



CRESTONE PEAK
RESOURCES

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

SECTION DETAILS

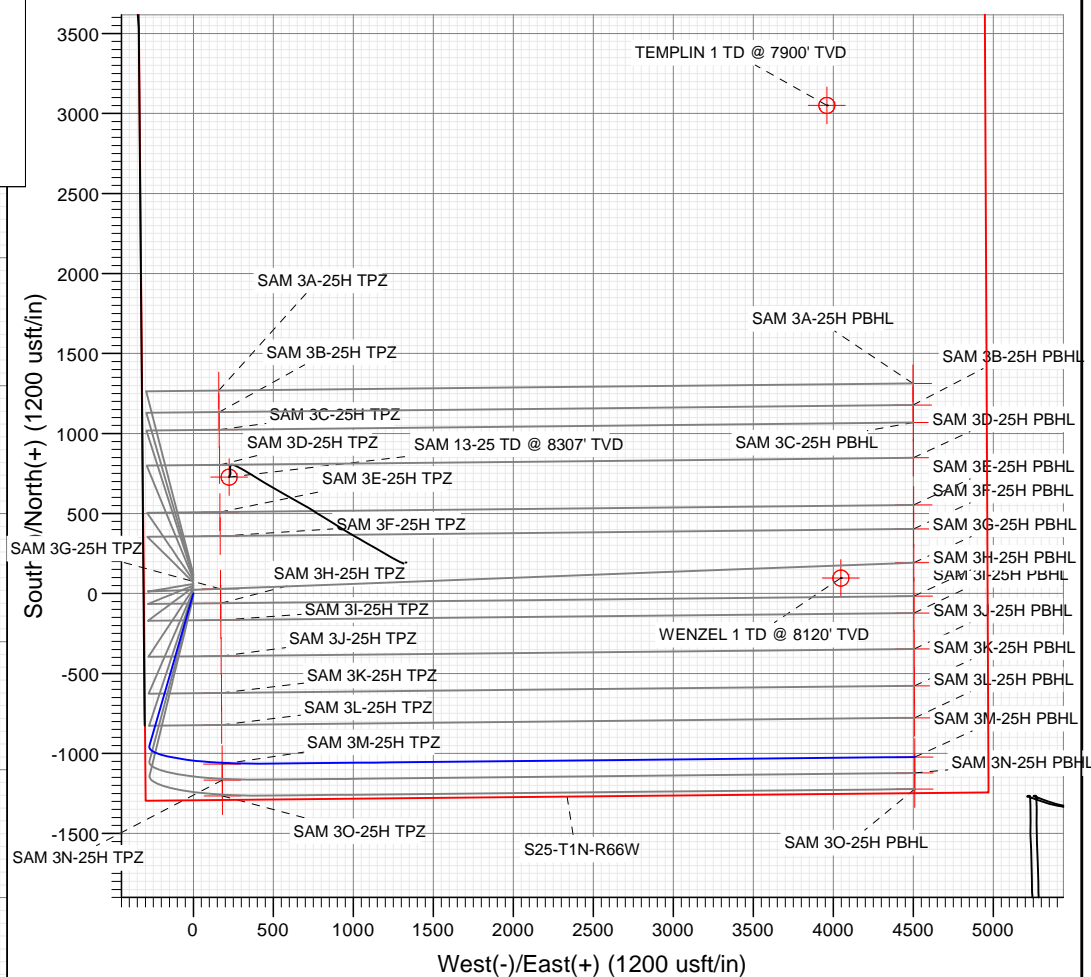
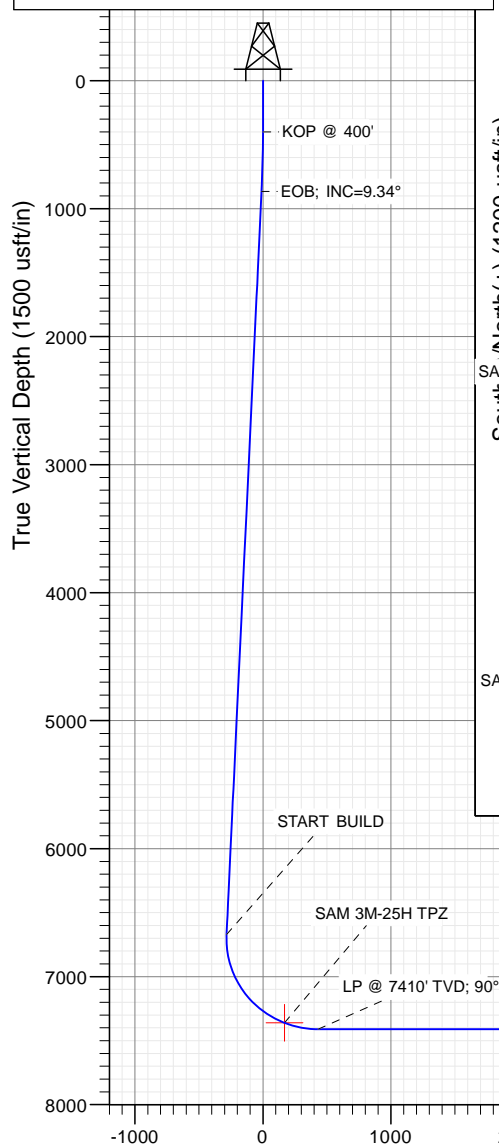
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	
3	867.08	9.34	196.06	865.01	-36.51	-10.51	2.00	196.06	-10.88	
4	6749.72	9.34	196.06	6669.64	-954.10	-274.73	0.00	0.00	-284.37	
5	7908.04	90.00	89.42	7410.00	-1063.51	441.84	8.00	-106.44	431.06	
6	11975.04	90.00	89.42	7410.00	-1022.17	4508.63	0.00	0.00	4498.06	SAM 3M-25H PBHL

PLAN #1
SAM 3M-25H-M166
16XXX LR
23 KB @ 5108.00usft
Ground Level @ 5086.00
North American Datum 1983
Well SAM 3M-25H-M166, Grid North

Name	Type	Target	No Target (Freehand)	Azimuth	Origin	Type	N/S	E/W	From	TVD	+N/-S	+E/-W	Latitude	Longitude
SAM 3M-25H TPZ				89.42			N/S	0.00	0.00	7360.86	-1066.17	179.51	40.015634	-104.733248
SAM 3M-25H PBHL										7410.00	-1022.17	4508.63	40.015651	-104.717791

FORMATION TOP DETAILS

No formation data is available



Azimuths to Grid North
True North: -0.49°
Magnetic North: 7.82°

Magnetic Field
Strength: 52247.5nT
Dip Angle: 66.47°
Date: 11/17/2016
Model: HDGM

WELL DETAILS: SAM 3M-25H-M166

+N/-S	+E/-W	Northing	Ground Level: Easting	5086.00	Latitude	Longitude
0.00	0.00	1250536.55	3214576.89		40.018565	-104.733856

CATHEDRAL



Cathedral Energy Services

Planning Report

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

Project	DJ BASIN		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	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 3M-25H-M166					
Well Position	+N/-S	0.00 usft	Northing:	1,250,536.55 usft	Latitude:	40.018565
	+E/-W	0.00 usft	Easting:	3,214,576.89 usft	Longitude:	-104.733856
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	5,086.00 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
			(°)	(°)	(nT)
	HDGM	11/17/2016	8.32	66.47	52,248

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

Plan Sections										
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	
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00	
867.08	9.34	196.06	865.01	-36.51	-10.51	2.00	2.00	0.00	196.06	
6,749.72	9.34	196.06	6,669.64	-954.10	-274.73	0.00	0.00	0.00	0.00	
7,908.04	90.00	89.42	7,410.00	-1,063.51	441.84	8.00	6.96	-9.21	-106.44	
11,975.04	90.00	89.42	7,410.00	-1,022.17	4,508.63	0.00	0.00	0.00	0.00	SAM 3M-25H PBHL

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well SAM 3M-25H-M166
Company:	Crestone Peak Resources	TVD Reference:	23' KB @ 5109.00usft
Project:	DJ BASIN	MD Reference:	23' KB @ 5109.00usft
Site:	S25-T1N-R66W (SAM)	North Reference:	Grid
Well:	SAM 3M-25H-M166	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	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	
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	KOP @ 400'
500.00	2.00	196.06	499.98	-1.68	-0.48	-0.50	2.00	2.00	
600.00	4.00	196.06	599.84	-6.71	-1.93	-2.00	2.00	2.00	
700.00	6.00	196.06	699.45	-15.08	-4.34	-4.49	2.00	2.00	
800.00	8.00	196.06	798.70	-26.79	-7.71	-7.99	2.00	2.00	
867.08	9.34	196.06	865.01	-36.51	-10.51	-10.88	2.00	2.00	EOB; INC=9.34°
900.00	9.34	196.06	897.50	-41.64	-11.99	-12.41	0.00	0.00	
1,000.00	9.34	196.06	996.17	-57.24	-16.48	-17.06	0.00	0.00	
1,100.00	9.34	196.06	1,094.84	-72.84	-20.97	-21.71	0.00	0.00	
1,200.00	9.34	196.06	1,193.52	-88.44	-25.47	-26.36	0.00	0.00	
1,300.00	9.34	196.06	1,292.19	-104.04	-29.96	-31.01	0.00	0.00	
1,400.00	9.34	196.06	1,390.87	-119.64	-34.45	-35.66	0.00	0.00	
1,500.00	9.34	196.06	1,489.54	-135.23	-38.94	-40.31	0.00	0.00	
1,600.00	9.34	196.06	1,588.21	-150.83	-43.43	-44.96	0.00	0.00	
1,700.00	9.34	196.06	1,686.89	-166.43	-47.92	-49.60	0.00	0.00	
1,800.00	9.34	196.06	1,785.56	-182.03	-52.41	-54.25	0.00	0.00	
1,900.00	9.34	196.06	1,884.23	-197.63	-56.91	-58.90	0.00	0.00	
2,000.00	9.34	196.06	1,982.91	-213.22	-61.40	-63.55	0.00	0.00	
2,100.00	9.34	196.06	2,081.58	-228.82	-65.89	-68.20	0.00	0.00	
2,200.00	9.34	196.06	2,180.26	-244.42	-70.38	-72.85	0.00	0.00	
2,300.00	9.34	196.06	2,278.93	-260.02	-74.87	-77.50	0.00	0.00	
2,400.00	9.34	196.06	2,377.60	-275.62	-79.36	-82.15	0.00	0.00	
2,500.00	9.34	196.06	2,476.28	-291.22	-83.85	-86.80	0.00	0.00	
2,600.00	9.34	196.06	2,574.95	-306.81	-88.35	-91.45	0.00	0.00	
2,700.00	9.34	196.06	2,673.63	-322.41	-92.84	-96.10	0.00	0.00	
2,800.00	9.34	196.06	2,772.30	-338.01	-97.33	-100.74	0.00	0.00	
2,900.00	9.34	196.06	2,870.97	-353.61	-101.82	-105.39	0.00	0.00	
3,000.00	9.34	196.06	2,969.65	-369.21	-106.31	-110.04	0.00	0.00	
3,100.00	9.34	196.06	3,068.32	-384.81	-110.80	-114.69	0.00	0.00	
3,200.00	9.34	196.06	3,166.99	-400.40	-115.29	-119.34	0.00	0.00	
3,300.00	9.34	196.06	3,265.67	-416.00	-119.79	-123.99	0.00	0.00	
3,400.00	9.34	196.06	3,364.34	-431.60	-124.28	-128.64	0.00	0.00	
3,500.00	9.34	196.06	3,463.02	-447.20	-128.77	-133.29	0.00	0.00	
3,600.00	9.34	196.06	3,561.69	-462.80	-133.26	-137.94	0.00	0.00	
3,700.00	9.34	196.06	3,660.36	-478.39	-137.75	-142.59	0.00	0.00	
3,800.00	9.34	196.06	3,759.04	-493.99	-142.24	-147.24	0.00	0.00	
3,900.00	9.34	196.06	3,857.71	-509.59	-146.73	-151.89	0.00	0.00	
4,000.00	9.34	196.06	3,956.39	-525.19	-151.23	-156.53	0.00	0.00	
4,100.00	9.34	196.06	4,055.06	-540.79	-155.72	-161.18	0.00	0.00	
4,200.00	9.34	196.06	4,153.73	-556.39	-160.21	-165.83	0.00	0.00	
4,300.00	9.34	196.06	4,252.41	-571.98	-164.70	-170.48	0.00	0.00	
4,400.00	9.34	196.06	4,351.08	-587.58	-169.19	-175.13	0.00	0.00	
4,500.00	9.34	196.06	4,449.75	-603.18	-173.68	-179.78	0.00	0.00	
4,600.00	9.34	196.06	4,548.43	-618.78	-178.17	-184.43	0.00	0.00	
4,700.00	9.34	196.06	4,647.10	-634.38	-182.67	-189.08	0.00	0.00	
4,800.00	9.34	196.06	4,745.78	-649.98	-187.16	-193.73	0.00	0.00	
4,900.00	9.34	196.06	4,844.45	-665.57	-191.65	-198.38	0.00	0.00	
5,000.00	9.34	196.06	4,943.12	-681.17	-196.14	-203.03	0.00	0.00	

Cathedral Energy Services

Planning Report

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Project:	DJ BASIN	MD Reference:	23' KB @ 5109.00usft
Site:	S25-T1N-R66W (SAM)	North Reference:	Grid
Well:	SAM 3M-25H-M166	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	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	9.34	196.06	5,041.80	-696.77	-200.63	-207.67	0.00	0.00	
5,200.00	9.34	196.06	5,140.47	-712.37	-205.12	-212.32	0.00	0.00	
5,300.00	9.34	196.06	5,239.14	-727.97	-209.61	-216.97	0.00	0.00	
5,400.00	9.34	196.06	5,337.82	-743.56	-214.11	-221.62	0.00	0.00	
5,500.00	9.34	196.06	5,436.49	-759.16	-218.60	-226.27	0.00	0.00	
5,600.00	9.34	196.06	5,535.17	-774.76	-223.09	-230.92	0.00	0.00	
5,700.00	9.34	196.06	5,633.84	-790.36	-227.58	-235.57	0.00	0.00	
5,800.00	9.34	196.06	5,732.51	-805.96	-232.07	-240.22	0.00	0.00	
5,900.00	9.34	196.06	5,831.19	-821.56	-236.56	-244.87	0.00	0.00	
6,000.00	9.34	196.06	5,929.86	-837.15	-241.05	-249.52	0.00	0.00	
6,100.00	9.34	196.06	6,028.54	-852.75	-245.55	-254.17	0.00	0.00	
6,200.00	9.34	196.06	6,127.21	-868.35	-250.04	-258.81	0.00	0.00	
6,300.00	9.34	196.06	6,225.88	-883.95	-254.53	-263.46	0.00	0.00	
6,400.00	9.34	196.06	6,324.56	-899.55	-259.02	-268.11	0.00	0.00	
6,500.00	9.34	196.06	6,423.23	-915.15	-263.51	-272.76	0.00	0.00	
6,600.00	9.34	196.06	6,521.90	-930.74	-268.00	-277.41	0.00	0.00	
6,700.00	9.34	196.06	6,620.58	-946.34	-272.49	-282.06	0.00	0.00	
6,749.72	9.34	196.06	6,669.64	-954.10	-274.73	-284.37	0.00	0.00	START BUILD
6,800.00	9.06	170.76	6,719.29	-961.93	-275.22	-284.94	8.00	-0.56	
6,900.00	12.93	132.79	6,817.56	-977.32	-265.74	-275.62	8.00	3.87	
7,000.00	19.47	115.90	6,913.59	-992.22	-242.50	-252.53	8.00	6.54	
7,100.00	26.79	107.60	7,005.51	-1,006.34	-205.97	-216.14	8.00	7.33	
7,200.00	34.40	102.72	7,091.54	-1,019.40	-156.85	-167.16	8.00	7.61	
7,300.00	42.14	99.45	7,169.99	-1,031.15	-96.09	-106.53	8.00	7.74	
7,400.00	49.95	97.03	7,239.35	-1,041.35	-24.89	-35.43	8.00	7.81	
7,500.00	57.80	95.11	7,298.26	-1,049.82	55.37	44.74	8.00	7.85	
7,600.00	65.68	93.50	7,345.57	-1,056.39	143.13	132.43	8.00	7.87	
7,700.00	73.57	92.08	7,380.36	-1,060.92	236.69	225.93	8.00	7.89	
7,800.00	81.46	90.77	7,401.97	-1,063.33	334.21	323.43	8.00	7.90	
7,900.00	89.37	89.52	7,409.96	-1,063.58	433.81	423.02	8.00	7.90	
7,908.04	90.00	89.42	7,410.00	-1,063.51	441.84	431.06	8.00	7.90	LP @ 7410' TVD; 90°
8,000.00	90.00	89.42	7,410.00	-1,062.57	533.80	523.02	0.00	0.00	
8,100.00	90.00	89.42	7,410.00	-1,061.55	633.80	623.02	0.00	0.00	
8,200.00	90.00	89.42	7,410.00	-1,060.54	733.79	723.02	0.00	0.00	
8,300.00	90.00	89.42	7,410.00	-1,059.52	833.79	823.02	0.00	0.00	
8,400.00	90.00	89.42	7,410.00	-1,058.51	933.78	923.02	0.00	0.00	
8,500.00	90.00	89.42	7,410.00	-1,057.49	1,033.78	1,023.02	0.00	0.00	
8,600.00	90.00	89.42	7,410.00	-1,056.47	1,133.77	1,123.02	0.00	0.00	
8,700.00	90.00	89.42	7,410.00	-1,055.46	1,233.77	1,223.02	0.00	0.00	
8,800.00	90.00	89.42	7,410.00	-1,054.44	1,333.76	1,323.02	0.00	0.00	
8,900.00	90.00	89.42	7,410.00	-1,053.42	1,433.76	1,423.02	0.00	0.00	
9,000.00	90.00	89.42	7,410.00	-1,052.41	1,533.75	1,523.02	0.00	0.00	
9,100.00	90.00	89.42	7,410.00	-1,051.39	1,633.75	1,623.02	0.00	0.00	
9,200.00	90.00	89.42	7,410.00	-1,050.37	1,733.74	1,723.02	0.00	0.00	
9,300.00	90.00	89.42	7,410.00	-1,049.36	1,833.74	1,823.02	0.00	0.00	
9,400.00	90.00	89.42	7,410.00	-1,048.34	1,933.73	1,923.02	0.00	0.00	
9,500.00	90.00	89.42	7,410.00	-1,047.33	2,033.73	2,023.02	0.00	0.00	
9,600.00	90.00	89.42	7,410.00	-1,046.31	2,133.72	2,123.02	0.00	0.00	
9,700.00	90.00	89.42	7,410.00	-1,045.29	2,233.72	2,223.02	0.00	0.00	
9,800.00	90.00	89.42	7,410.00	-1,044.28	2,333.71	2,323.02	0.00	0.00	
9,900.00	90.00	89.42	7,410.00	-1,043.26	2,433.71	2,423.02	0.00	0.00	
10,000.00	90.00	89.42	7,410.00	-1,042.24	2,533.70	2,523.02	0.00	0.00	

Cathedral Energy Services

Planning Report

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Company:	Crestone Peak Resources	TVD Reference:	23' KB @ 5109.00usft
Project:	DJ BASIN	MD Reference:	23' KB @ 5109.00usft
Site:	S25-T1N-R66W (SAM)	North Reference:	Grid
Well:	SAM 3M-25H-M166	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	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
10,100.00	90.00	89.42	7,410.00	-1,041.23	2,633.70	2,623.02	0.00	0.00	
10,200.00	90.00	89.42	7,410.00	-1,040.21	2,733.69	2,723.02	0.00	0.00	
10,300.00	90.00	89.42	7,410.00	-1,039.19	2,833.69	2,823.02	0.00	0.00	
10,400.00	90.00	89.42	7,410.00	-1,038.18	2,933.68	2,923.02	0.00	0.00	
10,500.00	90.00	89.42	7,410.00	-1,037.16	3,033.68	3,023.02	0.00	0.00	
10,600.00	90.00	89.42	7,410.00	-1,036.14	3,133.67	3,123.02	0.00	0.00	
10,700.00	90.00	89.42	7,410.00	-1,035.13	3,233.66	3,223.02	0.00	0.00	
10,800.00	90.00	89.42	7,410.00	-1,034.11	3,333.66	3,323.02	0.00	0.00	
10,900.00	90.00	89.42	7,410.00	-1,033.10	3,433.65	3,423.02	0.00	0.00	
11,000.00	90.00	89.42	7,410.00	-1,032.08	3,533.65	3,523.02	0.00	0.00	
11,100.00	90.00	89.42	7,410.00	-1,031.06	3,633.64	3,623.02	0.00	0.00	
11,200.00	90.00	89.42	7,410.00	-1,030.05	3,733.64	3,723.02	0.00	0.00	
11,300.00	90.00	89.42	7,410.00	-1,029.03	3,833.63	3,823.02	0.00	0.00	
11,400.00	90.00	89.42	7,410.00	-1,028.01	3,933.63	3,923.02	0.00	0.00	
11,500.00	90.00	89.42	7,410.00	-1,027.00	4,033.62	4,023.02	0.00	0.00	
11,600.00	90.00	89.42	7,410.00	-1,025.98	4,133.62	4,123.02	0.00	0.00	
11,700.00	90.00	89.42	7,410.00	-1,024.96	4,233.61	4,223.02	0.00	0.00	
11,800.00	90.00	89.42	7,410.00	-1,023.95	4,333.61	4,323.02	0.00	0.00	
11,900.00	90.00	89.42	7,410.00	-1,022.93	4,433.60	4,423.02	0.00	0.00	
11,975.04	90.00	89.42	7,410.00	-1,022.17	4,508.63	4,498.06	0.00	0.00	TD at 11975.04

Targets

Target Name

- hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
SAM 3M-25H PBHL - plan hits target center - Point	0.00	0.00	7,410.00	-1,022.17	4,508.63	1,249,514.38	3,219,085.53	40.015651	-104.717791
SAM 3M-25H TPZ - plan misses target center by 7.74usft at 7639.87usft MD (7360.98 TVD, -1058.44 N, 179.83 E) - Point	0.00	0.00	7,360.86	-1,066.17	179.51	1,249,470.37	3,214,756.41	40.015634	-104.733248

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
400.00	400.00	0.00	0.00	KOP @ 400'
867.08	865.01	-36.51	-10.51	EOB; INC=9.34°
6,749.72	6,669.64	-954.10	-274.73	START BUILD
7,908.04	7,410.00	-1,063.51	441.84	LP @ 7410' TVD; 90°
11,975.04	7,410.00	-1,022.17	4,508.63	TD at 11975.04

Crestone Peak Resources

DJ BASIN

S25-T1N-R66W (SAM)

SAM 3M-25H-M166

OH

PLAN #1

Anticollision Report

18 November, 2016

Cathedral Energy Services

Anticollision Report

Company:	Crestone Peak Resources	Local Co-ordinate Reference:	Well SAM 3M-25H-M166
Project:	DJ BASIN	TVD Reference:	23' KB @ 5109.00usft
Reference Site:	S25-T1N-R66W (SAM)	MD Reference:	23' KB @ 5109.00usft
Site Error:	0.00usft	North Reference:	Grid
Reference Well:	SAM 3M-25H-M166	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #1	Offset TVD Reference:	Offset Datum

Reference	PLAN #1		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 1,500.00usft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma		

Survey Tool Program		Date	11/18/2016		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.00	11,975.04	PLAN #1 (OH)	MWD+HDGM	OWSG MWD + HDGM	

Cathedral Energy Services

Anticollision Report

Company:	Crestone Peak Resources	Local Co-ordinate Reference:	Well SAM 3M-25H-M166
Project:	DJ BASIN	TVD Reference:	23' KB @ 5109.00usft
Reference Site:	S25-T1N-R66W (SAM)	MD Reference:	23' KB @ 5109.00usft
Site Error:	0.00usft	North Reference:	Grid
Reference Well:	SAM 3M-25H-M166	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #1	Offset TVD Reference:	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)						
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						Out of range
Beierle KE 26-361HN - GWOG WELL - GWOG WELL	7,344.78	12,555.47	419.23	344.29	5.594	CC
Beierle KE 26-361HN - GWOG WELL - GWOG WELL	7,400.00	12,555.47	424.53	343.55	5.242	ES
Beierle KE 26-361HN - GWOG WELL - GWOG WELL	7,500.00	12,555.47	459.31	368.92	5.082	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	11,975.04	7,174.92	856.17	773.79	10.393	CC, ES, SF
Lochbuie 2B-31H-D165 (EXISTING) - CPR WELL - SUR	11,975.04	7,255.00	1,115.38	1,051.45	17.448	CC, ES, SF
Lochbuie 2C-31H-D165 (EXISTING) - CPR WELL - SUR	11,975.04	7,095.00	1,487.89	1,429.38	25.429	CC, ES, SF
Lochbuie 2D-31H-D165 (EXISTING) - CPR WELL - SUR						Out of range
Lochbuie 2E-31H-D165 (EXISTING) - CPR WELL - SUR	11,975.04	7,166.81	883.85	804.06	11.076	CC, ES, SF
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	400.00	361.00	1,339.91	1,338.30	832.137	CC, ES
Sam 1 (EXISTING) - CPR WELL - NO SURVEYS	1,100.00	500.00	1,481.17	1,475.91	281.811	SF
Sam 13-25 (EXISTING) - CPR WELL - SURVEYS	3,098.33	3,287.81	1,316.68	1,295.04	60.838	CC
Sam 13-25 (EXISTING) - CPR WELL - SURVEYS	3,100.00	3,289.15	1,316.68	1,295.02	60.792	ES
Sam 13-25 (EXISTING) - CPR WELL - SURVEYS	4,900.00	4,943.19	1,499.06	1,459.44	37.842	SF
SAM 3A-25H-M166 - OH - PLAN #1	200.00	200.00	120.21	119.22	121.063	CC, ES
SAM 3A-25H-M166 - OH - PLAN #1	700.00	673.43	175.44	170.68	36.877	SF
SAM 3B-25H-M166 - OH - PLAN #1	300.00	300.00	110.00	108.29	64.332	CC, ES
SAM 3B-25H-M166 - OH - PLAN #1	700.00	681.25	150.69	146.02	32.295	SF
SAM 3C-25H-M166 - OH - PLAN #1	400.00	400.00	100.17	97.75	41.278	CC, ES
SAM 3C-25H-M166 - OH - PLAN #1	700.00	687.56	129.58	124.99	28.177	SF
SAM 3D-25H-M166 - OH - PLAN #1	400.00	400.00	89.98	87.55	37.077	CC, ES
SAM 3D-25H-M166 - OH - PLAN #1	700.00	692.73	111.28	106.73	24.436	SF
SAM 3E-25H-M166 - OH - PLAN #1	400.00	400.00	80.14	77.72	33.024	CC, ES
SAM 3E-25H-M166 - OH - PLAN #1	700.00	696.84	96.68	92.15	21.334	SF
SAM 3F-25H-M166 - OH - PLAN #1	400.00	400.00	69.94	67.51	28.819	CC, ES
SAM 3F-25H-M166 - OH - PLAN #1	11,975.04	11,901.40	1,425.03	1,123.67	4.729	SF
SAM 3G-25H-M166 - OH - PLAN #1	400.00	400.00	60.11	57.68	24.768	CC, ES
SAM 3G-25H-M166 - OH - PLAN #1	11,975.04	11,785.53	1,216.22	917.45	4.071	SF
SAM 3H-25H-M166 - OH - PLAN #1	400.00	400.00	49.91	47.48	20.565	CC, ES
SAM 3H-25H-M166 - OH - PLAN #1	11,975.04	12,064.49	1,019.30	721.50	3.423	SF
SAM 3I-25H-M166 - OH - PLAN #1	400.00	400.00	40.07	37.65	16.513	CC, ES
SAM 3I-25H-M166 - OH - PLAN #1	11,975.04	11,901.21	900.12	600.14	3.001	SF
SAM 3J-25H-M166 - OH - PLAN #1	400.00	400.00	30.23	27.81	12.457	CC, ES
SAM 3J-25H-M166 - OH - PLAN #1	11,975.04	11,841.35	678.62	379.85	2.271	SF
SAM 3K-25H-M166 - OH - PLAN #1	400.00	400.00	20.04	17.61	8.256	CC, ES
SAM 3K-25H-M166 - OH - PLAN #1	11,975.04	11,934.00	445.14	144.42	1.480	Level 3, SF
SAM 3L-25H-M166 - OH - PLAN #1	400.00	400.00	10.19	7.76	4.199	CC
SAM 3L-25H-M166 - OH - PLAN #1	11,975.04	11,885.33	254.95	-34.18	0.882	Level 1, ES, SF
SAM 3N-25H-M166 - OH - PLAN #1	300.00	300.00	9.84	8.13	5.752	CC, ES
SAM 3N-25H-M166 - OH - PLAN #1	11,975.04	12,155.71	197.14	34.90	1.215	Level 2, SF
SAM 3O-25H-M166 - OH - PLAN #1	200.00	200.00	20.04	19.05	20.183	CC
SAM 3O-25H-M166 - OH - PLAN #1	11,975.04	11,932.12	211.89	-75.47	0.737	Level 1, ES, SF

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

Cathedral Energy Services

Anticollision Report

Company:	Crestone Peak Resources	Local Co-ordinate Reference:	Well SAM 3M-25H-M166
Project:	DJ BASIN	TVD Reference:	23' KB @ 5109.00usft
Reference Site:	S25-T1N-R66W (SAM)	MD Reference:	23' KB @ 5109.00usft
Site Error:	0.00usft	North Reference:	Grid
Reference Well:	SAM 3M-25H-M166	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #1	Offset TVD Reference:	Offset Datum

Summary						
Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)		Separation Factor	Warning
Offset Well - Wellbore - Design						
S25-T1N-R66W (SAM)						
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	11,524.86	7,331.00	1,123.07	978.32	7.759	CC, ES
Wenzel 1 (EXISTING) - CPR WELL - NO SURVEYS	11,600.00	7,331.00	1,125.58	979.15	7.687	SF

Cathedral Energy Services

Anticollision Report

Company:	Crestone Peak Resources	Local Co-ordinate Reference:	Well SAM 3M-25H-M166
Project:	DJ BASIN	TVD Reference:	23' KB @ 5109.00usft
Reference Site:	S25-T1N-R66W (SAM)	MD Reference:	23' KB @ 5109.00usft
Site Error:	0.00usft	North Reference:	Grid
Reference Well:	SAM 3M-25H-M166	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #1	Offset TVD Reference:	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						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	
6,100.00	6,028.54	12,555.47	7,499.06	25.34	91.41	165.31	-825.64	-304.42	1,447.98	1,402.36	45.62	31.740	
6,200.00	6,127.21	12,555.47	7,499.06	25.77	91.41	165.31	-825.64	-304.42	1,349.62	1,303.73	45.89	29.407	
6,300.00	6,225.88	12,555.47	7,499.06	26.20	91.41	165.31	-825.64	-304.42	1,251.53	1,205.32	46.21	27.082	
6,400.00	6,324.56	12,555.47	7,499.06	26.64	91.41	165.31	-825.64	-304.42	1,153.77	1,107.18	46.58	24.767	
6,500.00	6,423.23	12,555.47	7,499.06	27.07	91.41	165.31	-825.64	-304.42	1,056.42	1,009.40	47.02	22.466	
6,600.00	6,521.90	12,555.47	7,499.06	27.51	91.41	165.31	-825.64	-304.42	959.62	912.08	47.55	20.182	
6,700.00	6,620.58	12,555.47	7,499.06	27.94	91.41	165.31	-825.64	-304.42	863.55	815.37	48.19	17.921	
6,749.72	6,669.64	12,555.47	7,499.06	28.16	91.41	165.31	-825.64	-304.42	816.14	767.58	48.56	16.808	
6,800.00	6,719.29	12,555.47	7,499.06	28.37	91.41	178.45	-825.64	-304.42	768.51	719.52	48.99	15.686	
6,850.00	6,768.59	12,555.47	7,499.06	28.57	91.41	-169.70	-825.64	-304.42	721.72	672.22	49.51	14.578	
6,900.00	6,817.56	12,555.47	7,499.06	28.75	91.41	-162.83	-825.64	-304.42	675.87	625.76	50.11	13.487	
6,950.00	6,865.97	12,555.47	7,499.06	28.92	91.41	-159.62	-825.64	-304.42	631.42	580.57	50.85	12.418	
7,000.00	6,913.59	12,555.47	7,499.06	29.08	91.41	-158.28	-825.64	-304.42	588.92	537.12	51.81	11.368	
7,050.00	6,960.18	12,555.47	7,499.06	29.23	91.41	-157.74	-825.64	-304.42	549.06	495.79	53.27	10.307	
7,100.00	7,005.51	12,555.47	7,499.06	29.37	91.41	-157.52	-825.64	-304.42	512.66	457.49	55.17	9.292	
7,150.00	7,049.37	12,555.47	7,499.06	29.50	91.41	-157.35	-825.64	-304.42	480.71	423.03	57.68	8.335	
7,200.00	7,091.54	12,555.47	7,499.06	29.61	91.41	-157.11	-825.64	-304.42	454.32	393.36	60.96	7.452	
7,250.00	7,131.81	12,555.47	7,499.06	29.72	91.41	-156.74	-825.64	-304.42	434.65	369.52	65.13	6.674	
7,300.00	7,169.99	12,555.47	7,499.06	29.81	91.41	-156.20	-825.64	-304.42	422.73	352.65	70.08	6.032	
7,344.78	7,202.26	12,555.47	7,499.06	29.89	91.41	-155.53	-825.64	-304.42	419.23	344.29	74.94	5.594 CC	
7,350.00	7,205.90	12,555.47	7,499.06	29.90	91.41	-155.44	-825.64	-304.42	419.28	343.76	75.52	5.552	
7,400.00	7,239.35	12,555.47	7,499.06	29.97	91.41	-154.43	-825.64	-304.42	424.53	343.55	80.98	5.242 ES	
7,450.00	7,270.19	12,555.47	7,499.06	30.04	91.41	-153.11	-825.64	-304.42	438.14	352.11	86.03	5.093	
7,500.00	7,298.26	12,555.47	7,499.06	30.10	91.41	-151.43	-825.64	-304.42	459.31	368.92	90.39	5.082 SF	
7,550.00	7,323.42	12,555.47	7,499.06	30.17	91.41	-149.30	-825.64	-304.42	486.95	392.98	93.97	5.182	
7,600.00	7,345.57	12,555.47	7,499.06	30.24	91.41	-146.60	-825.64	-304.42	519.92	423.07	96.85	5.368	
7,650.00	7,364.58	12,555.47	7,499.06	30.33	91.41	-143.17	-825.64	-304.42	557.12	457.98	99.14	5.620	
7,700.00	7,380.36	12,555.47	7,499.06	30.50	91.41	-138.81	-825.64	-304.42	597.60	496.63	100.97	5.919	
7,750.00	7,392.85	12,555.47	7,499.06	30.84	91.41	-133.25	-825.64	-304.42	640.56	538.10	102.45	6.252	
7,800.00	7,401.97	12,555.47	7,499.06	31.39	91.41	-126.18	-825.64	-304.42	685.34	581.66	103.69	6.610	
7,850.00	7,407.68	12,555.47	7,499.06	32.09	91.41	-117.35	-825.64	-304.42	731.42	626.69	104.73	6.984	
7,900.00	7,409.96	12,555.47	7,499.06	32.90	91.41	-106.70	-825.64	-304.42	778.36	672.74	105.62	7.369	
7,908.04	7,410.00	12,555.47	7,499.06	33.03	91.41	-104.85	-825.64	-304.42	785.96	680.20	105.75	7.432	
8,000.00	7,410.00	12,555.47	7,499.06	34.69	91.41	-104.85	-825.64	-304.42	873.50	766.44	107.06	8.159	
8,100.00	7,410.00	12,555.47	7,499.06	36.70	91.41	-104.85	-825.64	-304.42	969.61	861.46	108.15	8.966	
8,200.00	7,410.00	12,555.47	7,499.06	38.87	91.41	-104.85	-825.64	-304.42	1,066.45	957.38	109.07	9.778	
8,300.00	7,410.00	12,555.47	7,499.06	41.18	91.41	-104.85	-825.64	-304.42	1,163.81	1,053.91	109.91	10.589	
8,400.00	7,410.00	12,555.47	7,499.06	43.61	91.41	-104.85	-825.64	-304.42	1,261.59	1,151.00	110.60	11.407	
8,500.00	7,410.00	12,555.47	7,499.06	46.13	91.41	-104.85	-825.64	-304.42	1,359.70	1,248.52	111.17	12.231	
8,600.00	7,410.00	12,555.47	7,499.06	48.73	91.41	-104.85	-825.64	-304.42	1,458.06	1,346.40	111.66	13.058	

Cathedral Energy Services

Anticollision Report

Company:	Crestone Peak Resources	Local Co-ordinate Reference:	Well SAM 3M-25H-M166
Project:	DJ BASIN	TVD Reference:	23' KB @ 5109.00usft
Reference Site:	S25-T1N-R66W (SAM)	MD Reference:	23' KB @ 5109.00usft
Site Error:	0.00usft	North Reference:	Grid
Reference Well:	SAM 3M-25H-M166	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #1	Offset TVD Reference:	Offset Datum

Offset Design S25-T1N-R66W (SAM) - Lochbuie 2A-31H-D165 (EXISTING) - CPR WELL - SURVEYS													Offset Site Error: 0.00 usft
Survey Program: 164-ISCWSA 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
11,300.00	7,410.00	7,178.43	7,061.58	129.60	21.47	53.22	-1,385.96	5,232.34	1,469.94	1,413.74	56.21	26.153	
11,400.00	7,410.00	7,177.84	7,061.12	132.73	21.47	53.15	-1,385.60	5,232.34	1,375.40	1,317.11	58.29	23.596	
11,500.00	7,410.00	7,177.28	7,060.68	135.87	21.47	53.08	-1,385.25	5,232.34	1,281.69	1,220.88	60.81	21.078	
11,600.00	7,410.00	7,176.74	7,060.26	139.01	21.47	53.01	-1,384.92	5,232.34	1,189.00	1,125.15	63.85	18.622	
11,700.00	7,410.00	7,176.23	7,059.85	142.15	21.47	52.95	-1,384.60	5,232.34	1,097.60	1,030.06	67.54	16.250	
11,800.00	7,410.00	7,175.74	7,059.46	145.30	21.47	52.89	-1,384.30	5,232.34	1,007.83	935.80	72.03	13.991	
11,900.00	7,410.00	7,175.27	7,059.09	148.44	21.47	52.83	-1,384.01	5,232.35	920.17	842.67	77.50	11.873	
11,975.04	7,410.00	7,174.92	7,058.82	150.81	21.47	52.79	-1,383.80	5,232.35	856.17	773.79	82.38	10.393 CC, ES, SF	

Cathedral Energy Services

Anticollision Report

Company:	Crestone Peak Resources	Local Co-ordinate Reference:	Well SAM 3M-25H-M166
Project:	DJ BASIN	TVD Reference:	23' KB @ 5109.00usft
Reference Site:	S25-T1N-R66W (SAM)	MD Reference:	23' KB @ 5109.00usft
Site Error:	0.00usft	North Reference:	Grid
Reference Well:	SAM 3M-25H-M166	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #1	Offset TVD Reference:	Offset Datum

Offset Design S25-T1N-R66W (SAM) - Lochbuie 2B-31H-D165 (EXISTING) - CPR WELL - SURVEYS													Offset Site Error: 0.00 usft
Survey Program: 133-ISCWSA 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
11,600.00	7,410.00	7,255.00	7,215.22	139.01	18.06	69.05	-1,332.07	5,573.04	1,476.72	1,422.02	54.70	26.999	
11,700.00	7,410.00	7,255.00	7,215.22	142.15	18.06	69.05	-1,332.07	5,573.04	1,379.66	1,323.14	56.52	24.412	
11,800.00	7,410.00	7,255.00	7,215.22	145.30	18.06	69.05	-1,332.07	5,573.04	1,283.04	1,224.31	58.74	21.843	
11,900.00	7,410.00	7,255.00	7,215.22	148.44	18.06	69.05	-1,332.07	5,573.04	1,186.99	1,125.53	61.47	19.311	
11,975.04	7,410.00	7,255.00	7,215.22	150.81	18.06	69.05	-1,332.07	5,573.04	1,115.38	1,051.45	63.93	17.448	CC, ES, SF

Cathedral Energy Services

Anticollision Report

Company:	Crestone Peak Resources	Local Co-ordinate Reference:	Well SAM 3M-25H-M166
Project:	DJ BASIN	TVD Reference:	23' KB @ 5109.00usft
Reference Site:	S25-T1N-R66W (SAM)	MD Reference:	23' KB @ 5109.00usft
Site Error:	0.00usft	North Reference:	Grid
Reference Well:	SAM 3M-25H-M166	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #1	Offset TVD Reference:	Offset Datum

Offset Design S25-T1N-R66W (SAM) - Lochbuie 2C-31H-D165 (EXISTING) - CPR WELL - SURVEYS													Offset Site Error:	0.00 usft
Survey Program: 165-ISCWSA 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	
11,975.04	7,410.00	7,095.00	7,041.09	150.81	15.37	50.43	-1,367.08	5,925.22	1,487.89	1,429.38	58.51	25.429	CC, ES, SF	

Cathedral Energy Services

Anticollision Report

Company:	Crestone Peak Resources	Local Co-ordinate Reference:	Well SAM 3M-25H-M166
Project:	DJ BASIN	TVD Reference:	23' KB @ 5109.00usft
Reference Site:	S25-T1N-R66W (SAM)	MD Reference:	23' KB @ 5109.00usft
Site Error:	0.00usft	North Reference:	Grid
Reference Well:	SAM 3M-25H-M166	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #1	Offset TVD Reference:	Offset Datum

Offset Design													S25-T1N-R66W (SAM) - Lochbuie 2E-31H-D165 (EXISTING) - CPR WELL - SURVEYS		Offset Site Error:		0.00 usft	
Survey Program:													164-ISCWSA 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					
11,400.00	7,410.00	7,168.71	7,053.89	132.73	21.49	53.82	-1,379.66	5,271.56	1,408.92	1,351.55	57.37	24.557						
11,500.00	7,410.00	7,168.34	7,053.60	135.87	21.49	53.77	-1,379.44	5,271.56	1,314.61	1,254.91	59.71	22.018						
11,600.00	7,410.00	7,167.99	7,053.32	139.01	21.49	53.73	-1,379.23	5,271.56	1,221.21	1,158.67	62.53	19.529						
11,700.00	7,410.00	7,167.66	7,053.06	142.15	21.49	53.69	-1,379.03	5,271.56	1,128.93	1,062.97	65.96	17.114						
11,800.00	7,410.00	7,167.34	7,052.80	145.30	21.49	53.65	-1,378.83	5,271.56	1,038.09	967.95	70.14	14.800						
11,900.00	7,410.00	7,167.03	7,052.56	148.44	21.49	53.61	-1,378.65	5,271.56	949.09	873.85	75.24	12.614						
11,975.04	7,410.00	7,166.81	7,052.38	150.81	21.49	53.58	-1,378.52	5,271.56	883.85	804.06	79.80	11.076 CC, ES, SF						

Cathedral Energy Services

Anticollision Report

Company:	Crestone Peak Resources	Local Co-ordinate Reference:	Well SAM 3M-25H-M166
Project:	DJ BASIN	TVD Reference:	23' KB @ 5109.00usft
Reference Site:	S25-T1N-R66W (SAM)	MD Reference:	23' KB @ 5109.00usft
Site Error:	0.00usft	North Reference:	Grid
Reference Well:	SAM 3M-25H-M166	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #1	Offset TVD Reference:	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						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	81.70	193.40	1,325.88	1,340.48				
100.00	100.00	61.00	61.00	0.14	0.07	81.70	193.40	1,325.88	1,339.91	1,339.71	0.21	6,534.326	
200.00	200.00	161.00	161.00	0.50	0.18	81.70	193.40	1,325.88	1,339.91	1,339.24	0.67	1,989.653	
300.00	300.00	261.00	261.00	0.85	0.29	81.70	193.40	1,325.88	1,339.91	1,338.77	1.14	1,173.485	
400.00	400.00	361.00	361.00	1.21	0.40	81.70	193.40	1,325.88	1,339.91	1,338.30	1.61	832.137 CC, ES	
500.00	499.98	460.98	460.98	1.56	0.51	-114.42	193.40	1,325.88	1,340.63	1,338.57	2.06	650.138	
600.00	599.84	500.00	500.00	1.90	0.55	-114.42	193.40	1,325.88	1,344.18	1,341.71	2.48	542.831	
700.00	699.45	500.00	500.00	2.24	0.55	-114.20	193.40	1,325.88	1,355.99	1,353.00	2.99	454.127	
800.00	798.70	500.00	500.00	2.61	0.55	-113.82	193.40	1,325.88	1,376.37	1,372.81	3.56	386.090	
867.08	865.01	500.00	500.00	2.86	0.55	-113.47	193.40	1,325.88	1,394.66	1,390.70	3.96	351.796	
900.00	897.50	500.00	500.00	2.99	0.55	-113.47	193.40	1,325.88	1,404.87	1,400.71	4.16	337.808	
1,000.00	996.17	500.00	500.00	3.39	0.55	-113.47	193.40	1,325.88	1,440.06	1,435.33	4.73	304.738	
1,100.00	1,094.84	500.00	500.00	3.80	0.55	-113.47	193.40	1,325.88	1,481.17	1,475.91	5.26	281.811 SF	

Cathedral Energy Services

Anticollision Report

Company:	Crestone Peak Resources	Local Co-ordinate Reference:	Well SAM 3M-25H-M166
Project:	DJ BASIN	TVD Reference:	23' KB @ 5109.00usft
Reference Site:	S25-T1N-R66W (SAM)	MD Reference:	23' KB @ 5109.00usft
Site Error:	0.00usft	North Reference:	Grid
Reference Well:	SAM 3M-25H-M166	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #1	Offset TVD Reference:	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		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	81.92	186.37	1,313.06	1,326.33					
100.00	100.00	83.00	83.00	0.14	0.09	81.92	186.37	1,313.06	1,326.22	1,325.99	0.23	5,760.829		
200.00	200.00	183.00	183.00	0.50	0.20	81.92	186.37	1,313.06	1,326.22	1,325.52	0.70	1,895.218		
300.00	300.00	283.00	283.00	0.85	0.31	81.92	186.37	1,313.06	1,326.22	1,325.05	1.17	1,134.171		
400.00	400.00	383.00	383.00	1.21	0.43	81.92	186.37	1,313.06	1,326.22	1,324.58	1.64	809.219		
500.00	499.98	482.98	482.98	1.56	0.54	-114.20	186.37	1,313.06	1,326.93	1,324.84	2.09	634.312		
600.00	599.84	582.84	582.84	1.90	0.65	-114.36	186.37	1,313.06	1,329.09	1,326.55	2.54	523.355		
700.00	699.45	682.45	682.45	2.24	0.76	-114.64	186.37	1,313.06	1,332.71	1,329.71	3.00	444.251		
800.00	798.70	781.70	781.70	2.61	0.87	-115.02	186.37	1,313.06	1,337.86	1,334.39	3.47	385.113		
867.08	865.01	848.01	848.01	2.86	0.94	-115.32	186.37	1,313.06	1,342.20	1,338.40	3.80	353.126		
900.00	897.50	880.50	880.50	2.99	0.98	-115.53	186.37	1,313.06	1,344.52	1,340.56	3.96	339.211		
1,000.00	996.17	979.17	979.17	3.39	1.09	-116.14	186.37	1,313.06	1,351.67	1,347.21	4.46	302.924		
1,100.00	1,094.84	1,077.84	1,077.84	3.80	1.20	-116.75	186.37	1,313.06	1,358.98	1,354.01	4.97	273.599		
1,200.00	1,193.52	1,176.52	1,176.52	4.21	1.31	-117.35	186.37	1,313.06	1,366.44	1,360.96	5.48	249.513		
1,300.00	1,292.19	1,275.19	1,275.19	4.62	1.42	-117.95	186.37	1,313.06	1,374.05	1,368.06	5.99	229.439		
1,400.00	1,390.87	1,373.87	1,373.87	5.04	1.53	-118.54	186.37	1,313.06	1,381.81	1,375.31	6.50	212.488		
1,500.00	1,489.54	1,463.01	1,463.01	5.46	1.71	-119.06	186.48	1,313.30	1,390.02	1,382.93	7.09	196.113		
1,600.00	1,588.21	1,610.12	1,610.10	5.89	2.02	-119.99	188.02	1,311.91	1,397.60	1,389.77	7.83	178.466		
1,700.00	1,686.89	1,782.43	1,781.93	6.31	2.40	-121.31	193.44	1,300.88	1,400.48	1,391.82	8.65	161.817		
1,800.00	1,785.56	1,954.74	1,952.46	6.74	2.84	-122.90	203.09	1,278.47	1,397.64	1,388.13	9.50	147.042		
1,900.00	1,884.23	2,096.75	2,091.46	7.17	3.32	-124.52	216.71	1,252.88	1,391.94	1,381.60	10.34	134.645		
2,000.00	1,982.91	2,227.57	2,217.87	7.59	3.86	-126.27	233.73	1,223.87	1,383.89	1,372.68	11.21	123.442		
2,100.00	2,081.58	2,362.13	2,346.38	8.02	4.53	-128.27	254.01	1,189.53	1,374.27	1,362.07	12.20	112.690		
2,200.00	2,180.26	2,471.87	2,450.14	8.45	5.13	-130.00	271.26	1,158.27	1,363.02	1,349.89	13.13	103.792		
2,300.00	2,278.93	2,556.78	2,530.26	8.88	5.60	-131.39	285.36	1,133.95	1,353.03	1,339.05	13.98	96.772		
2,400.00	2,377.60	2,645.85	2,614.53	9.31	6.07	-132.84	299.69	1,108.88	1,344.39	1,329.53	14.85	90.509		
2,500.00	2,476.28	2,731.12	2,695.27	9.74	6.52	-134.23	313.44	1,085.15	1,337.11	1,321.39	15.72	85.052		
2,600.00	2,574.95	2,814.67	2,774.75	10.17	6.98	-135.57	326.35	1,062.88	1,331.63	1,315.04	16.59	80.272		
2,700.00	2,673.63	2,923.29	2,877.76	10.60	7.60	-137.36	343.61	1,033.09	1,326.72	1,309.10	17.62	75.300		
2,800.00	2,772.30	3,016.92	2,966.48	11.04	8.15	-138.91	358.14	1,006.91	1,322.33	1,303.74	18.59	71.116		
2,900.00	2,870.97	3,104.42	3,049.27	11.47	8.68	-140.38	372.31	982.40	1,319.33	1,299.78	19.55	67.469		
3,000.00	2,969.65	3,200.09	3,139.45	11.90	9.30	-142.05	388.69	954.97	1,317.43	1,296.82	20.61	63.911		
3,098.33	3,066.67	3,287.81	3,221.75	12.32	9.89	-143.62	404.60	929.12	1,316.68	1,295.04	21.64	60.838 CC		
3,100.00	3,068.32	3,289.15	3,223.01	12.33	9.90	-143.65	404.85	928.73	1,316.68	1,295.02	21.66	60.792 ES		
3,200.00	3,166.99	3,370.64	3,299.42	12.76	10.43	-145.12	420.13	904.92	1,317.74	1,295.09	22.65	58.187		
3,300.00	3,265.67	3,472.45	3,395.12	13.20	11.06	-146.93	438.55	875.44	1,319.91	1,296.17	23.75	55.584		
3,400.00	3,364.34	3,555.00	3,472.79	13.63	11.58	-148.39	453.34	851.71	1,323.41	1,298.69	24.72	53.537		
3,500.00	3,463.02	3,652.24	3,564.30	14.06	12.20	-150.09	470.79	823.87	1,328.24	1,302.45	25.80	51.489		
3,600.00	3,561.69	3,743.91	3,650.75	14.50	12.76	-151.66	486.69	797.83	1,334.05	1,307.24	26.81	49.756		
3,700.00	3,660.36	3,823.99	3,726.36	14.93	13.26	-153.01	500.67	775.45	1,341.42	1,313.67	27.74	48.351		
3,800.00	3,759.04	3,917.72	3,814.93	15.36	13.84	-154.57	517.25	749.66	1,350.34	1,321.58	28.77	46.944		
3,900.00	3,857.71	4,023.54	3,915.16	15.79	14.48	-156.28	534.93	720.70	1,359.78	1,329.92	29.86	45.543		
4,000.00	3,956.39	4,123.00	4,009.40	16.23	15.09	-157.85	550.70	693.07	1,369.41	1,338.51	30.90	44.320		
4,100.00	4,055.06	4,199.05	4,081.46	16.66	15.56	-159.04	562.97	672.10	1,380.37	1,348.61	31.76	43.459		
4,200.00	4,153.73	4,320.83	4,196.72	17.09	16.32	-160.94	582.67	638.10	1,392.24	1,359.27	32.98	42.221		
4,300.00	4,252.41	4,416.79	4,287.55	17.53	16.92	-162.39	596.91	610.61	1,403.62	1,369.63	33.98	41.303		
4,400.00	4,351.08	4,501.00	4,367.21	17.96	17.45	-163.66	609.89	586.59	1,416.42	1,381.52	34.90	40.586		
4,500.00	4,449.75	4,578.27	4,440.04	18.39	17.96	-164.84	622.74	564.22	1,430.89	1,395.12	35.77	39.998		
4,600.00	4,548.43	4,666.76	4,523.08	18.83	18.56	-166.21	638.25	537.84	1,446.67	1,409.92	36.75	39.363		
4,700.00	4,647.10	4,758.25	4,608.92	19.26	19.17	-167.60	654.35	510.60	1,463.52	1,425.79	37.73	38.787		
4,800.00	4,745.78	4,860.62	4,705.60	19.70	19.82	-169.05	671.27	481.51	1,481.00	1,442.23	38.76	38.208		
4,900.00	4,844.45	4,943.19	4,783.70	20.13	20.34	-170.19	684.58	458.24	1,499.06	1,459.44	39.61	37.842 SF		

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

Cathedral Energy Services

Anticollision Report

Company:	Crestone Peak Resources	Local Co-ordinate Reference:	Well SAM 3M-25H-M166
Project:	DJ BASIN	TVD Reference:	23' KB @ 5109.00usft
Reference Site:	S25-T1N-R66W (SAM)	MD Reference:	23' KB @ 5109.00usft
Site Error:	0.00usft	North Reference:	Grid
Reference Well:	SAM 3M-25H-M166	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #1	Offset TVD Reference:	Offset Datum

Cathedral Energy Services

Anticollision Report

Company:	Crestone Peak Resources	Local Co-ordinate Reference:	Well SAM 3M-25H-M166
Project:	DJ BASIN	TVD Reference:	23' KB @ 5109.00usft
Reference Site:	S25-T1N-R66W (SAM)	MD Reference:	23' KB @ 5109.00usft
Site Error:	0.00usft	North Reference:	Grid
Reference Well:	SAM 3M-25H-M166	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #1	Offset TVD Reference:	Offset Datum

Offset Design S25-T1N-R66W (SAM) - SAM 3A-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	0.04	120.21	0.08	120.21					
100.00	100.00	100.00	100.00	0.14	0.14	0.04	120.21	0.08	120.21	119.94	0.28	435.512		
200.00	200.00	200.00	200.00	0.50	0.50	0.04	120.21	0.08	120.21	119.22	0.99	121.063 CC, ES		
300.00	300.00	296.06	296.04	0.85	0.84	-0.15	121.77	-0.32	121.84	120.10	1.74	70.183		
400.00	400.00	391.91	391.76	1.21	1.19	-0.69	126.43	-1.53	126.71	124.20	2.51	50.578		
500.00	499.98	487.16	486.68	1.56	1.54	162.59	134.13	-3.52	136.49	133.23	3.26	41.814		
600.00	599.84	581.19	580.07	1.90	1.89	162.10	144.73	-6.26	152.78	148.77	4.01	38.053		
700.00	699.45	673.43	671.28	2.24	2.25	161.77	158.00	-9.69	175.44	170.68	4.76	36.877 SF		
800.00	798.70	763.36	759.74	2.61	2.62	161.56	173.67	-13.74	204.30	198.82	5.49	37.246		
867.08	865.01	822.35	817.47	2.86	2.87	161.46	185.40	-16.77	227.03	221.07	5.96	38.089		
900.00	897.50	853.09	847.49	2.99	3.00	161.50	191.79	-18.42	238.81	232.65	6.17	38.710		
1,000.00	996.17	946.47	938.69	3.39	3.41	161.60	211.19	-23.44	274.60	267.79	6.81	40.316		
1,100.00	1,094.84	1,039.84	1,029.90	3.80	3.83	161.67	230.58	-28.45	310.39	302.92	7.47	41.565		
1,200.00	1,193.52	1,133.22	1,121.10	4.21	4.25	161.73	249.98	-33.47	346.18	338.04	8.14	42.552		
1,300.00	1,292.19	1,226.60	1,212.30	4.62	4.67	161.78	269.38	-38.48	381.96	373.15	8.81	43.343		
1,400.00	1,390.87	1,319.97	1,303.50	5.04	5.10	161.82	288.78	-43.49	417.75	408.26	9.50	43.986		
1,500.00	1,489.54	1,413.35	1,394.70	5.46	5.53	161.85	308.18	-48.51	453.54	443.35	10.19	44.517		
1,600.00	1,588.21	1,506.73	1,485.90	5.89	5.96	161.88	327.58	-53.52	489.33	478.45	10.88	44.961		
1,700.00	1,686.89	1,600.10	1,577.10	6.31	6.39	161.91	346.97	-58.54	525.12	513.54	11.58	45.336		
1,800.00	1,785.56	1,693.48	1,668.31	6.74	6.82	161.93	366.37	-63.55	560.91	548.62	12.29	45.656		
1,900.00	1,884.23	1,786.86	1,759.51	7.17	7.25	161.95	385.77	-68.57	596.70	583.71	12.99	45.932		
2,000.00	1,982.91	1,880.23	1,850.71	7.59	7.69	161.97	405.17	-73.58	632.48	618.79	13.70	46.172		
2,100.00	2,081.58	1,973.61	1,941.91	8.02	8.12	161.98	424.57	-78.60	668.27	653.87	14.41	46.382		
2,200.00	2,180.26	2,066.98	2,033.11	8.45	8.55	162.00	443.97	-83.61	704.06	688.94	15.12	46.567		
2,300.00	2,278.93	2,160.36	2,124.31	8.88	8.99	162.01	463.36	-88.63	739.85	724.02	15.83	46.731		
2,400.00	2,377.60	2,253.74	2,215.51	9.31	9.42	162.02	482.76	-93.64	775.64	759.09	16.55	46.877		
2,500.00	2,476.28	2,347.11	2,306.71	9.74	9.86	162.03	502.16	-98.65	811.43	794.17	17.26	47.008		
2,600.00	2,574.95	2,440.49	2,397.92	10.17	10.29	162.04	521.56	-103.67	847.22	829.24	17.98	47.126		
2,700.00	2,673.63	2,533.87	2,489.12	10.60	10.73	162.05	540.96	-108.68	883.01	864.31	18.69	47.233		
2,800.00	2,772.30	2,627.24	2,580.32	11.04	11.17	162.06	560.36	-113.70	918.80	899.38	19.41	47.331		
2,900.00	2,870.97	2,720.62	2,671.52	11.47	11.60	162.06	579.75	-118.71	954.59	934.45	20.13	47.419		
3,000.00	2,969.65	2,813.99	2,762.72	11.90	12.04	162.07	599.15	-123.73	990.37	969.52	20.85	47.500		
3,100.00	3,068.32	2,907.37	2,853.92	12.33	12.48	162.08	618.55	-128.74	1,026.16	1,004.59	21.57	47.575		
3,200.00	3,166.99	3,000.75	2,945.12	12.76	12.91	162.08	637.95	-133.76	1,061.95	1,039.66	22.29	47.643		
3,300.00	3,265.67	3,094.12	3,036.33	13.20	13.35	162.09	657.35	-138.77	1,097.74	1,074.73	23.01	47.707		
3,400.00	3,364.34	3,187.50	3,127.53	13.63	13.78	162.09	676.75	-143.79	1,133.53	1,109.80	23.73	47.765		
3,500.00	3,463.02	3,280.88	3,218.73	14.06	14.22	162.10	696.14	-148.80	1,169.32	1,144.87	24.45	47.820		
3,600.00	3,561.69	3,374.25	3,309.93	14.50	14.66	162.10	715.54	-153.81	1,205.11	1,179.93	25.17	47.870		
3,700.00	3,660.36	3,467.63	3,401.13	14.93	15.10	162.11	734.94	-158.83	1,240.90	1,215.00	25.90	47.918		
3,800.00	3,759.04	3,561.00	3,492.33	15.36	15.53	162.11	754.34	-163.84	1,276.69	1,250.07	26.62	47.962		
3,900.00	3,857.71	3,654.38	3,583.53	15.79	15.97	162.12	773.74	-168.86	1,312.48	1,285.13	27.34	48.003		
4,000.00	3,956.39	3,747.76	3,674.74	16.23	16.41	162.12	793.14	-173.87	1,348.27	1,320.20	28.06	48.042		
4,100.00	4,055.06	3,841.13	3,765.94	16.66	16.84	162.12	812.53	-178.89	1,384.05	1,355.27	28.79	48.078		
4,200.00	4,153.73	3,934.51	3,857.14	17.09	17.28	162.13	831.93	-183.90	1,419.84	1,390.33	29.51	48.112		
4,300.00	4,252.41	4,027.89	3,948.34	17.53	17.72	162.13	851.33	-188.92	1,455.63	1,425.40	30.23	48.145		
4,400.00	4,351.08	4,121.26	4,039.54	17.96	18.16	162.13	870.73	-193.93	1,491.42	1,460.46	30.96	48.175		

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

Cathedral Energy Services

Anticollision Report

Company:	Crestone Peak Resources	Local Co-ordinate Reference:	Well SAM 3M-25H-M166
Project:	DJ BASIN	TVD Reference:	23' KB @ 5109.00usft
Reference Site:	S25-T1N-R66W (SAM)	MD Reference:	23' KB @ 5109.00usft
Site Error:	0.00usft	North Reference:	Grid
Reference Well:	SAM 3M-25H-M166	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #1	Offset TVD Reference:	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	
0.00	0.00	0.00	0.00	0.00	0.00	-0.06	110.00	-0.11	110.00				
100.00	100.00	100.00	100.00	0.14	0.14	-0.06	110.00	-0.11	110.00	109.73	0.28	398.522	
200.00	200.00	200.00	200.00	0.50	0.50	-0.06	110.00	-0.11	110.00	109.01	0.99	110.781	
300.00	300.00	300.00	300.00	0.85	0.85	-0.06	110.00	-0.11	110.00	108.29	1.71	64.332 CC, ES	
400.00	400.00	396.40	396.39	1.21	1.20	-0.29	111.56	-0.56	111.62	109.18	2.44	45.738	
500.00	499.98	492.48	492.33	1.56	1.55	163.20	116.21	-1.90	118.14	114.96	3.18	37.133	
600.00	599.84	587.62	587.14	1.90	1.90	162.83	123.86	-4.11	131.20	127.28	3.92	33.433	
700.00	699.45	681.25	680.13	2.24	2.24	162.54	134.34	-7.14	150.69	146.02	4.67	32.295 SF	
800.00	798.70	772.82	770.68	2.61	2.59	162.34	147.40	-10.91	176.46	171.07	5.40	32.697	
867.08	865.01	832.84	829.77	2.86	2.83	162.22	157.47	-13.81	197.18	191.30	5.88	33.526	
900.00	897.50	861.89	858.29	2.99	2.95	162.23	162.77	-15.34	208.17	202.06	6.11	34.046	
1,000.00	996.17	954.01	948.52	3.39	3.34	162.17	180.66	-20.51	242.66	235.90	6.76	35.878	
1,100.00	1,094.84	1,047.84	1,040.39	3.80	3.74	162.13	198.97	-25.79	277.25	269.83	7.43	37.322	
1,200.00	1,193.52	1,141.66	1,132.25	4.21	4.15	162.09	217.28	-31.08	311.85	303.75	8.10	38.499	
1,300.00	1,292.19	1,235.49	1,224.12	4.62	4.56	162.06	235.60	-36.37	346.45	337.66	8.78	39.456	
1,400.00	1,390.87	1,329.31	1,315.99	5.04	4.97	162.03	253.91	-41.65	381.04	371.57	9.47	40.245	
1,500.00	1,489.54	1,423.14	1,407.86	5.46	5.39	162.01	272.22	-46.94	415.64	405.48	10.16	40.904	
1,600.00	1,588.21	1,516.96	1,499.73	5.89	5.81	161.99	290.53	-52.23	450.23	439.37	10.86	41.461	
1,700.00	1,686.89	1,610.79	1,591.60	6.31	6.23	161.98	308.85	-57.52	484.83	473.27	11.56	41.938	
1,800.00	1,785.56	1,704.61	1,683.47	6.74	6.65	161.97	327.16	-62.80	519.42	507.16	12.27	42.349	
1,900.00	1,884.23	1,798.44	1,775.33	7.17	7.08	161.95	345.47	-68.09	554.02	541.05	12.97	42.706	
2,000.00	1,982.91	1,892.26	1,867.20	7.59	7.50	161.94	363.78	-73.38	588.62	574.93	13.68	43.020	
2,100.00	2,081.58	1,986.09	1,959.07	8.02	7.92	161.94	382.09	-78.66	623.21	608.82	14.39	43.297	
2,200.00	2,180.26	2,079.91	2,050.94	8.45	8.35	161.93	400.41	-83.95	657.81	642.70	15.11	43.544	
2,300.00	2,278.93	2,173.74	2,142.81	8.88	8.77	161.92	418.72	-89.24	692.40	676.58	15.82	43.764	
2,400.00	2,377.60	2,267.56	2,234.68	9.31	9.20	161.91	437.03	-94.52	727.00	710.46	16.54	43.962	
2,500.00	2,476.28	2,361.39	2,326.55	9.74	9.63	161.91	455.34	-99.81	761.59	744.34	17.25	44.141	
2,600.00	2,574.95	2,455.21	2,418.41	10.17	10.05	161.90	473.66	-105.10	796.19	778.22	17.97	44.303	
2,700.00	2,673.63	2,549.04	2,510.28	10.60	10.48	161.90	491.97	-110.38	830.79	812.10	18.69	44.451	
2,800.00	2,772.30	2,642.86	2,602.15	11.04	10.91	161.89	510.28	-115.67	865.38	845.97	19.41	44.587	
2,900.00	2,870.97	2,736.69	2,694.02	11.47	11.34	161.89	528.59	-120.96	899.98	879.85	20.13	44.711	
3,000.00	2,969.65	2,830.51	2,785.89	11.90	11.76	161.88	546.91	-126.24	934.57	913.72	20.85	44.825	
3,100.00	3,068.32	2,924.34	2,877.76	12.33	12.19	161.88	565.22	-131.53	969.17	947.60	21.57	44.931	
3,200.00	3,166.99	3,018.16	2,969.63	12.76	12.62	161.88	583.53	-136.82	1,003.77	981.47	22.29	45.028	
3,300.00	3,265.67	3,111.99	3,061.49	13.20	13.05	161.87	601.84	-142.10	1,038.36	1,015.35	23.01	45.119	
3,400.00	3,364.34	3,205.81	3,153.36	13.63	13.48	161.87	620.16	-147.39	1,072.96	1,049.22	23.74	45.204	
3,500.00	3,463.02	3,299.64	3,245.23	14.06	13.91	161.87	638.47	-152.68	1,107.55	1,083.09	24.46	45.283	
3,600.00	3,561.69	3,393.46	3,337.10	14.50	14.34	161.87	656.78	-157.96	1,142.15	1,116.97	25.18	45.356	
3,700.00	3,660.36	3,487.29	3,428.97	14.93	14.76	161.86	675.09	-163.25	1,176.75	1,150.84	25.91	45.425	
3,800.00	3,759.04	3,581.11	3,520.84	15.36	15.19	161.86	693.41	-168.54	1,211.34	1,184.71	26.63	45.490	
3,900.00	3,857.71	3,674.94	3,612.70	15.79	15.62	161.86	711.72	-173.82	1,245.94	1,218.58	27.35	45.551	
4,000.00	3,956.39	3,768.76	3,704.57	16.23	16.05	161.86	730.03	-179.11	1,280.53	1,252.46	28.08	45.608	
4,100.00	4,055.06	3,862.59	3,796.44	16.66	16.48	161.86	748.34	-184.40	1,315.13	1,286.33	28.80	45.662	
4,200.00	4,153.73	3,956.41	3,888.31	17.09	16.91	161.85	766.66	-189.68	1,349.72	1,320.20	29.53	45.713	
4,300.00	4,252.41	4,050.24	3,980.18	17.53	17.34	161.85	784.97	-194.97	1,384.32	1,354.07	30.25	45.762	
4,400.00	4,351.08	4,144.06	4,072.05	17.96	17.77	161.85	803.28	-200.26	1,418.92	1,387.94	30.98	45.808	
4,500.00	4,449.75	4,237.89	4,163.92	18.39	18.20	161.85	821.59	-205.54	1,453.51	1,421.81	31.70	45.851	
4,600.00	4,548.43	4,331.71	4,255.78	18.83	18.63	161.85	839.91	-210.83	1,488.11	1,455.68	32.43	45.892	

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

Cathedral Energy Services

Anticollision Report

Company:	Crestone Peak Resources	Local Co-ordinate Reference:	Well SAM 3M-25H-M166
Project:	DJ BASIN	TVD Reference:	23' KB @ 5109.00usft
Reference Site:	S25-T1N-R66W (SAM)	MD Reference:	23' KB @ 5109.00usft
Site Error:	0.00usft	North Reference:	Grid
Reference Well:	SAM 3M-25H-M166	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #1	Offset TVD Reference:	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	
0.00	0.00	0.00	0.00	0.00	0.00	-0.01	100.17	-0.03	100.17				
100.00	100.00	100.00	100.00	0.14	0.14	-0.01	100.17	-0.03	100.17	99.90	0.28	362.921	
200.00	200.00	200.00	200.00	0.50	0.50	-0.01	100.17	-0.03	100.17	99.18	0.99	100.884	
300.00	300.00	300.00	300.00	0.85	0.85	-0.01	100.17	-0.03	100.17	98.46	1.71	58.585	
400.00	400.00	400.00	400.00	1.21	1.21	-0.01	100.17	-0.03	100.17	97.75	2.43	41.278 CC, ES	
500.00	499.98	496.67	496.65	1.56	1.56	163.89	101.73	-0.52	103.46	100.32	3.14	32.983	
600.00	599.84	592.73	592.58	1.90	1.91	163.79	106.35	-2.00	113.29	109.42	3.86	29.323	
700.00	699.45	687.56	687.07	2.24	2.25	163.66	113.91	-4.41	129.58	124.99	4.60	28.177 SF	
800.00	798.70	780.60	779.48	2.61	2.60	163.50	124.22	-7.71	152.23	146.90	5.33	28.563	
867.08	865.01	841.74	839.99	2.86	2.83	163.38	132.55	-10.37	170.90	165.09	5.82	29.383	
900.00	897.50	871.37	869.25	2.99	2.94	163.37	137.03	-11.80	180.89	174.84	6.05	29.894	
1,000.00	996.17	961.66	958.09	3.39	3.30	163.18	152.38	-16.70	213.05	206.32	6.73	31.640	
1,100.00	1,094.84	1,056.06	1,050.82	3.80	3.68	162.96	169.22	-22.09	246.03	238.64	7.40	33.265	
1,200.00	1,193.52	1,150.46	1,143.55	4.21	4.07	162.80	186.06	-27.47	279.02	270.94	8.07	34.561	
1,300.00	1,292.19	1,244.86	1,236.28	4.62	4.47	162.68	202.90	-32.85	312.00	303.24	8.76	35.626	
1,400.00	1,390.87	1,339.27	1,329.01	5.04	4.87	162.57	219.74	-38.23	344.99	335.54	9.45	36.511	
1,500.00	1,489.54	1,433.67	1,421.74	5.46	5.28	162.49	236.58	-43.61	377.98	367.83	10.15	37.256	
1,600.00	1,588.21	1,528.07	1,514.47	5.89	5.68	162.42	253.43	-48.99	410.97	400.12	10.85	37.890	
1,700.00	1,686.89	1,622.47	1,607.20	6.31	6.09	162.36	270.27	-54.37	443.96	432.41	11.55	38.436	
1,800.00	1,785.56	1,716.87	1,699.93	6.74	6.50	162.30	287.11	-59.75	476.95	464.69	12.26	38.910	
1,900.00	1,884.23	1,811.27	1,792.66	7.17	6.91	162.26	303.95	-65.14	509.94	496.97	12.97	39.324	
2,000.00	1,982.91	1,905.67	1,885.39	7.59	7.32	162.22	320.79	-70.52	542.93	529.25	13.68	39.690	
2,100.00	2,081.58	2,000.07	1,978.12	8.02	7.74	162.18	337.64	-75.90	575.92	561.52	14.39	40.015	
2,200.00	2,180.26	2,094.47	2,070.85	8.45	8.15	162.15	354.48	-81.28	608.91	593.80	15.11	40.305	
2,300.00	2,278.93	2,188.87	2,163.58	8.88	8.56	162.12	371.32	-86.66	641.90	626.07	15.82	40.566	
2,400.00	2,377.60	2,283.27	2,256.31	9.31	8.98	162.10	388.16	-92.04	674.89	658.35	16.54	40.801	
2,500.00	2,476.28	2,377.68	2,349.04	9.74	9.39	162.07	405.00	-97.42	707.88	690.62	17.26	41.015	
2,600.00	2,574.95	2,472.08	2,441.77	10.17	9.81	162.05	421.84	-102.80	740.87	722.89	17.98	41.209	
2,700.00	2,673.63	2,566.48	2,534.50	10.60	10.23	162.03	438.69	-108.19	773.86	755.16	18.70	41.387	
2,800.00	2,772.30	2,660.88	2,627.23	11.04	10.64	162.02	455.53	-113.57	806.85	787.43	19.42	41.550	
2,900.00	2,870.97	2,755.28	2,719.96	11.47	11.06	162.00	472.37	-118.95	839.84	819.70	20.14	41.700	
3,000.00	2,969.65	2,849.68	2,812.69	11.90	11.47	161.98	489.21	-124.33	872.84	851.97	20.86	41.838	
3,100.00	3,068.32	2,944.08	2,905.42	12.33	11.89	161.97	506.05	-129.71	905.83	884.24	21.58	41.967	
3,200.00	3,166.99	3,038.48	2,998.15	12.76	12.31	161.96	522.90	-135.09	938.82	916.51	22.31	42.086	
3,300.00	3,265.67	3,132.88	3,090.89	13.20	12.73	161.94	539.74	-140.47	971.81	948.78	23.03	42.197	
3,400.00	3,364.34	3,227.28	3,183.62	13.63	13.14	161.93	556.58	-145.85	1,004.80	981.05	23.75	42.301	
3,500.00	3,463.02	3,321.68	3,276.35	14.06	13.56	161.92	573.42	-151.24	1,037.79	1,013.32	24.48	42.398	
3,600.00	3,561.69	3,416.09	3,369.08	14.50	13.98	161.91	590.26	-156.62	1,070.78	1,045.58	25.20	42.489	
3,700.00	3,660.36	3,510.49	3,461.81	14.93	14.40	161.90	607.10	-162.00	1,103.78	1,077.85	25.93	42.574	
3,800.00	3,759.04	3,604.89	3,554.54	15.36	14.82	161.89	623.95	-167.38	1,136.77	1,110.12	26.65	42.654	
3,900.00	3,857.71	3,699.29	3,647.27	15.79	15.23	161.89	640.79	-172.76	1,169.76	1,142.38	27.38	42.730	
4,000.00	3,956.39	3,793.69	3,740.00	16.23	15.65	161.88	657.63	-178.14	1,202.75	1,174.65	28.10	42.801	
4,100.00	4,055.06	3,888.09	3,832.73	16.66	16.07	161.87	674.47	-183.52	1,235.74	1,206.92	28.83	42.868	
4,200.00	4,153.73	3,982.49	3,925.46	17.09	16.49	161.86	691.31	-188.90	1,268.73	1,239.18	29.55	42.932	
4,300.00	4,252.41	4,076.89	4,018.19	17.53	16.91	161.86	708.16	-194.29	1,301.73	1,271.45	30.28	42.993	
4,400.00	4,351.08	4,171.29	4,110.92	17.96	17.33	161.85	725.00	-199.67	1,334.72	1,303.71	31.00	43.050	
4,500.00	4,449.75	4,265.69	4,203.65	18.39	17.74	161.84	741.84	-205.05	1,367.71	1,335.98	31.73	43.105	
4,600.00	4,548.43	4,360.09	4,296.38	18.83	18.16	161.84	758.68	-210.43	1,400.70	1,368.24	32.46	43.157	
4,700.00	4,647.10	4,454.49	4,389.11	19.26	18.58	161.83	775.52	-215.81	1,433.69	1,400.51	33.18	43.206	
4,800.00	4,745.78	4,548.90	4,481.84	19.70	19.00	161.83	792.36	-221.19	1,466.68	1,432.78	33.91	43.253	
4,900.00	4,844.45	4,643.30	4,574.57	20.13	19.42	161.82	809.21	-226.57	1,499.68	1,465.04	34.64	43.298	

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

Cathedral Energy Services

Anticollision Report

Company:	Crestone Peak Resources	Local Co-ordinate Reference:	Well SAM 3M-25H-M166
Project:	DJ BASIN	TVD Reference:	23' KB @ 5109.00usft
Reference Site:	S25-T1N-R66W (SAM)	MD Reference:	23' KB @ 5109.00usft
Site Error:	0.00usft	North Reference:	Grid
Reference Well:	SAM 3M-25H-M166	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #1	Offset TVD Reference:	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	0.04	89.98	0.06	89.98					
100.00	100.00	100.00	100.00	0.14	0.14	0.04	89.98	0.06	89.98	89.70	0.28	325.986		
200.00	200.00	200.00	200.00	0.50	0.50	0.04	89.98	0.06	89.98	88.99	0.99	90.617		
300.00	300.00	300.00	300.00	0.85	0.85	0.04	89.98	0.06	89.98	88.27	1.71	52.623		
400.00	400.00	400.00	400.00	1.21	1.21	0.04	89.98	0.06	89.98	87.55	2.43	37.077 CC, ES		
500.00	499.98	499.98	499.98	1.56	1.57	164.27	89.98	0.06	91.66	88.53	3.13	29.299		
600.00	599.84	596.80	596.79	1.90	1.92	164.67	91.49	-0.56	98.26	94.42	3.83	25.649		
700.00	699.45	692.73	692.58	2.24	2.27	164.76	95.97	-2.40	111.28	106.73	4.55	24.436 SF		
800.00	798.70	787.17	786.69	2.61	2.61	164.61	103.28	-5.41	130.65	125.36	5.28	24.741		
867.08	865.01	849.42	848.56	2.86	2.84	164.43	109.66	-8.03	147.12	141.35	5.77	25.509		
900.00	897.50	879.64	878.53	2.99	2.95	164.36	113.21	-9.49	156.03	150.03	6.00	25.992		
1,000.00	996.17	972.79	970.69	3.39	3.30	163.96	125.69	-14.62	184.70	178.01	6.69	27.608		
1,100.00	1,094.84	1,068.45	1,065.28	3.80	3.67	163.61	138.91	-20.06	213.81	206.44	7.37	29.018		
1,200.00	1,193.52	1,164.12	1,159.87	4.21	4.04	163.35	152.14	-25.50	242.92	234.86	8.06	30.136		
1,300.00	1,292.19	1,259.78	1,254.46	4.62	4.42	163.14	165.37	-30.94	272.04	263.28	8.76	31.063		
1,400.00	1,390.87	1,355.44	1,349.05	5.04	4.80	162.97	178.60	-36.38	301.16	291.70	9.46	31.837		
1,500.00	1,489.54	1,451.10	1,443.63	5.46	5.18	162.83	191.83	-41.82	330.28	320.11	10.17	32.491		
1,600.00	1,588.21	1,546.77	1,538.22	5.89	5.57	162.72	205.06	-47.26	359.40	348.53	10.87	33.051		
1,700.00	1,686.89	1,642.43	1,632.81	6.31	5.96	162.62	218.28	-52.70	388.53	376.94	11.59	33.534		
1,800.00	1,785.56	1,738.09	1,727.40	6.74	6.34	162.53	231.51	-58.14	417.65	405.35	12.30	33.955		
1,900.00	1,884.23	1,833.76	1,821.99	7.17	6.73	162.46	244.74	-63.58	446.78	433.76	13.02	34.325		
2,000.00	1,982.91	1,929.42	1,916.57	7.59	7.12	162.39	257.97	-69.02	475.90	462.17	13.73	34.653		
2,100.00	2,081.58	2,025.08	2,011.16	8.02	7.51	162.34	271.20	-74.46	505.03	490.57	14.45	34.945		
2,200.00	2,180.26	2,120.75	2,105.75	8.45	7.91	162.29	284.43	-79.90	534.15	518.98	15.17	35.207		
2,300.00	2,278.93	2,216.41	2,200.34	8.88	8.30	162.24	297.65	-85.34	563.28	547.39	15.89	35.442		
2,400.00	2,377.60	2,312.07	2,294.93	9.31	8.69	162.20	310.88	-90.78	592.41	575.79	16.61	35.656		
2,500.00	2,476.28	2,407.74	2,389.51	9.74	9.08	162.16	324.11	-96.22	621.54	604.20	17.34	35.850		
2,600.00	2,574.95	2,503.40	2,484.10	10.17	9.47	162.13	337.34	-101.66	650.66	632.60	18.06	36.027		
2,700.00	2,673.63	2,599.06	2,578.69	10.60	9.87	162.10	350.57	-107.10	679.79	661.01	18.78	36.190		
2,800.00	2,772.30	2,694.73	2,673.28	11.04	10.26	162.07	363.79	-112.54	708.92	689.41	19.51	36.340		
2,900.00	2,870.97	2,790.39	2,767.86	11.47	10.66	162.04	377.02	-117.97	738.05	717.81	20.23	36.478		
3,000.00	2,969.65	2,886.05	2,862.45	11.90	11.05	162.02	390.25	-123.41	767.18	746.22	20.96	36.605		
3,100.00	3,068.32	2,981.72	2,957.04	12.33	11.44	161.99	403.48	-128.85	796.30	774.62	21.68	36.724		
3,200.00	3,166.99	3,077.38	3,051.63	12.76	11.84	161.97	416.71	-134.29	825.43	803.02	22.41	36.834		
3,300.00	3,265.67	3,173.04	3,146.22	13.20	12.23	161.95	429.94	-139.73	854.56	831.43	23.14	36.937		
3,400.00	3,364.34	3,268.70	3,240.80	13.63	12.63	161.94	443.16	-145.17	883.69	859.83	23.86	37.033		
3,500.00	3,463.02	3,364.37	3,335.39	14.06	13.02	161.92	456.39	-150.61	912.82	888.23	24.59	37.124		
3,600.00	3,561.69	3,460.03	3,429.98	14.50	13.42	161.90	469.62	-156.05	941.95	916.63	25.32	37.208		
3,700.00	3,660.36	3,555.69	3,524.57	14.93	13.81	161.89	482.85	-161.49	971.08	945.03	26.04	37.288		
3,800.00	3,759.04	3,651.36	3,619.16	15.36	14.21	161.87	496.08	-166.93	1,000.21	973.44	26.77	37.363		
3,900.00	3,857.71	3,747.02	3,713.74	15.79	14.60	161.86	509.30	-172.37	1,029.34	1,001.84	27.50	37.434		
4,000.00	3,956.39	3,842.68	3,808.33	16.23	15.00	161.85	522.53	-177.81	1,058.47	1,030.24	28.23	37.500		
4,100.00	4,055.06	3,938.35	3,902.92	16.66	15.39	161.84	535.76	-183.25	1,087.59	1,058.64	28.95	37.564		
4,200.00	4,153.73	4,034.01	3,997.51	17.09	15.79	161.82	548.99	-188.69	1,116.72	1,087.04	29.68	37.624		
4,300.00	4,252.41	4,129.67	4,092.09	17.53	16.18	161.81	562.22	-194.13	1,145.85	1,115.44	30.41	37.681		
4,400.00	4,351.08	4,225.34	4,186.68	17.96	16.58	161.80	575.45	-199.57	1,174.98	1,143.84	31.14	37.735		
4,500.00	4,449.75	4,321.00	4,281.27	18.39	16.97	161.79	588.67	-205.01	1,204.11	1,172.25	31.87	37.786		
4,600.00	4,548.43	4,416.66	4,375.86	18.83	17.37	161.78	601.90	-210.45	1,233.24	1,200.65	32.59	37.835		
4,700.00	4,647.10	4,512.33	4,470.45	19.26	17.77	161.78	615.13	-215.89	1,262.37	1,229.05	33.32	37.882		
4,800.00	4,745.78	4,607.99	4,565.03	19.70	18.16	161.77	628.36	-221.33	1,291.50	1,257.45	34.05	37.927		
4,900.00	4,844.45	4,703.65	4,659.62	20.13	18.56	161.76	641.59	-226.77	1,320.63	1,285.85	34.78	37.969		
5,000.00	4,943.12	4,799.32	4,754.21	20.56	18.95	161.75	654.81	-232.21	1,349.76	1,314.25	35.51	38.010		

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

Cathedral Energy Services

Anticollision Report

Company:	Crestone Peak Resources	Local Co-ordinate Reference:	Well SAM 3M-25H-M166
Project:	DJ BASIN	TVD Reference:	23' KB @ 5109.00usft
Reference Site:	S25-T1N-R66W (SAM)	MD Reference:	23' KB @ 5109.00usft
Site Error:	0.00usft	North Reference:	Grid
Reference Well:	SAM 3M-25H-M166	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #1	Offset TVD Reference:	Offset Datum

Offset Design													S25-T1N-R66W (SAM) - SAM 3D-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	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre +N/-S	+E/-W	Between Centres	Between Ellipses	Total Uncertainty Axis	Separation Factor	Warning				
(usft)	(usft)	(usft)	(usft)	(usft)	(usft)	(°)	(usft)	(usft)	(usft)	(usft)							
5,100.00	5,041.80	4,894.98	4,848.80	21.00	19.35	161.74	668.04	-237.65	1,378.89	1,342.65	36.24	38.049					
5,200.00	5,140.47	4,990.64	4,943.39	21.43	19.74	161.74	681.27	-243.09	1,408.02	1,371.05	36.97	38.087					
5,300.00	5,239.14	5,086.31	5,037.97	21.86	20.14	161.73	694.50	-248.53	1,437.15	1,399.45	37.70	38.122					
5,400.00	5,337.82	5,181.97	5,132.56	22.30	20.54	161.72	707.73	-253.97	1,466.28	1,427.85	38.43	38.157					
5,500.00	5,436.49	5,277.63	5,227.15	22.73	20.93	161.72	720.96	-259.41	1,495.41	1,456.25	39.16	38.190					

Cathedral Energy Services

Anticollision Report

Company:	Crestone Peak Resources	Local Co-ordinate Reference:	Well SAM 3M-25H-M166
Project:	DJ BASIN	TVD Reference:	23' KB @ 5109.00usft
Reference Site:	S25-T1N-R66W (SAM)	MD Reference:	23' KB @ 5109.00usft
Site Error:	0.00usft	North Reference:	Grid
Reference Well:	SAM 3M-25H-M166	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #1	Offset TVD Reference:	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	0.11	80.14	0.15	80.14					
100.00	100.00	100.00	100.00	0.14	0.14	0.11	80.14	0.15	80.14	79.87	0.28	290.355		
200.00	200.00	200.00	200.00	0.50	0.50	0.11	80.14	0.15	80.14	79.15	0.99	80.713		
300.00	300.00	300.00	300.00	0.85	0.85	0.11	80.14	0.15	80.14	78.43	1.71	46.871		
400.00	400.00	400.00	400.00	1.21	1.21	0.11	80.14	0.15	80.14	77.72	2.43	33.024 CC, ES		
500.00	499.98	499.98	499.98	1.56	1.57	164.37	80.14	0.15	81.82	78.70	3.13	26.155		
600.00	599.84	599.84	599.84	1.90	1.93	165.27	80.14	0.15	86.88	83.05	3.83	22.708		
700.00	699.45	696.84	696.82	2.24	2.28	165.94	81.50	-0.77	96.68	92.15	4.53	21.334 SF		
800.00	798.70	792.75	792.61	2.61	2.62	165.85	85.50	-3.50	112.54	107.29	5.25	21.444		
867.08	865.01	856.22	855.88	2.86	2.85	165.50	89.61	-6.30	126.52	120.79	5.73	22.074		
900.00	897.50	887.12	886.64	2.99	2.96	165.29	92.03	-7.95	134.17	128.20	5.97	22.486		
1,000.00	996.17	984.26	983.30	3.39	3.32	164.66	100.04	-13.41	157.84	151.18	6.66	23.701		
1,100.00	1,094.84	1,081.41	1,079.96	3.80	3.67	164.19	108.06	-18.87	181.53	174.17	7.36	24.666		
1,200.00	1,193.52	1,178.56	1,176.62	4.21	4.03	163.84	116.08	-24.33	205.22	197.15	8.07	25.443		
1,300.00	1,292.19	1,275.70	1,273.28	4.62	4.40	163.55	124.10	-29.79	228.92	220.14	8.78	26.082		
1,400.00	1,390.87	1,372.85	1,369.94	5.04	4.76	163.32	132.11	-35.26	252.62	243.13	9.49	26.617		
1,500.00	1,489.54	1,469.99	1,466.60	5.46	5.13	163.13	140.13	-40.72	276.33	266.12	10.21	27.069		
1,600.00	1,588.21	1,567.14	1,563.26	5.89	5.49	162.97	148.15	-46.18	300.03	289.11	10.93	27.457		
1,700.00	1,686.89	1,664.28	1,659.92	6.31	5.86	162.83	156.17	-51.64	323.74	312.10	11.65	27.793		
1,800.00	1,785.56	1,761.43	1,756.58	6.74	6.23	162.71	164.19	-57.11	347.46	335.09	12.37	28.086		
1,900.00	1,884.23	1,858.58	1,853.24	7.17	6.60	162.61	172.20	-62.57	371.17	358.07	13.09	28.345		
2,000.00	1,982.91	1,955.72	1,949.90	7.59	6.97	162.52	180.22	-68.03	394.88	381.06	13.82	28.574		
2,100.00	2,081.58	2,052.87	2,046.56	8.02	7.34	162.44	188.24	-73.49	418.60	404.05	14.55	28.778		
2,200.00	2,180.26	2,150.01	2,143.22	8.45	7.71	162.37	196.26	-78.95	442.31	427.04	15.27	28.962		
2,300.00	2,278.93	2,247.16	2,239.88	8.88	8.08	162.30	204.27	-84.42	466.03	450.03	16.00	29.128		
2,400.00	2,377.60	2,344.30	2,336.54	9.31	8.45	162.24	212.29	-89.88	489.75	473.02	16.73	29.278		
2,500.00	2,476.28	2,441.45	2,433.20	9.74	8.82	162.19	220.31	-95.34	513.47	496.01	17.46	29.416		
2,600.00	2,574.95	2,538.59	2,529.86	10.17	9.19	162.14	228.33	-100.80	537.18	519.00	18.18	29.541		
2,700.00	2,673.63	2,635.74	2,626.52	10.60	9.56	162.10	236.35	-106.26	560.90	541.99	18.91	29.656		
2,800.00	2,772.30	2,732.89	2,723.18	11.04	9.93	162.06	244.36	-111.73	584.62	564.98	19.64	29.762		
2,900.00	2,870.97	2,830.03	2,819.84	11.47	10.30	162.02	252.38	-117.19	608.34	587.96	20.37	29.860		
3,000.00	2,969.65	2,927.18	2,916.50	11.90	10.67	161.98	260.40	-122.65	632.06	610.95	21.10	29.951		
3,100.00	3,068.32	3,024.32	3,013.16	12.33	11.05	161.95	268.42	-128.11	655.78	633.94	21.83	30.036		
3,200.00	3,166.99	3,121.47	3,109.82	12.76	11.42	161.92	276.43	-133.58	679.49	656.93	22.56	30.114		
3,300.00	3,265.67	3,218.61	3,206.48	13.20	11.79	161.89	284.45	-139.04	703.21	679.92	23.29	30.188		
3,400.00	3,364.34	3,315.76	3,303.14	13.63	12.16	161.87	292.47	-144.50	726.93	702.91	24.03	30.256		
3,500.00	3,463.02	3,412.91	3,399.80	14.06	12.53	161.84	300.49	-149.96	750.65	725.90	24.76	30.321		
3,600.00	3,561.69	3,510.05	3,496.46	14.50	12.90	161.82	308.51	-155.42	774.37	748.88	25.49	30.382		
3,700.00	3,660.36	3,607.20	3,593.12	14.93	13.28	161.80	316.52	-160.89	798.09	771.87	26.22	30.439		
3,800.00	3,759.04	3,704.34	3,689.78	15.36	13.65	161.78	324.54	-166.35	821.81	794.86	26.95	30.492		
3,900.00	3,857.71	3,801.49	3,786.44	15.79	14.02	161.76	332.56	-171.81	845.53	817.85	27.68	30.543		
4,000.00	3,956.39	3,898.63	3,883.10	16.23	14.39	161.74	340.58	-177.27	869.25	840.84	28.41	30.591		
4,100.00	4,055.06	3,995.78	3,979.76	16.66	14.76	161.72	348.59	-182.73	892.97	863.83	29.15	30.637		
4,200.00	4,153.73	4,092.93	4,076.42	17.09	15.14	161.71	356.61	-188.20	916.69	886.81	29.88	30.680		
4,300.00	4,252.41	4,190.07	4,173.08	17.53	15.51	161.69	364.63	-193.66	940.41	909.80	30.61	30.721		
4,400.00	4,351.08	4,287.22	4,269.74	17.96	15.88	161.68	372.65	-199.12	964.13	932.79	31.34	30.760		
4,500.00	4,449.75	4,384.36	4,366.40	18.39	16.25	161.66	380.67	-204.58	987.85	955.78	32.08	30.797		
4,600.00	4,548.43	4,481.51	4,463.06	18.83	16.63	161.65	388.68	-210.05	1,011.57	978.77	32.81	30.833		
4,700.00	4,647.10	4,578.65	4,559.72	19.26	17.00	161.64	396.70	-215.51	1,035.30	1,001.75	33.54	30.867		
4,800.00	4,745.78	4,675.80	4,656.38	19.70	17.37	161.62	404.72	-220.97	1,059.02	1,024.74	34.27	30.899		
4,900.00	4,844.45	4,772.95	4,753.04	20.13	17.74	161.61	412.74	-226.43	1,082.74	1,047.73	35.01	30.930		
5,000.00	4,943.12	4,870.09	4,849.70	20.56	18.11	161.60	420.75	-231.89	1,106.46	1,070.72	35.74	30.959		

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

Cathedral Energy Services

Anticollision Report

Company:	Crestone Peak Resources	Local Co-ordinate Reference:	Well SAM 3M-25H-M166
Project:	DJ BASIN	TVD Reference:	23' KB @ 5109.00usft
Reference Site:	S25-T1N-R66W (SAM)	MD Reference:	23' KB @ 5109.00usft
Site Error:	0.00usft	North Reference:	Grid
Reference Well:	SAM 3M-25H-M166	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #1	Offset TVD Reference:	Offset Datum

Offset Design S25-T1N-R66W (SAM) - SAM 3E-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	5,041.80	4,967.24	4,946.36	21.00	18.49	161.59	428.77	-237.36	1,130.18	1,093.71	36.47	30.988	
5,200.00	5,140.47	5,064.38	5,043.02	21.43	18.86	161.58	436.79	-242.82	1,153.90	1,116.69	37.20	31.015	
5,300.00	5,239.14	5,161.53	5,139.68	21.86	19.23	161.57	444.81	-248.28	1,177.62	1,139.68	37.94	31.041	
5,400.00	5,337.82	5,258.67	5,236.34	22.30	19.60	161.56	452.83	-253.74	1,201.34	1,162.67	38.67	31.066	
5,500.00	5,436.49	5,355.82	5,333.00	22.73	19.98	161.55	460.84	-259.20	1,225.06	1,185.66	39.40	31.090	
5,600.00	5,535.17	5,452.97	5,429.66	23.17	20.35	161.54	468.86	-264.67	1,248.78	1,208.65	40.14	31.113	
5,700.00	5,633.84	5,550.11	5,526.32	23.60	20.72	161.53	476.88	-270.13	1,272.50	1,231.63	40.87	31.135	
5,800.00	5,732.51	5,647.26	5,622.98	24.03	21.09	161.53	484.90	-275.59	1,296.22	1,254.62	41.60	31.157	
5,900.00	5,831.19	5,748.09	5,723.31	24.47	21.48	161.52	493.21	-281.25	1,319.94	1,277.57	42.36	31.157	
6,000.00	5,929.86	5,909.08	5,883.90	24.90	22.07	161.62	502.33	-287.47	1,341.08	1,297.56	43.51	30.822	
6,100.00	6,028.54	6,053.75	6,028.54	25.34	22.57	161.89	504.27	-288.79	1,357.72	1,313.25	44.47	30.532	
6,200.00	6,127.21	6,152.42	6,127.21	25.77	22.91	162.10	504.27	-288.79	1,373.17	1,327.99	45.18	30.391	
6,300.00	6,225.88	6,251.09	6,225.88	26.20	23.24	162.30	504.27	-288.79	1,388.65	1,342.75	45.90	30.254	
6,400.00	6,324.56	6,349.77	6,324.56	26.64	23.57	162.50	504.27	-288.79	1,404.14	1,357.52	46.62	30.122	
6,500.00	6,423.23	6,448.44	6,423.23	27.07	23.91	162.70	504.27	-288.79	1,419.64	1,372.31	47.33	29.994	
6,600.00	6,521.90	6,547.12	6,521.90	27.51	24.24	162.89	504.27	-288.79	1,435.17	1,387.12	48.05	29.870	
6,700.00	6,620.58	6,645.79	6,620.58	27.94	24.58	163.08	504.27	-288.79	1,450.71	1,401.94	48.76	29.750	
6,749.72	6,669.64	6,694.74	6,669.50	28.16	24.73	163.23	504.29	-287.33	1,458.44	1,409.33	49.11	29.697	
6,800.00	6,719.29	6,743.77	6,718.28	28.37	24.88	-170.94	504.34	-282.53	1,466.29	1,416.84	49.44	29.656	
6,850.00	6,768.59	6,792.18	6,766.02	28.57	25.03	-148.01	504.42	-274.53	1,474.09	1,424.34	49.76	29.626	
6,900.00	6,817.56	6,840.28	6,812.80	28.75	25.16	-131.94	504.53	-263.41	1,481.86	1,431.81	50.05	29.606	
6,950.00	6,865.97	6,888.08	6,858.45	28.92	25.29	-121.33	504.68	-249.26	1,489.56	1,439.22	50.34	29.592	
7,000.00	6,913.59	6,935.61	6,902.81	29.08	25.41	-114.09	504.85	-232.22	1,497.14	1,446.54	50.61	29.583	

Cathedral Energy Services

Anticollision Report

Company:	Crestone Peak Resources	Local Co-ordinate Reference:	Well SAM 3M-25H-M166
Project:	DJ BASIN	TVD Reference:	23' KB @ 5109.00usft
Reference Site:	S25-T1N-R66W (SAM)	MD Reference:	23' KB @ 5109.00usft
Site Error:	0.00usft	North Reference:	Grid
Reference Well:	SAM 3M-25H-M166	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #1	Offset TVD Reference:	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					Separation Factor	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			
0.00	0.00	0.00	0.00	0.00	0.00	-0.04	69.94	-0.04	69.94					
100.00	100.00	100.00	100.00	0.14	0.14	-0.04	69.94	-0.04	69.94	69.66	0.28	253.380		
200.00	200.00	200.00	200.00	0.50	0.50	-0.04	69.94	-0.04	69.94	68.95	0.99	70.434		
300.00	300.00	300.00	300.00	0.85	0.85	-0.04	69.94	-0.04	69.94	68.23	1.71	40.902		
400.00	400.00	400.00	400.00	1.21	1.21	-0.04	69.94	-0.04	69.94	67.51	2.43	28.819 CC, ES		
500.00	499.98	499.98	499.98	1.56	1.57	164.28	69.94	-0.04	71.62	68.49	3.13	22.893		
600.00	599.84	599.84	599.84	1.90	1.93	165.31	69.94	-0.04	76.67	72.84	3.83	20.040		
700.00	699.45	699.45	699.45	2.24	2.29	166.76	69.94	-0.04	85.13	80.60	4.53	18.786		
800.00	798.70	798.70	798.70	2.61	2.64	168.36	69.94	-0.04	97.03	91.79	5.24	18.510		
867.08	865.01	865.01	865.01	2.86	2.88	169.42	69.94	-0.04	106.96	101.24	5.72	18.691		
900.00	897.50	897.50	897.50	2.99	3.00	169.92	69.94	-0.04	112.22	106.26	5.96	18.836		
1,000.00	996.17	996.17	996.17	3.39	3.35	171.19	69.94	-0.04	128.24	121.57	6.67	19.240		
1,100.00	1,094.84	1,092.06	1,092.05	3.80	3.69	171.67	70.98	-1.10	145.21	137.85	7.36	19.722		
1,200.00	1,193.52	1,187.15	1,187.02	4.21	4.03	171.15	74.24	-4.39	164.16	156.10	8.06	20.372		
1,300.00	1,292.19	1,282.88	1,282.44	4.62	4.37	170.00	79.55	-9.77	184.96	176.20	8.76	21.119		
1,400.00	1,390.87	1,380.54	1,379.75	5.04	4.73	168.94	85.37	-15.65	206.16	196.70	9.47	21.771		
1,500.00	1,489.54	1,478.20	1,477.06	5.46	5.08	168.07	91.18	-21.53	227.43	217.24	10.19	22.329		
1,600.00	1,588.21	1,575.86	1,574.37	5.89	5.44	167.36	97.00	-27.41	248.73	237.83	10.90	22.811		
1,700.00	1,686.89	1,673.52	1,671.68	6.31	5.79	166.76	102.81	-33.29	270.07	258.45	11.62	23.232		
1,800.00	1,785.56	1,771.18	1,768.99	6.74	6.15	166.24	108.63	-39.17	291.43	279.08	12.35	23.602		
1,900.00	1,884.23	1,868.84	1,866.30	7.17	6.51	165.80	114.44	-45.06	312.81	299.74	13.07	23.929		
2,000.00	1,982.91	1,966.50	1,963.61	7.59	6.87	165.41	120.26	-50.94	334.21	320.41	13.80	24.221		
2,100.00	2,081.58	2,064.16	2,060.92	8.02	7.23	165.07	126.07	-56.82	355.61	341.09	14.53	24.483		
2,200.00	2,180.26	2,161.83	2,158.23	8.45	7.60	164.77	131.89	-62.70	377.03	361.78	15.25	24.718		
2,300.00	2,278.93	2,259.49	2,255.54	8.88	7.96	164.50	137.70	-68.58	398.46	382.48	15.98	24.932		
2,400.00	2,377.60	2,357.15	2,352.85	9.31	8.32	164.26	143.52	-74.46	419.90	403.18	16.71	25.126		
2,500.00	2,476.28	2,454.81	2,450.16	9.74	8.69	164.04	149.33	-80.34	441.34	423.89	17.44	25.303		
2,600.00	2,574.95	2,552.47	2,547.47	10.17	9.05	163.84	155.15	-86.22	462.78	444.61	18.17	25.465		
2,700.00	2,673.63	2,650.13	2,644.78	10.60	9.41	163.66	160.96	-92.10	484.24	465.33	18.90	25.615		
2,800.00	2,772.30	2,747.79	2,742.10	11.04	9.78	163.50	166.78	-97.98	505.69	486.06	19.64	25.753		
2,900.00	2,870.97	2,845.45	2,839.41	11.47	10.14	163.34	172.59	-103.87	527.15	506.78	20.37	25.881		
3,000.00	2,969.65	2,943.11	2,936.72	11.90	10.51	163.20	178.41	-109.75	548.62	527.51	21.10	25.999		
3,100.00	3,068.32	3,040.78	3,034.03	12.33	10.88	163.08	184.22	-115.63	570.08	548.25	21.83	26.110		
3,200.00	3,166.99	3,138.44	3,131.34	12.76	11.24	162.96	190.04	-121.51	591.55	568.98	22.57	26.213		
3,300.00	3,265.67	3,236.10	3,228.65	13.20	11.61	162.84	195.85	-127.39	613.02	589.72	23.30	26.309		
3,400.00	3,364.34	3,333.76	3,325.96	13.63	11.97	162.74	201.67	-133.27	634.49	610.46	24.03	26.399		
3,500.00	3,463.02	3,431.42	3,423.27	14.06	12.34	162.64	207.48	-139.15	655.97	631.20	24.77	26.484		
3,600.00	3,561.69	3,529.08	3,520.58	14.50	12.70	162.55	213.30	-145.03	677.45	651.94	25.50	26.563		
3,700.00	3,660.36	3,626.74	3,617.89	14.93	13.07	162.47	219.11	-150.91	698.92	672.69	26.24	26.638		
3,800.00	3,759.04	3,724.40	3,715.20	15.36	13.44	162.39	224.93	-156.79	720.40	693.43	26.97	26.709		
3,900.00	3,857.71	3,822.06	3,812.51	15.79	13.80	162.31	230.74	-162.68	741.88	714.18	27.71	26.776		
4,000.00	3,956.39	3,919.72	3,909.82	16.23	14.17	162.24	236.56	-168.56	763.37	734.92	28.44	26.840		
4,100.00	4,055.06	4,017.39	4,007.13	16.66	14.54	162.17	242.37	-174.44	784.85	755.67	29.18	26.900		
4,200.00	4,153.73	4,115.05	4,104.44	17.09	14.90	162.11	248.19	-180.32	806.33	776.42	29.91	26.957		
4,300.00	4,252.41	4,212.71	4,201.75	17.53	15.27	162.05	254.00	-186.20	827.82	797.17	30.65	27.011		
4,400.00	4,351.08	4,310.37	4,299.06	17.96	15.64	161.99	259.82	-192.08	849.30	817.92	31.38	27.063		
4,500.00	4,449.75	4,408.03	4,396.37	18.39	16.00	161.93	265.63	-197.96	870.79	838.67	32.12	27.112		
4,600.00	4,548.43	4,505.69	4,493.68	18.83	16.37	161.88	271.45	-203.84	892.28	859.42	32.85	27.159		
4,700.00	4,647.10	4,603.35	4,590.99	19.26	16.74	161.83	277.26	-209.72	913.77	880.18	33.59	27.204		
4,800.00	4,745.78	4,701.01	4,688.30	19.70	17.11	161.79	283.08	-215.60	935.25	900.93	34.33	27.247		
4,900.00	4,844.45	4,798.67	4,785.61	20.13	17.47	161.74	288.89	-221.49	956.74	921.68	35.06	27.288		
5,000.00	4,943.12	4,896.34	4,882.92	20.56	17.84	161.70	294.71	-227.37	978.23	942.44	35.80	27.327		

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

Cathedral Energy Services

Anticollision Report

Company:	Crestone Peak Resources	Local Co-ordinate Reference:	Well SAM 3M-25H-M166
Project:	DJ BASIN	TVD Reference:	23' KB @ 5109.00usft
Reference Site:	S25-T1N-R66W (SAM)	MD Reference:	23' KB @ 5109.00usft
Site Error:	0.00usft	North Reference:	Grid
Reference Well:	SAM 3M-25H-M166	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #1	Offset TVD Reference:	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									
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	5,041.80	4,994.00	4,980.23	21.00	18.21	161.66	300.52	-233.25	999.72	963.19	36.53	27.365				
5,200.00	5,140.47	5,091.66	5,077.54	21.43	18.57	161.62	306.34	-239.13	1,021.21	983.94	37.27	27.401				
5,300.00	5,239.14	5,189.32	5,174.85	21.86	18.94	161.58	312.15	-245.01	1,042.70	1,004.70	38.01	27.436				
5,400.00	5,337.82	5,286.98	5,272.16	22.30	19.31	161.54	317.97	-250.89	1,064.20	1,025.45	38.74	27.469				
5,500.00	5,436.49	5,384.64	5,369.47	22.73	19.68	161.51	323.78	-256.77	1,085.69	1,046.21	39.48	27.501				
5,600.00	5,535.17	5,482.30	5,466.78	23.17	20.04	161.47	329.60	-262.65	1,107.18	1,066.97	40.21	27.532				
5,700.00	5,633.84	5,579.96	5,564.09	23.60	20.41	161.44	335.41	-268.53	1,128.67	1,087.72	40.95	27.561				
5,800.00	5,732.51	5,677.62	5,661.40	24.03	20.78	161.41	341.23	-274.41	1,150.17	1,108.48	41.69	27.590				
5,900.00	5,831.19	5,775.85	5,759.27	24.47	21.15	161.38	347.07	-280.33	1,171.66	1,129.23	42.43	27.615				
6,000.00	5,929.86	5,916.14	5,899.30	24.90	21.66	161.46	352.95	-286.28	1,191.36	1,147.91	43.45	27.641				
6,100.00	6,028.54	6,045.39	6,028.54	25.34	22.12	161.72	354.20	-287.53	1,207.68	1,163.34	44.34	27.235				
6,200.00	6,127.21	6,144.07	6,127.21	25.77	22.45	161.96	354.20	-287.53	1,223.12	1,178.07	45.06	27.145				
6,300.00	6,225.88	6,242.74	6,225.88	26.20	22.79	162.19	354.20	-287.53	1,238.59	1,192.81	45.77	27.059				
6,400.00	6,324.56	6,341.42	6,324.56	26.64	23.13	162.41	354.20	-287.53	1,254.07	1,207.58	46.49	26.976				
6,500.00	6,423.23	6,440.09	6,423.23	27.07	23.47	162.64	354.20	-287.53	1,269.57	1,222.37	47.20	26.895				
6,600.00	6,521.90	6,538.76	6,521.90	27.51	23.81	162.85	354.20	-287.53	1,285.09	1,237.17	47.92	26.817				
6,700.00	6,620.58	6,637.44	6,620.58	27.94	24.15	163.06	354.20	-287.53	1,300.63	1,251.99	48.64	26.742				
6,749.72	6,669.64	6,686.50	6,669.64	28.16	24.32	163.16	354.20	-287.53	1,308.36	1,259.37	48.99	26.706				
6,800.00	6,719.29	6,736.10	6,719.24	28.37	24.49	-171.17	354.20	-287.08	1,316.18	1,266.84	49.34	26.673				
6,850.00	6,768.59	6,785.37	6,768.38	28.57	24.65	-148.43	354.24	-283.64	1,323.95	1,274.28	49.67	26.653				
6,900.00	6,817.56	6,834.61	6,817.14	28.75	24.80	-132.53	354.31	-276.84	1,331.67	1,281.69	49.99	26.641				
6,950.00	6,865.97	6,883.84	6,865.30	28.92	24.94	-122.10	354.41	-266.70	1,339.31	1,289.02	50.28	26.635				
7,000.00	6,913.59	6,933.07	6,912.66	29.08	25.08	-115.02	354.55	-253.28	1,346.81	1,296.24	50.57	26.632				
7,050.00	6,960.18	6,982.32	6,958.99	29.23	25.21	-109.98	354.72	-236.63	1,354.15	1,303.30	50.85	26.630				
7,100.00	7,005.51	7,031.58	7,004.09	29.37	25.34	-106.20	354.92	-216.83	1,361.30	1,310.17	51.13	26.626				
7,150.00	7,049.37	7,080.87	7,047.75	29.50	25.48	-103.26	355.15	-193.97	1,368.21	1,316.81	51.41	26.616				
7,200.00	7,091.54	7,130.20	7,089.76	29.61	25.61	-100.91	355.41	-168.13	1,374.86	1,323.16	51.70	26.594				
7,250.00	7,131.81	7,179.58	7,129.93	29.72	25.76	-98.97	355.70	-139.44	1,381.20	1,329.19	52.01	26.554				
7,300.00	7,169.99	7,229.01	7,168.07	29.81	25.92	-97.35	356.02	-108.01	1,387.22	1,334.85	52.37	26.490				
7,350.00	7,205.90	7,278.49	7,203.99	29.90	26.12	-95.98	356.37	-73.99	1,392.88	1,340.10	52.78	26.393				
7,400.00	7,239.35	7,328.04	7,237.51	29.97	26.35	-94.81	356.74	-37.53	1,398.15	1,344.90	53.25	26.255				
7,450.00	7,270.19	7,377.64	7,268.47	30.04	26.64	-93.82	357.13	1.22	1,403.01	1,349.19	53.82	26.071				
7,500.00	7,298.26	7,427.31	7,296.70	30.10	26.98	-92.97	357.55	42.06	1,407.43	1,352.95	54.48	25.832				
7,550.00	7,323.42	7,477.03	7,322.07	30.17	27.38	-92.24	357.98	84.81	1,411.40	1,356.13	55.27	25.536				
7,600.00	7,345.57	7,526.81	7,344.43	30.24	27.85	-91.63	358.43	129.28	1,414.89	1,358.70	56.19	25.181				
7,650.00	7,364.58	7,576.64	7,363.67	30.33	28.39	-91.13	358.90	175.23	1,417.89	1,360.64	57.25	24.768				
7,700.00	7,380.36	7,626.52	7,379.68	30.50	29.00	-90.73	359.38	222.46	1,420.37	1,361.93	58.45	24.302				
7,750.00	7,392.85	7,676.44	7,392.37	30.84	29.68	-90.41	359.87	270.72	1,422.34	1,362.55	59.79	23.790				
7,800.00	7,401.97	7,726.39	7,401.68	31.39	30.43	-90.19	360.37	319.79	1,423.78	1,362.51	61.26	23.241				
7,850.00	7,407.68	7,776.37	7,407.55	32.09	31.24	-90.05	360.87	369.41	1,424.68	1,361.82	62.86	22.664				
7,900.00	7,409.96	7,826.36	7,409.94	32.90	32.09	-90.00	361.38	419.33	1,425.04	1,360.48	64.56	22.074				
7,908.04	7,410.00	7,834.40	7,410.00	33.03	32.23	-90.00	361.46	427.36	1,425.04	1,360.20	64.84	21.978				
8,000.00	7,410.00	7,926.36	7,410.00	34.69	33.97	-90.00	362.40	519.32	1,425.04	1,356.77	68.28	20.872				
8,100.00	7,410.00	8,026.36	7,410.00	36.70	36.03	-90.00	363.41	619.32	1,425.04	1,352.69	72.36	19.695				
8,200.00	7,410.00	8,126.36	7,410.00	38.87	38.24	-90.00	364.43	719.31	1,425.04	1,348.29	76.75	18.566				
8,300.00	7,410.00	8,226.36	7,410.00	41.18	40.58	-90.00	365.45	819.31	1,425.04	1,343.62	81.42	17.502				
8,400.00	7,410.00	8,326.36	7,410.00	43.61	43.04	-90.00	366.46	919.30	1,425.04	1,338.73	86.31	16.510				
8,500.00	7,410.00	8,426.36	7,410.00	46.13	45.59	-90.00	367.48	1,019.30	1,425.04	1,333.65	91.39	15.592				
8,600.00	7,410.00	8,526.36	7,410.00	48.73	48.22	-90.00	368.49	1,119.29	1,425.04	1,328.41	96.63	14.747				
8,700.00	7,410.00	8,626.36	7,410.00	51.39	50.91	-90.00	369.51	1,219.29	1,425.04	1,323.04	102.01	13.970				
8,800.00	7,410.00	8,726.36	7,410.00	54.12	53.66	-90.00	370.53	1,319.28	1,425.04	1,317.55	107.49	13.257				
8,900.00	7,410.00	8,826.36	7,410.00	56.90	56.46	-90.00	371.54	1,419.28	1,425.04	1,311.96	113.08	12.602				

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

Cathedral Energy Services

Anticollision Report

Company:	Crestone Peak Resources	Local Co-ordinate Reference:	Well SAM 3M-25H-M166
Project:	DJ BASIN	TVD Reference:	23' KB @ 5109.00usft
Reference Site:	S25-T1N-R66W (SAM)	MD Reference:	23' KB @ 5109.00usft
Site Error:	0.00usft	North Reference:	Grid
Reference Well:	SAM 3M-25H-M166	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #1	Offset TVD Reference:	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						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)	Centre +E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	
9,000.00	7,410.00	8,926.36	7,410.00	59.71	59.30	-90.00	372.56	1,519.27	1,425.04	1,306.29	118.75	12.001	
9,100.00	7,410.00	9,026.36	7,410.00	62.57	62.17	-90.00	373.58	1,619.27	1,425.04	1,300.55	124.49	11.447	
9,200.00	7,410.00	9,126.36	7,410.00	65.46	65.08	-90.00	374.59	1,719.26	1,425.04	1,294.75	130.29	10.937	
9,300.00	7,410.00	9,226.36	7,410.00	68.37	68.01	-90.00	375.61	1,819.26	1,425.04	1,288.89	136.15	10.467	
9,400.00	7,410.00	9,326.36	7,410.00	71.31	70.97	-90.00	376.62	1,919.25	1,425.04	1,282.99	142.05	10.032	
9,500.00	7,410.00	9,426.36	7,410.00	74.28	73.95	-90.00	377.64	2,019.25	1,425.04	1,277.04	148.00	9.629	
9,600.00	7,410.00	9,526.36	7,410.00	77.26	76.95	-90.00	378.66	2,119.24	1,425.04	1,271.05	153.99	9.254	
9,700.00	7,410.00	9,626.36	7,410.00	80.26	79.96	-90.00	379.67	2,219.24	1,425.04	1,265.03	160.01	8.906	
9,800.00	7,410.00	9,726.36	7,410.00	83.27	82.99	-90.00	380.69	2,319.23	1,425.04	1,258.98	166.05	8.582	
9,900.00	7,410.00	9,826.36	7,410.00	86.30	86.03	-90.00	381.70	2,419.23	1,425.04	1,252.91	172.13	8.279	
10,000.00	7,410.00	9,926.36	7,410.00	89.34	89.08	-90.00	382.72	2,519.22	1,425.04	1,246.81	178.23	7.996	
10,100.00	7,410.00	10,026.36	7,410.00	92.39	92.14	-90.00	383.74	2,619.22	1,425.04	1,240.69	184.35	7.730	
10,200.00	7,410.00	10,126.36	7,410.00	95.46	95.21	-90.00	384.75	2,719.21	1,425.04	1,234.55	190.49	7.481	
10,300.00	7,410.00	10,226.36	7,410.00	98.53	98.29	-90.00	385.77	2,819.21	1,425.04	1,228.39	196.64	7.247	
10,400.00	7,410.00	10,326.36	7,410.00	101.61	101.38	-90.00	386.79	2,919.20	1,425.04	1,222.22	202.82	7.026	
10,500.00	7,410.00	10,426.36	7,410.00	104.69	104.48	-90.00	387.80	3,019.19	1,425.04	1,216.03	209.00	6.818	
10,600.00	7,410.00	10,526.36	7,410.00	107.79	107.58	-90.00	388.82	3,119.19	1,425.04	1,209.83	215.20	6.622	
10,700.00	7,410.00	10,626.36	7,410.00	110.89	110.69	-90.00	389.83	3,219.18	1,425.04	1,203.62	221.41	6.436	
10,800.00	7,410.00	10,726.36	7,410.00	113.99	113.80	-90.00	390.85	3,319.18	1,425.04	1,197.40	227.64	6.260	
10,900.00	7,410.00	10,826.36	7,410.00	117.11	116.92	-90.00	391.87	3,419.17	1,425.04	1,191.16	233.87	6.093	
11,000.00	7,410.00	10,926.36	7,410.00	120.22	120.04	-90.00	392.88	3,519.17	1,425.03	1,184.92	240.11	5.935	
11,100.00	7,410.00	11,026.36	7,410.00	123.34	123.17	-90.00	393.90	3,619.16	1,425.03	1,178.67	246.37	5.784	
11,200.00	7,410.00	11,126.36	7,410.00	126.47	126.30	-90.00	394.91	3,719.16	1,425.03	1,172.41	252.63	5.641	
11,300.00	7,410.00	11,226.36	7,410.00	129.60	129.43	-90.00	395.93	3,819.15	1,425.03	1,166.14	258.89	5.504	
11,400.00	7,410.00	11,326.36	7,410.00	132.73	132.57	-90.00	396.95	3,919.15	1,425.03	1,159.87	265.17	5.374	
11,500.00	7,410.00	11,426.36	7,410.00	135.87	135.71	-90.00	397.96	4,019.14	1,425.03	1,153.59	271.45	5.250	
11,600.00	7,410.00	11,526.36	7,410.00	139.01	138.86	-90.00	398.98	4,119.14	1,425.03	1,147.30	277.73	5.131	
11,700.00	7,410.00	11,626.36	7,410.00	142.15	142.01	-90.00	400.00	4,219.13	1,425.03	1,141.01	284.03	5.017	
11,800.00	7,410.00	11,726.36	7,410.00	145.30	145.16	-90.00	401.01	4,319.13	1,425.03	1,134.71	290.32	4.908	
11,900.00	7,410.00	11,826.36	7,410.00	148.44	148.31	-90.00	402.03	4,419.12	1,425.03	1,128.41	296.63	4.804	
11,975.04	7,410.00	11,901.40	7,410.00	150.81	150.67	-90.00	402.79	4,494.15	1,425.03	1,123.67	301.36	4.729 SF	

Cathedral Energy Services

Anticollision Report

Company:	Crestone Peak Resources	Local Co-ordinate Reference:	Well SAM 3M-25H-M166
Project:	DJ BASIN	TVD Reference:	23' KB @ 5109.00usft
Reference Site:	S25-T1N-R66W (SAM)	MD Reference:	23' KB @ 5109.00usft
Site Error:	0.00usft	North Reference:	Grid
Reference Well:	SAM 3M-25H-M166	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #1	Offset TVD Reference:	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				Total Uncertainty Axis	Separation Factor	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)				
0.00	0.00	0.00	0.00	0.00	0.00	0.04	60.11	0.04	60.11					
100.00	100.00	100.00	100.00	0.14	0.14	0.04	60.11	0.04	60.11	59.83	0.28	217.764		
200.00	200.00	200.00	200.00	0.50	0.50	0.04	60.11	0.04	60.11	59.11	0.99	60.534		
300.00	300.00	300.00	300.00	0.85	0.85	0.04	60.11	0.04	60.11	58.40	1.71	35.153		
400.00	400.00	400.00	400.00	1.21	1.21	0.04	60.11	0.04	60.11	57.68	2.43	24.768 CC, ES		
500.00	499.98	499.98	499.98	1.56	1.57	164.41	60.11	0.04	61.79	58.66	3.13	19.751		
600.00	599.84	599.84	599.84	1.90	1.93	165.59	60.11	0.04	66.84	63.02	3.83	17.472		
700.00	699.45	699.45	699.45	2.24	2.29	167.21	60.11	0.04	75.32	70.78	4.53	16.620		
800.00	798.70	798.70	798.70	2.61	2.64	168.93	60.11	0.04	87.24	82.00	5.24	16.643		
867.08	865.01	865.58	865.58	2.86	2.88	169.62	59.99	-0.70	97.00	91.28	5.72	16.964		
900.00	897.50	898.41	898.39	2.99	2.99	169.65	59.85	-1.63	102.02	96.07	5.95	17.141		
1,000.00	996.17	997.69	997.57	3.39	3.33	168.89	59.13	-6.15	116.84	110.19	6.65	17.572		
1,100.00	1,094.84	1,096.59	1,096.34	3.80	3.68	168.16	58.38	-10.97	131.60	124.25	7.35	17.897		
1,200.00	1,193.52	1,195.48	1,195.11	4.21	4.02	167.59	57.62	-15.80	146.38	138.32	8.06	18.153		
1,300.00	1,292.19	1,294.37	1,293.88	4.62	4.37	167.12	56.86	-20.62	161.17	152.40	8.78	18.359		
1,400.00	1,390.87	1,393.26	1,392.66	5.04	4.73	166.72	56.10	-25.44	175.97	166.48	9.50	18.528		
1,500.00	1,489.54	1,492.16	1,491.43	5.46	5.08	166.39	55.34	-30.26	190.78	180.56	10.22	18.668		
1,600.00	1,588.21	1,591.05	1,590.20	5.89	5.43	166.11	54.58	-35.08	205.59	194.65	10.94	18.787		
1,700.00	1,686.89	1,689.94	1,688.97	6.31	5.79	165.86	53.82	-39.91	220.41	208.74	11.67	18.888		
1,800.00	1,785.56	1,788.83	1,787.74	6.74	6.14	165.65	53.06	-44.73	235.23	222.83	12.40	18.975		
1,900.00	1,884.23	1,887.72	1,886.51	7.17	6.50	165.46	52.31	-49.55	250.05	236.93	13.13	19.050		
2,000.00	1,982.91	1,986.62	1,985.29	7.59	6.86	165.29	51.55	-54.37	264.88	251.02	13.86	19.116		
2,100.00	2,081.58	2,085.51	2,084.06	8.02	7.22	165.14	50.79	-59.20	279.70	265.12	14.59	19.175		
2,200.00	2,180.26	2,184.40	2,182.83	8.45	7.57	165.01	50.03	-64.02	294.53	279.21	15.32	19.227		
2,300.00	2,278.93	2,283.29	2,281.60	8.88	7.93	164.88	49.27	-68.84	309.36	293.31	16.05	19.273		
2,400.00	2,377.60	2,382.19	2,380.37	9.31	8.29	164.77	48.51	-73.66	324.19	307.41	16.78	19.315		
2,500.00	2,476.28	2,481.08	2,479.14	9.74	8.65	164.67	47.75	-78.48	339.02	321.51	17.52	19.353		
2,600.00	2,574.95	2,579.97	2,577.92	10.17	9.01	164.58	47.00	-83.31	353.86	335.61	18.25	19.387		
2,700.00	2,673.63	2,678.86	2,676.69	10.60	9.37	164.49	46.24	-88.13	368.69	349.70	18.99	19.418		
2,800.00	2,772.30	2,777.75	2,775.46	11.04	9.73	164.41	45.48	-92.95	383.53	363.80	19.72	19.447		
2,900.00	2,870.97	2,876.65	2,874.23	11.47	10.09	164.34	44.72	-97.77	398.36	377.90	20.46	19.473		
3,000.00	2,969.65	2,975.54	2,973.00	11.90	10.45	164.27	43.96	-102.60	413.20	392.01	21.19	19.497		
3,100.00	3,068.32	3,074.43	3,071.77	12.33	10.81	164.21	43.20	-107.42	428.03	406.11	21.93	19.519		
3,200.00	3,166.99	3,173.32	3,170.55	12.76	11.17	164.15	42.44	-112.24	442.87	420.21	22.66	19.540		
3,300.00	3,265.67	3,272.22	3,269.32	13.20	11.53	164.10	41.68	-117.06	457.71	434.31	23.40	19.559		
3,400.00	3,364.34	3,371.11	3,368.09	13.63	11.89	164.05	40.93	-121.89	472.55	448.41	24.14	19.577		
3,500.00	3,463.02	3,470.00	3,466.86	14.06	12.25	164.00	40.17	-126.71	487.39	462.51	24.87	19.594		
3,600.00	3,561.69	3,568.89	3,565.63	14.50	12.61	163.95	39.41	-131.53	502.22	476.61	25.61	19.609		
3,700.00	3,660.36	3,667.78	3,664.40	14.93	12.97	163.91	38.65	-136.35	517.06	490.71	26.35	19.624		
3,800.00	3,759.04	3,766.68	3,763.17	15.36	13.34	163.87	37.89	-141.17	531.90	504.82	27.09	19.638		
3,900.00	3,857.71	3,865.57	3,861.95	15.79	13.70	163.83	37.13	-146.00	546.74	518.92	27.82	19.651		
4,000.00	3,956.39	3,964.46	3,960.72	16.23	14.06	163.79	36.37	-150.82	561.58	533.02	28.56	19.663		
4,100.00	4,055.06	4,063.35	4,059.49	16.66	14.42	163.76	35.62	-155.64	576.42	547.12	29.30	19.674		
4,200.00	4,153.73	4,162.25	4,158.26	17.09	14.78	163.73	34.86	-160.46	591.26	561.22	30.04	19.685		
4,300.00	4,252.41	4,261.14	4,257.03	17.53	15.14	163.70	34.10	-165.29	606.10	575.33	30.77	19.695		
4,400.00	4,351.08	4,360.03	4,355.80	17.96	15.50	163.67	33.34	-170.11	620.94	589.43	31.51	19.705		
4,500.00	4,449.75	4,458.92	4,454.58	18.39	15.86	163.64	32.58	-174.93	635.78	603.53	32.25	19.714		
4,600.00	4,548.43	4,557.81	4,553.35	18.83	16.23	163.61	31.82	-179.75	650.62	617.63	32.99	19.723		
4,700.00	4,647.10	4,656.71	4,652.12	19.26	16.59	163.59	31.06	-184.57	665.46	631.74	33.73	19.732		
4,800.00	4,745.78	4,755.60	4,750.89	19.70	16.95	163.56	30.31	-189.40	680.30	645.84	34.46	19.740		
4,900.00	4,844.45	4,854.49	4,849.66	20.13	17.31	163.54	29.55	-194.22	695.14	659.94	35.20	19.747		
5,000.00	4,943.12	4,953.38	4,948.43	20.56	17.67	163.52	28.79	-199.04	709.99	674.04	35.94	19.754		

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

Cathedral Energy Services

Anticollision Report

Company:	Crestone Peak Resources	Local Co-ordinate Reference:	Well SAM 3M-25H-M166
Project:	DJ BASIN	TVD Reference:	23' KB @ 5109.00usft
Reference Site:	S25-T1N-R66W (SAM)	MD Reference:	23' KB @ 5109.00usft
Site Error:	0.00usft	North Reference:	Grid
Reference Well:	SAM 3M-25H-M166	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #1	Offset TVD Reference:	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	5,041.80	5,052.28	5,047.21	21.00	18.03	163.49	28.03	-203.86	724.83	688.15	36.68	19.761		
5,200.00	5,140.47	5,151.17	5,145.98	21.43	18.39	163.47	27.27	-208.69	739.67	702.25	37.42	19.768		
5,300.00	5,239.14	5,250.06	5,244.75	21.86	18.76	163.45	26.51	-213.51	754.51	716.35	38.16	19.774		
5,400.00	5,337.82	5,348.95	5,343.52	22.30	19.12	163.43	25.75	-218.33	769.35	730.46	38.89	19.780		
5,500.00	5,436.49	5,447.84	5,442.29	22.73	19.48	163.42	24.99	-223.15	784.19	744.56	39.63	19.786		
5,600.00	5,535.17	5,546.74	5,541.06	23.17	19.84	163.40	24.24	-227.97	799.03	758.66	40.37	19.792		
5,700.00	5,633.84	5,645.63	5,639.84	23.60	20.20	163.38	23.48	-232.80	813.88	772.76	41.11	19.797		
5,800.00	5,732.51	5,744.52	5,738.61	24.03	20.56	163.36	22.72	-237.62	828.72	786.87	41.85	19.802		
5,900.00	5,831.19	5,843.41	5,837.38	24.47	20.93	163.35	21.96	-242.44	843.56	800.97	42.59	19.807		
6,000.00	5,929.86	5,942.31	5,936.15	24.90	21.29	163.33	21.20	-247.26	858.40	815.07	43.33	19.812		
6,100.00	6,028.54	6,041.20	6,034.92	25.34	21.65	163.32	20.44	-252.09	873.24	829.18	44.07	19.817		
6,200.00	6,127.21	6,140.09	6,133.69	25.77	22.01	163.30	19.68	-256.91	888.08	843.28	44.81	19.821		
6,300.00	6,225.88	6,238.98	6,232.47	26.20	22.37	163.29	18.93	-261.73	902.93	857.38	45.54	19.825		
6,400.00	6,324.56	6,337.87	6,331.24	26.64	22.74	163.28	18.17	-266.55	917.77	871.49	46.28	19.829		
6,500.00	6,423.23	6,436.77	6,430.01	27.07	23.10	163.26	17.41	-271.38	932.61	885.59	47.02	19.833		
6,600.00	6,521.90	6,535.66	6,528.78	27.51	23.46	163.25	16.65	-276.20	947.45	899.69	47.76	19.837		
6,700.00	6,620.58	6,633.06	6,626.09	27.94	23.81	163.30	15.94	-279.97	962.33	913.85	48.48	19.850		
6,749.72	6,669.64	6,680.02	6,673.01	28.16	23.96	163.53	15.73	-278.27	969.84	921.04	48.80	19.873		
6,800.00	6,719.29	6,727.02	6,719.76	28.37	24.10	-170.55	15.64	-273.50	977.57	928.46	49.11	19.907		
6,850.00	6,768.59	6,773.42	6,765.51	28.57	24.24	-147.53	15.66	-265.80	985.36	935.96	49.39	19.949		
6,900.00	6,817.56	6,819.53	6,810.38	28.75	24.37	-131.38	15.80	-255.22	993.20	943.54	49.66	19.998		
6,950.00	6,865.97	6,865.36	6,854.22	28.92	24.50	-120.70	16.05	-241.88	1,001.07	951.14	49.92	20.053		
7,000.00	6,913.59	6,910.94	6,896.88	29.08	24.63	-113.39	16.41	-225.85	1,008.90	958.74	50.17	20.111		
7,050.00	6,960.18	6,956.30	6,938.24	29.23	24.76	-108.12	16.87	-207.25	1,016.67	966.27	50.40	20.171		
7,100.00	7,005.51	7,000.00	6,976.89	29.37	24.88	-104.14	17.41	-186.88	1,024.33	973.70	50.63	20.232		
7,150.00	7,049.37	7,046.47	7,016.55	29.50	25.02	-100.99	18.10	-162.68	1,031.83	980.95	50.88	20.279		
7,200.00	7,091.54	7,091.33	7,053.27	29.61	25.17	-98.45	18.86	-136.94	1,039.15	988.01	51.14	20.321		
7,250.00	7,131.81	7,136.08	7,088.21	29.72	25.33	-96.33	19.71	-109.02	1,046.24	994.82	51.42	20.347		
7,300.00	7,169.99	7,180.72	7,121.28	29.81	25.51	-94.55	20.65	-79.04	1,053.06	1,001.32	51.74	20.353		
7,350.00	7,205.90	7,225.30	7,152.36	29.90	25.71	-93.04	21.68	-47.12	1,059.59	1,007.47	52.11	20.332		
7,400.00	7,239.35	7,269.82	7,181.37	29.97	25.95	-91.74	22.78	-13.36	1,065.78	1,013.22	52.56	20.279		
7,450.00	7,270.19	7,314.32	7,208.20	30.04	26.23	-90.62	23.97	22.10	1,071.61	1,018.53	53.08	20.189		
7,500.00	7,298.26	7,358.80	7,232.77	30.10	26.55	-89.66	25.23	59.15	1,077.05	1,023.35	53.70	20.058		
7,550.00	7,323.42	7,403.29	7,255.00	30.17	26.91	-88.84	26.55	97.66	1,082.07	1,027.64	54.43	19.882		
7,600.00	7,345.57	7,450.00	7,275.71	30.24	27.36	-88.15	28.02	139.49	1,086.66	1,031.35	55.31	19.648		
7,650.00	7,364.58	7,492.36	7,292.10	30.33	27.82	-87.58	29.40	178.52	1,090.77	1,034.51	56.26	19.387		
7,700.00	7,380.36	7,536.98	7,306.84	30.50	28.36	-87.13	30.90	220.60	1,094.41	1,037.03	57.38	19.074		
7,750.00	7,392.85	7,581.67	7,318.94	30.84	28.96	-86.77	32.46	263.58	1,097.55	1,038.93	58.62	18.722		
7,800.00	7,401.97	7,626.44	7,328.35	31.39	29.61	-86.53	34.06	307.32	1,100.18	1,040.19	60.00	18.338		
7,850.00	7,407.68	7,671.32	7,335.03	32.09	30.32	-86.38	35.69	351.66	1,102.29	1,040.81	61.48	17.928		
7,900.00	7,409.96	7,716.31	7,338.91	32.90	31.07	-86.33	37.37	396.44	1,103.87	1,040.79	63.07	17.501		
7,908.04	7,410.00	7,723.55	7,339.27	33.03	31.19	-86.33	37.64	403.67	1,104.07	1,040.73	63.34	17.431		
8,000.00	7,410.00	7,812.02	7,340.00	34.69	32.80	-86.37	40.98	492.06	1,106.55	1,039.92	66.63	16.607		
8,100.00	7,410.00	7,911.98	7,340.00	36.70	34.80	-86.38	44.75	591.95	1,109.31	1,038.67	70.64	15.703		
8,200.00	7,410.00	8,011.94	7,340.00	38.87	36.97	-86.39	48.53	691.84	1,112.07	1,037.08	74.99	14.830		
8,300.00	7,410.00	8,111.90	7,340.00	41.18	39.28	-86.40	52.31	791.73	1,114.83	1,035.22	79.61	14.004		
8,400.00	7,410.00	8,211.86	7,340.00	43.61	41.70	-86.41	56.09	891.63	1,117.59	1,033.13	84.46	13.232		
8,500.00	7,410.00	8,311.83	7,340.00	46.13	44.22	-86.42	59.87	991.52	1,120.34	1,030.84	89.50	12.517		
8,600.00	7,410.00	8,411.79	7,340.00	48.73	46.83	-86.43	63.65	1,091.41	1,123.10	1,028.39	94.71	11.858		
8,700.00	7,410.00	8,511.75	7,340.00	51.39	49.50	-86.43	67.42	1,191.30	1,125.86	1,025.81	100.06	11.252		
8,800.00	7,410.00	8,611.71	7,340.00	54.12	52.24	-86.44	71.20	1,291.19	1,128.62	1,023.10	105.52	10.696		
8,900.00	7,410.00	8,711.67	7,340.00	56.90	55.02	-86.45	74.98	1,391.08	1,131.38	1,020.30	111.08	10.186		

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

Cathedral Energy Services

Anticollision Report

Company:	Crestone Peak Resources	Local Co-ordinate Reference:	Well SAM 3M-25H-M166
Project:	DJ BASIN	TVD Reference:	23' KB @ 5109.00usft
Reference Site:	S25-T1N-R66W (SAM)	MD Reference:	23' KB @ 5109.00usft
Site Error:	0.00usft	North Reference:	Grid
Reference Well:	SAM 3M-25H-M166	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #1	Offset TVD Reference:	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		
9,000.00	7,410.00	8,811.63	7,340.00	59.71	57.84	-86.46	78.76	1,490.97	1,134.14	1,017.42	116.72	9.717		
9,100.00	7,410.00	8,911.60	7,340.00	62.57	60.71	-86.47	82.54	1,590.86	1,136.90	1,014.46	122.44	9.285		
9,200.00	7,410.00	9,011.56	7,340.00	65.46	63.60	-86.48	86.31	1,690.75	1,139.65	1,011.43	128.22	8.888		
9,300.00	7,410.00	9,111.52	7,340.00	68.37	66.52	-86.49	90.09	1,790.64	1,142.41	1,008.35	134.06	8.522		
9,400.00	7,410.00	9,211.48	7,340.00	71.31	69.47	-86.49	93.87	1,890.53	1,145.17	1,005.23	139.95	8.183		
9,500.00	7,410.00	9,311.44	7,340.00	74.28	72.43	-86.50	97.65	1,990.42	1,147.93	1,002.06	145.87	7.869		
9,600.00	7,410.00	9,411.41	7,340.00	77.26	75.42	-86.51	101.43	2,090.31	1,150.69	998.85	151.84	7.578		
9,700.00	7,410.00	9,511.37	7,340.00	80.26	78.42	-86.52	105.21	2,190.20	1,153.45	995.61	157.84	7.308		
9,800.00	7,410.00	9,611.33	7,340.00	83.27	81.44	-86.53	108.98	2,290.09	1,156.21	992.34	163.87	7.056		
9,900.00	7,410.00	9,711.29	7,340.00	86.30	84.46	-86.54	112.76	2,389.98	1,158.96	989.04	169.92	6.821		
10,000.00	7,410.00	9,811.25	7,340.00	89.34	87.51	-86.54	116.54	2,489.87	1,161.72	985.72	176.00	6.601		
10,100.00	7,410.00	9,911.21	7,340.00	92.39	90.56	-86.55	120.32	2,589.76	1,164.48	982.38	182.10	6.395		
10,200.00	7,410.00	10,011.18	7,340.00	95.46	93.62	-86.56	124.10	2,689.65	1,167.24	979.02	188.22	6.201		
10,300.00	7,410.00	10,111.14	7,340.00	98.53	96.69	-86.57	127.88	2,789.54	1,170.00	975.64	194.36	6.020		
10,400.00	7,410.00	10,211.10	7,340.00	101.61	99.77	-86.58	131.65	2,889.43	1,172.76	972.25	200.51	5.849		
10,500.00	7,410.00	10,311.06	7,340.00	104.69	102.85	-86.58	135.43	2,989.32	1,175.52	968.84	206.68	5.688		
10,600.00	7,410.00	10,411.02	7,340.00	107.79	105.94	-86.59	139.21	3,089.21	1,178.28	965.41	212.86	5.535		
10,700.00	7,410.00	10,510.99	7,340.00	110.89	109.04	-86.60	142.99	3,189.10	1,181.04	961.98	219.06	5.391		
10,800.00	7,410.00	10,610.95	7,340.00	113.99	112.14	-86.61	146.77	3,288.99	1,183.79	958.53	225.26	5.255		
10,900.00	7,410.00	10,710.91	7,340.00	117.11	115.25	-86.62	150.55	3,388.88	1,186.55	955.08	231.47	5.126		
11,000.00	7,410.00	10,810.87	7,340.00	120.22	118.36	-86.62	154.32	3,488.77	1,189.31	951.61	237.70	5.003		
11,100.00	7,410.00	10,910.83	7,340.00	123.34	121.48	-86.63	158.10	3,588.67	1,192.07	948.14	243.93	4.887		
11,200.00	7,410.00	11,010.79	7,340.00	126.47	124.60	-86.64	161.88	3,688.56	1,194.83	944.66	250.17	4.776		
11,300.00	7,410.00	11,110.76	7,340.00	129.60	127.72	-86.65	165.66	3,788.45	1,197.59	941.17	256.42	4.670		
11,400.00	7,410.00	11,210.72	7,340.00	132.73	130.85	-86.66	169.44	3,888.34	1,200.35	937.67	262.68	4.570		
11,500.00	7,410.00	11,310.68	7,340.00	135.87	133.98	-86.66	173.21	3,988.23	1,203.11	934.17	268.94	4.474		
11,600.00	7,410.00	11,410.64	7,340.00	139.01	137.11	-86.67	176.99	4,088.12	1,205.87	930.66	275.21	4.382		
11,700.00	7,410.00	11,510.60	7,340.00	142.15	140.25	-86.68	180.77	4,188.01	1,208.63	927.15	281.48	4.294		
11,800.00	7,410.00	11,610.56	7,340.00	145.30	143.39	-86.69	184.55	4,287.90	1,211.39	923.63	287.76	4.210		
11,900.00	7,410.00	11,710.53	7,340.00	148.44	146.53	-86.69	188.33	4,387.79	1,214.14	920.10	294.04	4.129		
11,975.04	7,410.00	11,785.53	7,340.00	150.81	148.89	-86.70	191.16	4,462.74	1,216.22	917.45	298.76	4.071 SF		

Cathedral Energy Services

Anticollision Report

Company:	Crestone Peak Resources	Local Co-ordinate Reference:	Well SAM 3M-25H-M166
Project:	DJ BASIN	TVD Reference:	23' KB @ 5109.00usft
Reference Site:	S25-T1N-R66W (SAM)	MD Reference:	23' KB @ 5109.00usft
Site Error:	0.00usft	North Reference:	Grid
Reference Well:	SAM 3M-25H-M166	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #1	Offset TVD Reference:	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	0.15	49.91	0.13	49.91					
100.00	100.00	100.00	100.00	0.14	0.14	0.15	49.91	0.13	49.91	49.63	0.28	180.813		
200.00	200.00	200.00	200.00	0.50	0.50	0.15	49.91	0.13	49.91	48.92	0.99	50.262		
300.00	300.00	300.00	300.00	0.85	0.85	0.15	49.91	0.13	49.91	48.20	1.71	29.188		
400.00	400.00	400.00	400.00	1.21	1.21	0.15	49.91	0.13	49.91	47.48	2.43	20.565 CC, ES		
500.00	499.98	499.98	499.98	1.56	1.57	164.61	49.91	0.13	51.59	48.46	3.13	16.491		
600.00	599.84	599.84	599.84	1.90	1.93	165.99	49.91	0.13	56.65	52.83	3.83	14.808		
700.00	699.45	699.45	699.45	2.24	2.29	167.81	49.91	0.13	65.14	60.61	4.53	14.375		
800.00	798.70	798.70	798.70	2.61	2.64	169.68	49.91	0.13	77.10	71.86	5.24	14.708		
867.08	865.01	865.01	865.01	2.86	2.88	170.84	49.91	0.13	87.07	81.35	5.72	15.216		
900.00	897.50	897.50	897.50	2.99	3.00	171.36	49.91	0.13	92.35	86.39	5.96	15.502		
1,000.00	996.17	998.04	998.02	3.39	3.35	171.90	49.28	-1.42	107.59	100.93	6.66	16.149		
1,100.00	1,094.84	1,098.68	1,098.52	3.80	3.69	170.88	47.34	-6.18	121.14	113.77	7.37	16.441		
1,200.00	1,193.52	1,197.79	1,197.44	4.21	4.03	169.66	45.01	-11.89	134.20	126.12	8.07	16.622		
1,300.00	1,292.19	1,296.89	1,296.35	4.62	4.38	168.66	42.69	-17.59	147.30	138.52	8.79	16.767		
1,400.00	1,390.87	1,396.00	1,395.27	5.04	4.73	167.82	40.36	-23.30	160.44	150.94	9.50	16.885		
1,500.00	1,489.54	1,495.11	1,494.19	5.46	5.08	167.11	38.03	-29.01	173.62	163.39	10.22	16.982		
1,600.00	1,588.21	1,594.22	1,593.10	5.89	5.43	166.50	35.71	-34.71	186.81	175.86	10.95	17.064		
1,700.00	1,686.89	1,693.32	1,692.02	6.31	5.79	165.97	33.38	-40.42	200.02	188.35	11.67	17.133		
1,800.00	1,785.56	1,792.43	1,790.93	6.74	6.15	165.50	31.06	-46.12	213.25	200.84	12.40	17.191		
1,900.00	1,884.23	1,891.54	1,889.85	7.17	6.50	165.09	28.73	-51.83	226.49	213.35	13.14	17.242		
2,000.00	1,982.91	1,990.65	1,988.77	7.59	6.86	164.73	26.41	-57.54	239.73	225.87	13.87	17.286		
2,100.00	2,081.58	2,089.75	2,087.68	8.02	7.22	164.40	24.08	-63.24	252.99	238.39	14.60	17.324		
2,200.00	2,180.26	2,188.86	2,186.60	8.45	7.58	164.10	21.76	-68.95	266.26	250.92	15.34	17.358		
2,300.00	2,278.93	2,287.97	2,285.51	8.88	7.95	163.84	19.43	-74.65	279.53	263.45	16.08	17.388		
2,400.00	2,377.60	2,387.08	2,384.43	9.31	8.31	163.60	17.11	-80.36	292.80	275.99	16.81	17.415		
2,500.00	2,476.28	2,486.18	2,483.34	9.74	8.67	163.38	14.78	-86.07	306.09	288.53	17.55	17.439		
2,600.00	2,574.95	2,585.29	2,582.26	10.17	9.03	163.17	12.45	-91.77	319.37	301.08	18.29	17.461		
2,700.00	2,673.63	2,684.40	2,681.18	10.60	9.40	162.99	10.13	-97.48	332.66	313.63	19.03	17.480		
2,800.00	2,772.30	2,783.51	2,780.09	11.04	9.76	162.81	7.80	-103.19	345.95	326.18	19.77	17.498		
2,900.00	2,870.97	2,882.61	2,879.01	11.47	10.13	162.65	5.48	-108.89	359.25	338.73	20.51	17.514		
3,000.00	2,969.65	2,981.72	2,977.92	11.90	10.49	162.51	3.15	-114.60	372.54	351.29	21.25	17.529		
3,100.00	3,068.32	3,080.83	3,076.84	12.33	10.85	162.37	0.83	-120.30	385.84	363.85	22.00	17.542		
3,200.00	3,166.99	3,179.94	3,175.75	12.76	11.22	162.24	-1.50	-126.01	399.14	376.41	22.74	17.555		
3,300.00	3,265.67	3,279.04	3,274.67	13.20	11.58	162.12	-3.82	-131.72	412.45	388.97	23.48	17.566		
3,400.00	3,364.34	3,378.15	3,373.59	13.63	11.95	162.01	-6.15	-137.42	425.75	401.53	24.22	17.577		
3,500.00	3,463.02	3,477.26	3,472.50	14.06	12.31	161.90	-8.48	-143.13	439.06	414.09	24.97	17.587		
3,600.00	3,561.69	3,576.37	3,571.42	14.50	12.68	161.80	-10.80	-148.84	452.37	426.66	25.71	17.596		
3,700.00	3,660.36	3,675.47	3,670.33	14.93	13.04	161.71	-13.13	-154.54	465.68	439.23	26.45	17.604		
3,800.00	3,759.04	3,774.58	3,769.25	15.36	13.41	161.62	-15.45	-160.25	478.99	451.79	27.20	17.612		
3,900.00	3,857.71	3,873.69	3,868.17	15.79	13.78	161.53	-17.78	-165.95	492.30	464.36	27.94	17.620		
4,000.00	3,956.39	3,972.80	3,967.08	16.23	14.14	161.45	-20.10	-171.66	505.61	476.93	28.68	17.627		
4,100.00	4,055.06	4,071.90	4,066.00	16.66	14.51	161.38	-22.43	-177.37	518.93	489.50	29.43	17.633		
4,200.00	4,153.73	4,171.01	4,164.91	17.09	14.87	161.31	-24.75	-183.07	532.24	502.07	30.17	17.640		
4,300.00	4,252.41	4,270.12	4,263.83	17.53	15.24	161.24	-27.08	-188.78	545.56	514.64	30.92	17.645		
4,400.00	4,351.08	4,369.23	4,362.74	17.96	15.61	161.17	-29.41	-194.48	558.87	527.21	31.66	17.651		
4,500.00	4,449.75	4,468.33	4,461.66	18.39	15.97	161.11	-31.73	-200.19	572.19	539.78	32.41	17.656		
4,600.00	4,548.43	4,567.44	4,560.58	18.83	16.34	161.05	-34.06	-205.90	585.51	552.35	33.15	17.661		
4,700.00	4,647.10	4,666.55	4,659.49	19.26	16.71	160.99	-36.38	-211.60	598.82	564.93	33.90	17.666		
4,800.00	4,745.78	4,765.66	4,758.41	19.70	17.07	160.94	-38.71	-217.31	612.14	577.50	34.64	17.670		
4,900.00	4,844.45	4,864.76	4,857.32	20.13	17.44	160.89	-41.03	-223.02	625.46	590.07	35.39	17.674		
5,000.00	4,943.12	4,963.87	4,956.24	20.56	17.81	160.84	-43.36	-228.72	638.78	602.65	36.13	17.678		

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

Cathedral Energy Services

Anticollision Report

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Project:	DJ BASIN	TVD Reference:	23' KB @ 5109.00usft
Reference Site:	S25-T1N-R66W (SAM)	MD Reference:	23' KB @ 5109.00usft
Site Error:	0.00usft	North Reference:	Grid
Reference Well:	SAM 3M-25H-M166	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #1	Offset TVD Reference:	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	5,041.80	5,062.98	5,055.15	21.00	18.17	160.79	-45.68	-234.43	652.10	615.22	36.88	17.682		
5,200.00	5,140.47	5,162.09	5,154.07	21.43	18.54	160.75	-48.01	-240.13	665.42	627.79	37.62	17.686		
5,300.00	5,239.14	5,261.19	5,252.99	21.86	18.90	160.70	-50.33	-245.84	678.74	640.37	38.37	17.689		
5,400.00	5,337.82	5,360.30	5,351.90	22.30	19.27	160.66	-52.66	-251.55	692.06	652.95	39.12	17.692		
5,500.00	5,436.49	5,459.41	5,450.82	22.73	19.64	160.62	-54.99	-257.25	705.38	665.52	39.86	17.696		
5,600.00	5,535.17	5,558.52	5,549.73	23.17	20.01	160.58	-57.31	-262.96	718.70	678.10	40.61	17.699		
5,700.00	5,633.84	5,657.62	5,648.65	23.60	20.37	160.54	-59.64	-268.67	732.03	690.67	41.35	17.701		
5,800.00	5,732.51	5,756.73	5,747.57	24.03	20.74	160.51	-61.96	-274.37	745.35	703.25	42.10	17.704		
5,900.00	5,831.19	5,853.89	5,844.54	24.47	21.10	160.48	-64.21	-279.88	758.70	715.87	42.83	17.714		
6,000.00	5,929.86	5,944.96	5,935.54	24.90	21.42	160.60	-65.53	-283.12	772.79	729.29	43.50	17.765		
6,100.00	6,028.54	6,037.96	6,028.54	25.34	21.74	160.92	-65.80	-283.79	787.88	743.72	44.16	17.841		
6,200.00	6,127.21	6,136.63	6,127.21	25.77	22.07	161.30	-65.80	-283.79	803.26	758.40	44.86	17.908		
6,300.00	6,225.88	6,235.31	6,225.88	26.20	22.40	161.66	-65.80	-283.79	818.67	773.12	45.55	17.973		
6,400.00	6,324.56	6,333.98	6,324.56	26.64	22.73	162.01	-65.80	-283.79	834.11	787.87	46.25	18.037		
6,500.00	6,423.23	6,432.66	6,423.23	27.07	23.06	162.35	-65.80	-283.79	849.59	802.64	46.94	18.099		
6,600.00	6,521.90	6,531.33	6,521.90	27.51	23.39	162.67	-65.80	-283.79	865.09	817.45	47.64	18.159		
6,700.00	6,620.58	6,630.00	6,620.58	27.94	23.73	162.99	-65.80	-283.79	880.61	832.27	48.34	18.218		
6,749.72	6,669.64	6,679.07	6,669.64	28.16	23.89	163.14	-65.80	-283.79	888.34	839.66	48.69	18.247		
6,800.00	6,719.29	6,728.72	6,719.29	28.37	24.06	-171.20	-65.80	-283.79	896.17	847.13	49.04	18.276		
6,850.00	6,768.59	6,778.01	6,768.59	28.57	24.22	-148.67	-65.80	-283.79	903.94	854.56	49.38	18.304		
6,900.00	6,817.56	6,826.99	6,817.56	28.75	24.39	-133.19	-65.80	-283.79	911.70	861.97	49.73	18.334		
6,950.00	6,865.97	6,875.46	6,866.03	28.92	24.55	-123.36	-65.80	-283.79	919.47	869.41	50.07	18.364		
7,000.00	6,913.59	6,925.24	6,915.77	29.08	24.71	-116.99	-65.78	-281.90	927.28	876.87	50.41	18.396		
7,050.00	6,960.18	6,975.89	6,966.11	29.23	24.87	-112.62	-65.73	-276.45	935.06	884.32	50.74	18.428		
7,100.00	7,005.51	7,027.44	7,016.83	29.37	25.03	-109.51	-65.63	-267.25	942.77	891.70	51.07	18.461		
7,150.00	7,049.37	7,079.95	7,067.66	29.50	25.18	-107.22	-65.50	-254.17	950.37	898.98	51.39	18.493		
7,200.00	7,091.54	7,133.46	7,118.34	29.61	25.33	-105.49	-65.33	-237.04	957.81	906.09	51.72	18.521		
7,250.00	7,131.81	7,188.00	7,168.54	29.72	25.48	-104.16	-65.11	-215.73	965.05	913.01	52.05	18.543		
7,300.00	7,169.99	7,243.61	7,217.90	29.81	25.64	-103.12	-64.85	-190.14	972.04	919.65	52.39	18.554		
7,350.00	7,205.90	7,300.32	7,266.02	29.90	25.81	-102.30	-64.55	-160.18	978.73	925.97	52.76	18.551		
7,400.00	7,239.35	7,358.12	7,312.49	29.97	25.99	-101.65	-64.20	-125.83	985.08	931.90	53.17	18.525		
7,450.00	7,270.19	7,417.02	7,356.83	30.04	26.22	-101.13	-63.80	-87.08	991.02	937.37	53.65	18.471		
7,500.00	7,298.26	7,477.00	7,398.56	30.10	26.49	-100.73	-63.36	-44.02	996.51	942.29	54.22	18.380		
7,550.00	7,323.42	7,538.02	7,437.16	30.17	26.82	-100.41	-62.88	3.21	1,001.51	946.62	54.90	18.244		
7,600.00	7,345.57	7,600.02	7,472.12	30.24	27.24	-100.16	-62.36	54.38	1,005.97	950.26	55.71	18.056		
7,650.00	7,364.58	7,662.92	7,502.93	30.33	27.78	-99.97	-61.81	109.20	1,009.84	953.13	56.71	17.808		
7,700.00	7,380.36	7,726.62	7,529.11	30.50	28.42	-99.83	-61.22	167.24	1,013.09	955.20	57.89	17.501		
7,750.00	7,392.85	7,791.00	7,550.23	30.84	29.19	-99.72	-60.60	228.03	1,015.69	956.43	59.26	17.139		
7,800.00	7,401.97	7,855.92	7,565.91	31.39	30.08	-99.65	-59.96	291.00	1,017.60	956.76	60.84	16.726		
7,850.00	7,407.68	7,921.21	7,575.86	32.09	31.09	-99.61	-59.30	355.51	1,018.80	956.19	62.61	16.272		
7,900.00	7,409.96	7,986.72	7,579.91	32.90	32.19	-99.60	-58.64	420.86	1,019.29	954.75	64.54	15.792		
7,908.04	7,410.00	7,997.26	7,580.00	33.03	32.37	-99.60	-58.53	431.40	1,019.30	954.44	64.87	15.714		
8,000.00	7,410.00	8,089.45	7,580.00	34.69	34.09	-99.60	-57.59	523.59	1,019.30	951.07	68.24	14.937		
8,100.00	7,410.00	8,189.45	7,580.00	36.70	36.14	-99.60	-56.58	623.58	1,019.30	947.06	72.24	14.109		
8,200.00	7,410.00	8,289.45	7,580.00	38.87	38.34	-99.60	-55.56	723.58	1,019.30	942.74	76.56	13.313		
8,300.00	7,410.00	8,389.45	7,580.00	41.18	40.67	-99.60	-54.55	823.57	1,019.30	938.16	81.15	12.561		
8,400.00	7,410.00	8,489.45	7,580.00	43.61	43.12	-99.60	-53.53	923.57	1,019.30	933.35	85.95	11.859		
8,500.00	7,410.00	8,589.45	7,580.00	46.13	45.66	-99.60	-52.51	1,023.56	1,019.30	928.36	90.95	11.208		
8,600.00	7,410.00	8,689.45	7,580.00	48.73	48.28	-99.60	-51.50	1,123.56	1,019.30	923.21	96.10	10.607		
8,700.00	7,410.00	8,789.45	7,580.00	51.39	50.97	-99.60	-50.48	1,223.55	1,019.30	917.93	101.38	10.054		
8,800.00	7,410.00	8,889.45	7,580.00	54.12	53.72	-99.60	-49.46	1,323.55	1,019.30	912.53	106.78	9.546		
8,900.00	7,410.00	8,989.45	7,580.00	56.90	56.51	-99.60	-48.45	1,423.54	1,019.30	907.04	112.27	9.079		

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

Cathedral Energy Services

Anticollision Report

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Project:	DJ BASIN	TVD Reference:	23' KB @ 5109.00usft
Reference Site:	S25-T1N-R66W (SAM)	MD Reference:	23' KB @ 5109.00usft
Site Error:	0.00usft	North Reference:	Grid
Reference Well:	SAM 3M-25H-M166	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #1	Offset TVD Reference:	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		
9,000.00	7,410.00	9,089.45	7,580.00	59.71	59.35	-99.60	-47.43	1,523.54	1,019.30	901.46	117.85	8.649		
9,100.00	7,410.00	9,189.45	7,580.00	62.57	62.22	-99.60	-46.41	1,623.53	1,019.30	895.81	123.50	8.254		
9,200.00	7,410.00	9,289.45	7,580.00	65.46	65.12	-99.60	-45.40	1,723.53	1,019.30	890.10	129.21	7.889		
9,300.00	7,410.00	9,389.45	7,580.00	68.37	68.05	-99.60	-44.38	1,823.52	1,019.30	884.33	134.98	7.552		
9,400.00	7,410.00	9,489.45	7,580.00	71.31	71.01	-99.60	-43.37	1,923.52	1,019.30	878.51	140.79	7.240		
9,500.00	7,410.00	9,589.45	7,580.00	74.28	73.98	-99.60	-42.35	2,023.51	1,019.30	872.66	146.65	6.951		
9,600.00	7,410.00	9,689.45	7,580.00	77.26	76.97	-99.60	-41.33	2,123.51	1,019.30	866.76	152.54	6.682		
9,700.00	7,410.00	9,789.45	7,580.00	80.26	79.98	-99.60	-40.32	2,223.50	1,019.30	860.83	158.47	6.432		
9,800.00	7,410.00	9,889.45	7,580.00	83.27	83.01	-99.60	-39.30	2,323.50	1,019.30	854.87	164.43	6.199		
9,900.00	7,410.00	9,989.45	7,580.00	86.30	86.05	-99.60	-38.28	2,423.49	1,019.30	848.89	170.41	5.981		
10,000.00	7,410.00	10,089.45	7,580.00	89.34	89.10	-99.60	-37.27	2,523.49	1,019.30	842.88	176.42	5.778		
10,100.00	7,410.00	10,189.45	7,580.00	92.39	92.16	-99.60	-36.25	2,623.48	1,019.30	836.85	182.45	5.587		
10,200.00	7,410.00	10,289.45	7,580.00	95.46	95.23	-99.60	-35.23	2,723.48	1,019.30	830.80	188.50	5.407		
10,300.00	7,410.00	10,389.45	7,580.00	98.53	98.31	-99.60	-34.22	2,823.47	1,019.30	824.73	194.57	5.239		
10,400.00	7,410.00	10,489.45	7,580.00	101.61	101.39	-99.60	-33.20	2,923.47	1,019.30	818.65	200.65	5.080		
10,500.00	7,410.00	10,589.45	7,580.00	104.69	104.49	-99.60	-32.19	3,023.46	1,019.30	812.55	206.75	4.930		
10,600.00	7,410.00	10,689.45	7,580.00	107.79	107.59	-99.60	-31.17	3,123.46	1,019.30	806.44	212.86	4.789		
10,700.00	7,410.00	10,789.45	7,580.00	110.89	110.69	-99.60	-30.15	3,223.45	1,019.30	800.32	218.99	4.655		
10,800.00	7,410.00	10,889.45	7,580.00	113.99	113.81	-99.60	-29.14	3,323.44	1,019.30	794.18	225.12	4.528		
10,900.00	7,410.00	10,989.45	7,580.00	117.11	116.92	-99.60	-28.12	3,423.44	1,019.30	788.04	231.27	4.408		
11,000.00	7,410.00	11,089.45	7,580.00	120.22	120.04	-99.60	-27.10	3,523.43	1,019.30	781.88	237.42	4.293		
11,100.00	7,410.00	11,189.45	7,580.00	123.34	123.17	-99.60	-26.09	3,623.43	1,019.30	775.72	243.58	4.185		
11,200.00	7,410.00	11,289.45	7,580.00	126.47	126.30	-99.60	-25.07	3,723.42	1,019.30	769.55	249.75	4.081		
11,300.00	7,410.00	11,389.45	7,580.00	129.60	129.43	-99.60	-24.05	3,823.42	1,019.30	763.37	255.93	3.983		
11,400.00	7,410.00	11,489.45	7,580.00	132.73	132.57	-99.60	-23.04	3,923.41	1,019.30	757.18	262.12	3.889		
11,500.00	7,410.00	11,589.45	7,580.00	135.87	135.71	-99.60	-22.02	4,023.41	1,019.30	750.99	268.31	3.799		
11,600.00	7,410.00	11,689.45	7,580.00	139.01	138.86	-99.60	-21.01	4,123.40	1,019.30	744.79	274.51	3.713		
11,700.00	7,410.00	11,789.45	7,580.00	142.15	142.00	-99.60	-19.99	4,223.40	1,019.30	738.59	280.72	3.631		
11,800.00	7,410.00	11,889.45	7,580.00	145.30	145.15	-99.60	-18.97	4,323.39	1,019.30	732.38	286.93	3.552		
11,900.00	7,410.00	11,989.45	7,580.00	148.44	148.30	-99.60	-17.96	4,423.39	1,019.30	726.16	293.14	3.477		
11,975.04	7,410.00	12,064.49	7,580.00	150.81	150.67	-99.60	-17.19	4,498.42	1,019.30	721.50	297.81	3.423 SF		

Cathedral Energy Services

Anticollision Report

Company:	Crestone Peak Resources	Local Co-ordinate Reference:	Well SAM 3M-25H-M166
Project:	DJ BASIN	TVD Reference:	23' KB @ 5109.00usft
Reference Site:	S25-T1N-R66W (SAM)	MD Reference:	23' KB @ 5109.00usft
Site Error:	0.00usft	North Reference:	Grid
Reference Well:	SAM 3M-25H-M166	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #1	Offset TVD Reference:	Offset Datum

Offset Design S25-T1N-R66W (SAM) - SAM 3I-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	0.31	40.07	0.21	40.07					
100.00	100.00	100.00	100.00	0.14	0.14	0.31	40.07	0.21	40.07	39.80	0.28	145.184		
200.00	200.00	200.00	200.00	0.50	0.50	0.31	40.07	0.21	40.07	39.08	0.99	40.358		
300.00	300.00	300.00	300.00	0.85	0.85	0.31	40.07	0.21	40.07	38.36	1.71	23.436		
400.00	400.00	400.00	400.00	1.21	1.21	0.31	40.07	0.21	40.07	37.65	2.43	16.513 CC, ES		
500.00	499.98	499.98	499.98	1.56	1.57	164.88	40.07	0.21	41.76	38.63	3.13	13.348		
600.00	599.84	599.84	599.84	1.90	1.93	166.53	40.07	0.21	46.83	43.00	3.83	12.240		
700.00	699.45	699.45	699.45	2.24	2.29	168.60	40.07	0.21	55.34	50.81	4.53	12.213		
800.00	798.70	798.70	798.70	2.61	2.64	170.61	40.07	0.21	67.33	62.09	5.24	12.845		
867.08	865.01	866.26	866.25	2.86	2.88	171.41	39.62	-0.40	76.80	71.09	5.72	13.431		
900.00	897.50	899.49	899.47	2.99	2.99	171.50	39.04	-1.17	81.43	75.48	5.95	13.679		
1,000.00	996.17	1,000.86	1,000.69	3.39	3.33	170.65	35.88	-5.44	93.88	87.22	6.66	14.097		
1,100.00	1,094.84	1,101.54	1,101.01	3.80	3.68	168.72	30.83	-12.22	104.22	96.85	7.37	14.137		
1,200.00	1,193.52	1,200.97	1,200.05	4.21	4.03	166.96	25.54	-19.34	114.33	106.24	8.08	14.141		
1,300.00	1,292.19	1,300.40	1,299.09	4.62	4.38	165.49	20.25	-26.47	124.52	115.72	8.80	14.142		
1,400.00	1,390.87	1,399.83	1,398.12	5.04	4.74	164.24	14.95	-33.59	134.79	125.25	9.53	14.141		
1,500.00	1,489.54	1,499.27	1,497.16	5.46	5.11	163.17	9.66	-40.71	145.10	134.84	10.26	14.137		
1,600.00	1,588.21	1,598.70	1,596.19	5.89	5.47	162.24	4.37	-47.83	155.47	144.46	11.00	14.132		
1,700.00	1,686.89	1,698.13	1,695.23	6.31	5.84	161.42	-0.93	-54.96	165.86	154.12	11.74	14.127		
1,800.00	1,785.56	1,797.56	1,794.26	6.74	6.21	160.70	-6.22	-62.08	176.29	163.80	12.48	14.121		
1,900.00	1,884.23	1,896.99	1,893.30	7.17	6.58	160.07	-11.51	-69.20	186.74	173.51	13.23	14.115		
2,000.00	1,982.91	1,996.43	1,992.33	7.59	6.95	159.50	-16.81	-76.32	197.21	183.23	13.98	14.108		
2,100.00	2,081.58	2,095.86	2,091.37	8.02	7.32	158.98	-22.10	-83.45	207.70	192.97	14.73	14.102		
2,200.00	2,180.26	2,195.29	2,190.40	8.45	7.70	158.52	-27.39	-90.57	218.20	202.72	15.48	14.096		
2,300.00	2,278.93	2,294.72	2,289.44	8.88	8.07	158.10	-32.68	-97.69	228.72	212.49	16.23	14.090		
2,400.00	2,377.60	2,394.15	2,388.47	9.31	8.45	157.72	-37.98	-104.81	239.25	222.26	16.99	14.084		
2,500.00	2,476.28	2,493.59	2,487.51	9.74	8.82	157.37	-43.27	-111.94	249.78	232.04	17.74	14.078		
2,600.00	2,574.95	2,593.02	2,586.55	10.17	9.20	157.04	-48.56	-119.06	260.33	241.83	18.50	14.072		
2,700.00	2,673.63	2,692.45	2,685.58	10.60	9.57	156.75	-53.86	-126.18	270.88	251.62	19.26	14.067		
2,800.00	2,772.30	2,791.88	2,784.62	11.04	9.95	156.47	-59.15	-133.30	281.44	261.43	20.01	14.062		
2,900.00	2,870.97	2,891.32	2,883.65	11.47	10.33	156.21	-64.44	-140.43	292.01	271.23	20.77	14.057		
3,000.00	2,969.65	2,990.75	2,982.69	11.90	10.71	155.98	-69.74	-147.55	302.58	281.05	21.53	14.052		
3,100.00	3,068.32	3,090.18	3,081.72	12.33	11.08	155.76	-75.03	-154.67	313.15	290.86	22.29	14.047		
3,200.00	3,166.99	3,189.61	3,180.76	12.76	11.46	155.55	-80.32	-161.79	323.73	300.68	23.05	14.043		
3,300.00	3,265.67	3,289.04	3,279.79	13.20	11.84	155.35	-85.61	-168.91	334.32	310.50	23.81	14.039		
3,400.00	3,364.34	3,388.48	3,378.83	13.63	12.22	155.17	-90.91	-176.04	344.91	320.33	24.58	14.035		
3,500.00	3,463.02	3,487.91	3,477.86	14.06	12.60	155.00	-96.20	-183.16	355.50	330.16	25.34	14.031		
3,600.00	3,561.69	3,587.34	3,576.90	14.50	12.98	154.84	-101.49	-190.28	366.09	339.99	26.10	14.027		
3,700.00	3,660.36	3,686.77	3,675.93	14.93	13.36	154.69	-106.79	-197.40	376.69	349.83	26.86	14.023		
3,800.00	3,759.04	3,786.20	3,774.97	15.36	13.74	154.54	-112.08	-204.53	387.29	359.66	27.62	14.020		
3,900.00	3,857.71	3,885.64	3,874.01	15.79	14.11	154.41	-117.37	-211.65	397.89	369.50	28.39	14.017		
4,000.00	3,956.39	3,985.07	3,973.04	16.23	14.49	154.28	-122.67	-218.77	408.49	379.34	29.15	14.013		
4,100.00	4,055.06	4,084.50	4,072.08	16.66	14.87	154.16	-127.96	-225.89	419.10	389.18	29.91	14.010		
4,200.00	4,153.73	4,183.93	4,171.11	17.09	15.25	154.04	-133.25	-233.02	429.70	399.03	30.68	14.007		
4,300.00	4,252.41	4,283.37	4,270.15	17.53	15.63	153.93	-138.54	-240.14	440.31	408.87	31.44	14.004		
4,400.00	4,351.08	4,382.80	4,369.18	17.96	16.01	153.82	-143.84	-247.26	450.92	418.72	32.21	14.002		
4,500.00	4,449.75	4,482.23	4,468.22	18.39	16.39	153.72	-149.13	-254.38	461.53	428.57	32.97	13.999		
4,600.00	4,548.43	4,581.66	4,567.25	18.83	16.77	153.62	-154.42	-261.51	472.15	438.41	33.73	13.996		
4,700.00	4,647.10	4,681.09	4,666.29	19.26	17.15	153.53	-159.72	-268.63	482.76	448.26	34.50	13.994		
4,800.00	4,745.78	4,779.03	4,763.84	19.70	17.53	153.45	-164.89	-275.59	493.41	458.16	35.25	13.997		
4,900.00	4,844.45	4,871.20	4,855.80	20.13	17.87	153.59	-168.54	-280.50	505.04	469.10	35.94	14.051		
5,000.00	4,943.12	4,962.89	4,947.43	20.56	18.20	154.02	-170.42	-283.03	518.11	481.51	36.60	14.155		

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

Cathedral Energy Services

Anticollision Report

Company:	Crestone Peak Resources	Local Co-ordinate Reference:	Well SAM 3M-25H-M166
Project:	DJ BASIN	TVD Reference:	23' KB @ 5109.00usft
Reference Site:	S25-T1N-R66W (SAM)	MD Reference:	23' KB @ 5109.00usft
Site Error:	0.00usft	North Reference:	Grid
Reference Well:	SAM 3M-25H-M166	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #1	Offset TVD Reference:	Offset Datum

Offset Design S25-T1N-R66W (SAM) - SAM 3I-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	5,041.80	5,057.26	5,041.80	21.00	18.51	154.70	-170.71	-283.42	532.54	495.29	37.25	14.297	
5,200.00	5,140.47	5,155.93	5,140.47	21.43	18.83	155.42	-170.71	-283.42	547.29	509.37	37.92	14.432	
5,300.00	5,239.14	5,254.60	5,239.14	21.86	19.15	156.11	-170.71	-283.42	562.13	523.53	38.60	14.564	
5,400.00	5,337.82	5,353.28	5,337.82	22.30	19.47	156.76	-170.71	-283.42	577.04	537.76	39.27	14.693	
5,500.00	5,436.49	5,451.95	5,436.49	22.73	19.80	157.38	-170.71	-283.42	592.02	552.06	39.95	14.818	
5,600.00	5,535.17	5,550.63	5,535.17	23.17	20.12	157.97	-170.71	-283.42	607.06	566.43	40.63	14.940	
5,700.00	5,633.84	5,649.30	5,633.84	23.60	20.44	158.53	-170.71	-283.42	622.16	580.85	41.32	15.058	
5,800.00	5,732.51	5,747.97	5,732.51	24.03	20.77	159.06	-170.71	-283.42	637.32	595.32	42.00	15.174	
5,900.00	5,831.19	5,846.65	5,831.19	24.47	21.09	159.57	-170.71	-283.42	652.53	609.85	42.69	15.286	
6,000.00	5,929.86	5,945.32	5,929.86	24.90	21.42	160.06	-170.71	-283.42	667.79	624.42	43.38	15.395	
6,100.00	6,028.54	6,043.99	6,028.54	25.34	21.75	160.52	-170.71	-283.42	683.10	639.03	44.07	15.502	
6,200.00	6,127.21	6,142.67	6,127.21	25.77	22.08	160.96	-170.71	-283.42	698.44	653.69	44.76	15.605	
6,300.00	6,225.88	6,241.34	6,225.88	26.20	22.41	161.39	-170.71	-283.42	713.83	668.38	45.45	15.706	
6,400.00	6,324.56	6,340.02	6,324.56	26.64	22.74	161.79	-170.71	-283.42	729.25	683.11	46.14	15.804	
6,500.00	6,423.23	6,438.69	6,423.23	27.07	23.07	162.18	-170.71	-283.42	744.70	697.87	46.84	15.900	
6,600.00	6,521.90	6,537.36	6,521.90	27.51	23.40	162.56	-170.71	-283.42	760.19	712.66	47.53	15.993	
6,700.00	6,620.58	6,636.04	6,620.58	27.94	23.73	162.92	-170.71	-283.42	775.71	727.48	48.23	16.084	
6,749.72	6,669.64	6,685.10	6,669.64	28.16	23.90	163.09	-170.71	-283.42	783.44	734.86	48.58	16.128	
6,800.00	6,719.29	6,734.75	6,719.28	28.37	24.06	-171.22	-170.70	-282.96	791.26	742.34	48.92	16.173	
6,850.00	6,768.59	6,784.10	6,768.50	28.57	24.22	-148.45	-170.67	-279.51	799.03	749.78	49.25	16.223	
6,900.00	6,817.56	6,833.42	6,817.34	28.75	24.37	-132.55	-170.60	-272.68	806.75	757.19	49.56	16.277	
6,950.00	6,865.97	6,882.73	6,865.58	28.92	24.52	-122.10	-170.49	-262.51	814.38	764.52	49.86	16.333	
7,000.00	6,913.59	6,932.05	6,913.01	29.08	24.66	-115.02	-170.36	-249.05	821.89	771.74	50.15	16.390	
7,050.00	6,960.18	6,981.37	6,959.41	29.23	24.79	-109.97	-170.19	-232.35	829.23	778.81	50.42	16.446	
7,100.00	7,005.51	7,030.70	7,004.56	29.37	24.93	-106.19	-169.99	-212.49	836.38	785.68	50.69	16.499	
7,150.00	7,049.37	7,080.07	7,048.27	29.50	25.06	-103.25	-169.75	-189.55	843.29	792.32	50.97	16.545	
7,200.00	7,091.54	7,129.47	7,090.32	29.61	25.20	-100.89	-169.49	-163.64	849.94	798.68	51.26	16.581	
7,250.00	7,131.81	7,178.92	7,130.52	29.72	25.35	-98.95	-169.20	-134.87	856.28	804.71	51.57	16.604	
7,300.00	7,169.99	7,228.41	7,168.67	29.81	25.51	-97.34	-168.88	-103.36	862.30	810.38	51.92	16.607	
7,350.00	7,205.90	7,277.96	7,204.59	29.90	25.70	-95.97	-168.53	-69.26	867.96	815.63	52.33	16.587	
7,400.00	7,239.35	7,327.56	7,238.11	29.97	25.93	-94.81	-168.16	-32.71	873.23	820.43	52.80	16.537	
7,450.00	7,270.19	7,377.22	7,269.05	30.04	26.21	-93.81	-167.76	6.12	878.09	824.72	53.37	16.453	
7,500.00	7,298.26	7,426.93	7,297.26	30.10	26.55	-92.96	-167.35	47.04	882.51	828.47	54.04	16.331	
7,550.00	7,323.42	7,476.70	7,322.58	30.17	26.95	-92.24	-166.91	89.87	886.48	831.65	54.83	16.168	
7,600.00	7,345.57	7,526.51	7,344.89	30.24	27.43	-91.64	-166.46	134.40	889.97	834.22	55.75	15.963	
7,650.00	7,364.58	7,576.38	7,364.07	30.33	27.97	-91.14	-165.99	180.41	892.97	836.15	56.82	15.717	
7,700.00	7,380.36	7,626.29	7,380.01	30.50	28.59	-90.73	-165.51	227.69	895.45	837.43	58.03	15.432	
7,750.00	7,392.85	7,676.23	7,392.63	30.84	29.28	-90.42	-165.02	276.00	897.42	838.04	59.38	15.114	
7,800.00	7,401.97	7,726.19	7,401.86	31.39	30.03	-90.19	-164.52	325.09	898.86	837.99	60.86	14.768	
7,850.00	7,407.68	7,776.18	7,407.65	32.09	30.85	-90.06	-164.02	374.73	899.76	837.29	62.47	14.402	
7,900.00	7,409.96	7,826.18	7,409.95	32.90	31.72	-90.00	-163.51	424.66	900.12	835.93	64.18	14.024	
7,908.04	7,410.00	7,834.21	7,410.00	33.03	31.86	-90.00	-163.43	432.70	900.12	835.66	64.47	13.963	
8,000.00	7,410.00	7,926.18	7,410.00	34.69	33.63	-90.00	-162.49	524.66	900.12	832.20	67.93	13.251	
8,100.00	7,410.00	8,026.18	7,410.00	36.70	35.70	-90.00	-161.48	624.65	900.12	828.09	72.03	12.496	
8,200.00	7,410.00	8,126.18	7,410.00	38.87	37.94	-90.00	-160.46	724.65	900.12	823.67	76.46	11.773	
8,300.00	7,410.00	8,226.18	7,410.00	41.18	40.30	-90.00	-159.45	824.64	900.12	818.98	81.14	11.093	
8,400.00	7,410.00	8,326.18	7,410.00	43.61	42.78	-90.00	-158.43	924.64	900.12	814.07	86.06	10.460	
8,500.00	7,410.00	8,426.18	7,410.00	46.13	45.35	-90.00	-157.41	1,024.63	900.12	808.97	91.15	9.875	
8,600.00	7,410.00	8,526.18	7,410.00	48.73	47.99	-90.00	-156.40	1,124.63	900.12	803.71	96.41	9.336	
8,700.00	7,410.00	8,626.18	7,410.00	51.39	50.70	-90.00	-155.38	1,224.62	900.12	798.32	101.80	8.842	
8,800.00	7,410.00	8,726.18	7,410.00	54.12	53.46	-90.00	-154.36	1,324.62	900.12	792.82	107.30	8.389	
8,900.00	7,410.00	8,826.18	7,410.00	56.90	56.28	-90.00	-153.35	1,424.61	900.12	787.22	112.90	7.973	

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

Cathedral Energy Services

Anticollision Report

Company:	Crestone Peak Resources	Local Co-ordinate Reference:	Well SAM 3M-25H-M166
Project:	DJ BASIN	TVD Reference:	23' KB @ 5109.00usft
Reference Site:	S25-T1N-R66W (SAM)	MD Reference:	23' KB @ 5109.00usft
Site Error:	0.00usft	North Reference:	Grid
Reference Well:	SAM 3M-25H-M166	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #1	Offset TVD Reference:	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				Total		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	Separation Factor		
9,000.00	7,410.00	8,926.18	7,410.00	59.71	59.13	-90.00	-152.33	1,524.61	900.12	781.54	118.58	7.591		
9,100.00	7,410.00	9,026.18	7,410.00	62.57	62.01	-90.00	-151.32	1,624.60	900.12	775.79	124.33	7.240		
9,200.00	7,410.00	9,126.18	7,410.00	65.46	64.93	-90.00	-150.30	1,724.60	900.12	769.98	130.14	6.916		
9,300.00	7,410.00	9,226.18	7,410.00	68.37	67.87	-90.00	-149.28	1,824.59	900.12	764.11	136.01	6.618		
9,400.00	7,410.00	9,326.18	7,410.00	71.31	70.84	-90.00	-148.27	1,924.58	900.12	758.20	141.92	6.342		
9,500.00	7,410.00	9,426.18	7,410.00	74.28	73.83	-90.00	-147.25	2,024.58	900.12	752.24	147.88	6.087		
9,600.00	7,410.00	9,526.18	7,410.00	77.26	76.83	-90.00	-146.23	2,124.57	900.12	746.25	153.87	5.850		
9,700.00	7,410.00	9,626.18	7,410.00	80.26	79.85	-90.00	-145.22	2,224.57	900.12	740.22	159.90	5.629		
9,800.00	7,410.00	9,726.18	7,410.00	83.27	82.88	-90.00	-144.20	2,324.56	900.12	734.17	165.95	5.424		
9,900.00	7,410.00	9,826.18	7,410.00	86.30	85.93	-90.00	-143.19	2,424.56	900.12	728.09	172.03	5.232		
10,000.00	7,410.00	9,926.18	7,410.00	89.34	88.99	-90.00	-142.17	2,524.55	900.12	721.98	178.14	5.053		
10,100.00	7,410.00	10,026.18	7,410.00	92.39	92.05	-90.00	-141.15	2,624.55	900.12	715.86	184.26	4.885		
10,200.00	7,410.00	10,126.18	7,410.00	95.46	95.13	-90.00	-140.14	2,724.54	900.12	709.71	190.41	4.727		
10,300.00	7,410.00	10,226.18	7,410.00	98.53	98.21	-90.00	-139.12	2,824.54	900.12	703.55	196.57	4.579		
10,400.00	7,410.00	10,326.18	7,410.00	101.61	101.31	-90.00	-138.10	2,924.53	900.12	697.38	202.74	4.440		
10,500.00	7,410.00	10,426.18	7,410.00	104.69	104.41	-90.00	-137.09	3,024.53	900.12	691.19	208.93	4.308		
10,600.00	7,410.00	10,526.18	7,410.00	107.79	107.51	-90.00	-136.07	3,124.52	900.12	684.98	215.14	4.184		
10,700.00	7,410.00	10,626.18	7,410.00	110.89	110.62	-90.00	-135.06	3,224.52	900.12	678.77	221.35	4.066		
10,800.00	7,410.00	10,726.18	7,410.00	113.99	113.74	-90.00	-134.04	3,324.51	900.12	672.54	227.58	3.955		
10,900.00	7,410.00	10,826.18	7,410.00	117.11	116.86	-90.00	-133.02	3,424.51	900.12	666.30	233.82	3.850		
11,000.00	7,410.00	10,926.18	7,410.00	120.22	119.99	-90.00	-132.01	3,524.50	900.12	660.06	240.06	3.750		
11,100.00	7,410.00	11,026.18	7,410.00	123.34	123.12	-90.00	-130.99	3,624.50	900.12	653.80	246.32	3.654		
11,200.00	7,410.00	11,126.18	7,410.00	126.47	126.25	-90.00	-129.97	3,724.49	900.12	647.54	252.58	3.564		
11,300.00	7,410.00	11,226.18	7,410.00	129.60	129.39	-90.00	-128.96	3,824.49	900.12	641.27	258.85	3.477		
11,400.00	7,410.00	11,326.18	7,410.00	132.73	132.53	-90.00	-127.94	3,924.48	900.12	634.99	265.13	3.395		
11,500.00	7,410.00	11,426.18	7,410.00	135.87	135.67	-90.00	-126.93	4,024.48	900.12	628.71	271.41	3.316		
11,600.00	7,410.00	11,526.18	7,410.00	139.01	138.82	-90.00	-125.91	4,124.47	900.12	622.42	277.70	3.241		
11,700.00	7,410.00	11,626.18	7,410.00	142.15	141.97	-90.00	-124.89	4,224.47	900.12	616.13	283.99	3.170		
11,800.00	7,410.00	11,726.18	7,410.00	145.30	145.12	-90.00	-123.88	4,324.46	900.12	609.83	290.29	3.101		
11,900.00	7,410.00	11,826.18	7,410.00	148.44	147.93	-90.00	-122.86	4,424.46	900.12	603.87	296.25	3.038		
11,975.04	7,410.00	11,901.21	7,410.00	150.81	149.29	-90.00	-122.10	4,499.49	900.12	600.14	299.98	3.001 SF		

Cathedral Energy Services

Anticollision Report

Company:	Crestone Peak Resources	Local Co-ordinate Reference:	Well SAM 3M-25H-M166
Project:	DJ BASIN	TVD Reference:	23' KB @ 5109.00usft
Reference Site:	S25-T1N-R66W (SAM)	MD Reference:	23' KB @ 5109.00usft
Site Error:	0.00usft	North Reference:	Grid
Reference Well:	SAM 3M-25H-M166	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #1	Offset TVD Reference:	Offset Datum

Offset Design S25-T1N-R66W (SAM) - SAM 3J-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	0.04	30.23	0.02	30.23					
100.00	100.00	100.00	100.00	0.14	0.14	0.04	30.23	0.02	30.23	29.96	0.28	109.526		
200.00	200.00	200.00	200.00	0.50	0.50	0.04	30.23	0.02	30.23	29.24	0.99	30.446		
300.00	300.00	300.00	300.00	0.85	0.85	0.04	30.23	0.02	30.23	28.52	1.71	17.680		
400.00	400.00	400.00	400.00	1.21	1.21	0.04	30.23	0.02	30.23	27.81	2.43	12.457 CC, ES		
500.00	499.98	499.98	499.98	1.56	1.57	164.83	30.23	0.02	31.91	28.78	3.13	10.201		
600.00	599.84	599.84	599.84	1.90	1.93	166.93	30.23	0.02	36.99	33.16	3.83	9.668		
700.00	699.45	699.45	699.45	2.24	2.29	169.38	30.23	0.02	45.52	40.99	4.53	10.046		
800.00	798.70	800.48	800.46	2.61	2.63	170.83	28.76	-0.95	55.99	50.75	5.24	10.690		
867.08	865.01	868.44	868.34	2.86	2.86	171.00	26.10	-2.71	63.18	57.47	5.72	11.053		
900.00	897.50	901.86	901.70	2.99	2.97	170.91	24.30	-3.90	66.57	60.62	5.95	11.184		
1,000.00	996.17	1,003.47	1,002.90	3.39	3.32	169.86	16.85	-8.81	74.80	68.12	6.67	11.207		
1,100.00	1,094.84	1,103.20	1,102.13	3.80	3.67	168.59	8.41	-14.39	81.85	74.47	7.38	11.093		
1,200.00	1,193.52	1,202.94	1,201.35	4.21	4.03	167.52	-0.03	-19.96	88.93	80.84	8.09	10.991		
1,300.00	1,292.19	1,302.68	1,300.57	4.62	4.39	166.61	-8.47	-25.53	96.04	87.23	8.81	10.900		
1,400.00	1,390.87	1,402.41	1,399.79	5.04	4.76	165.82	-16.91	-31.10	103.17	93.63	9.54	10.818		
1,500.00	1,489.54	1,502.15	1,499.01	5.46	5.13	165.13	-25.35	-36.68	110.32	100.05	10.27	10.745		
1,600.00	1,588.21	1,601.89	1,598.24	5.89	5.51	164.53	-33.79	-42.25	117.48	106.48	11.00	10.679		
1,700.00	1,686.89	1,701.62	1,697.46	6.31	5.88	164.00	-42.23	-47.82	124.65	112.91	11.74	10.619		
1,800.00	1,785.56	1,801.36	1,796.68	6.74	6.26	163.53	-50.67	-53.39	131.84	119.36	12.48	10.565		
1,900.00	1,884.23	1,901.09	1,895.90	7.17	6.64	163.10	-59.11	-58.96	139.03	125.81	13.22	10.516		
2,000.00	1,982.91	2,000.83	1,995.12	7.59	7.02	162.72	-67.55	-64.54	146.22	132.26	13.96	10.471		
2,100.00	2,081.58	2,100.57	2,094.35	8.02	7.40	162.37	-75.99	-70.11	153.43	138.72	14.71	10.430		
2,200.00	2,180.26	2,200.30	2,193.57	8.45	7.78	162.05	-84.43	-75.68	160.64	145.18	15.46	10.392		
2,300.00	2,278.93	2,300.04	2,292.79	8.88	8.17	161.77	-92.87	-81.25	167.85	151.64	16.21	10.358		
2,400.00	2,377.60	2,399.77	2,392.01	9.31	8.55	161.50	-101.31	-86.83	175.07	158.11	16.95	10.325		
2,500.00	2,476.28	2,499.51	2,491.23	9.74	8.94	161.26	-109.75	-92.40	182.29	164.58	17.71	10.296		
2,600.00	2,574.95	2,599.25	2,590.46	10.17	9.32	161.03	-118.19	-97.97	189.51	171.05	18.46	10.268		
2,700.00	2,673.63	2,698.98	2,689.68	10.60	9.71	160.82	-126.63	-103.54	196.74	177.53	19.21	10.242		
2,800.00	2,772.30	2,798.72	2,788.90	11.04	10.09	160.63	-135.07	-109.11	203.96	184.00	19.96	10.218		
2,900.00	2,870.97	2,898.45	2,888.12	11.47	10.48	160.45	-143.51	-114.69	211.19	190.48	20.71	10.196		
3,000.00	2,969.65	2,998.19	2,987.34	11.90	10.86	160.28	-151.95	-120.26	218.43	196.96	21.47	10.175		
3,100.00	3,068.32	3,097.93	3,086.57	12.33	11.25	160.12	-160.39	-125.83	225.66	203.44	22.22	10.155		
3,200.00	3,166.99	3,197.66	3,185.79	12.76	11.64	159.97	-168.83	-131.40	232.90	209.92	22.98	10.136		
3,300.00	3,265.67	3,297.40	3,285.01	13.20	12.02	159.83	-177.27	-136.98	240.13	216.40	23.73	10.119		
3,400.00	3,364.34	3,397.13	3,384.23	13.63	12.41	159.70	-185.70	-142.55	247.37	222.89	24.49	10.102		
3,500.00	3,463.02	3,496.87	3,483.45	14.06	12.80	159.58	-194.14	-148.12	254.61	229.37	25.24	10.087		
3,600.00	3,561.69	3,596.61	3,582.68	14.50	13.19	159.46	-202.58	-153.69	261.85	235.86	26.00	10.072		
3,700.00	3,660.36	3,696.34	3,681.90	14.93	13.57	159.35	-211.02	-159.27	269.10	242.34	26.75	10.058		
3,800.00	3,759.04	3,796.08	3,781.12	15.36	13.96	159.24	-219.46	-164.84	276.34	248.83	27.51	10.045		
3,900.00	3,857.71	3,895.82	3,880.34	15.79	14.35	159.14	-227.90	-170.41	283.58	255.32	28.27	10.032		
4,000.00	3,956.39	3,995.55	3,979.56	16.23	14.74	159.05	-236.34	-175.98	290.83	261.80	29.03	10.020		
4,100.00	4,055.06	4,095.29	4,078.79	16.66	15.12	158.96	-244.78	-181.55	298.07	268.29	29.78	10.008		
4,200.00	4,153.73	4,195.02	4,178.01	17.09	15.51	158.87	-253.22	-187.13	305.32	274.78	30.54	9.997		
4,300.00	4,252.41	4,294.76	4,277.23	17.53	15.90	158.79	-261.66	-192.70	312.57	281.27	31.30	9.987		
4,400.00	4,351.08	4,394.50	4,376.45	17.96	16.29	158.71	-270.10	-198.27	319.81	287.76	32.06	9.977		
4,500.00	4,449.75	4,494.23	4,475.67	18.39	16.68	158.64	-278.54	-203.84	327.06	294.25	32.81	9.967		
4,600.00	4,548.43	4,593.97	4,574.90	18.83	17.07	158.57	-286.98	-209.42	334.31	300.74	33.57	9.958		
4,700.00	4,647.10	4,693.70	4,674.12	19.26	17.45	158.50	-295.42	-214.99	341.56	307.23	34.33	9.949		
4,800.00	4,745.78	4,793.44	4,773.34	19.70	17.84	158.44	-303.86	-220.56	348.81	313.72	35.09	9.941		
4,900.00	4,844.45	4,893.18	4,872.56	20.13	18.23	158.37	-312.30	-226.13	356.06	320.21	35.85	9.933		
5,000.00	4,943.12	4,992.91	4,971.78	20.56	18.62	158.31	-320.74	-231.71	363.31	326.71	36.61	9.925		

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

Cathedral Energy Services

Anticollision Report

Company:	Crestone Peak Resources	Local Co-ordinate Reference:	Well SAM 3M-25H-M166
Project:	DJ BASIN	TVD Reference:	23' KB @ 5109.00usft
Reference Site:	S25-T1N-R66W (SAM)	MD Reference:	23' KB @ 5109.00usft
Site Error:	0.00usft	North Reference:	Grid
Reference Well:	SAM 3M-25H-M166	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #1	Offset TVD Reference:	Offset Datum

Offset Design S25-T1N-R66W (SAM) - SAM 3J-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	5,041.80	5,092.65	5,071.01	21.00	19.01	158.25	-329.18	-237.28	370.56	333.20	37.36	9.918	
5,200.00	5,140.47	5,192.38	5,170.23	21.43	19.40	158.20	-337.62	-242.85	377.81	339.69	38.12	9.910	
5,300.00	5,239.14	5,292.12	5,269.45	21.86	19.79	158.15	-346.06	-248.42	385.06	346.18	38.88	9.904	
5,400.00	5,337.82	5,391.86	5,368.67	22.30	20.18	158.09	-354.50	-253.99	392.32	352.68	39.64	9.897	
5,500.00	5,436.49	5,491.59	5,467.89	22.73	20.57	158.04	-362.94	-259.57	399.57	359.17	40.40	9.890	
5,600.00	5,535.17	5,591.33	5,567.12	23.17	20.95	158.00	-371.38	-265.14	406.82	365.66	41.16	9.884	
5,700.00	5,633.84	5,691.07	5,666.34	23.60	21.34	157.95	-379.82	-270.71	414.07	372.15	41.92	9.878	
5,800.00	5,732.51	5,785.04	5,759.87	24.03	21.71	157.95	-387.40	-275.72	421.71	379.08	42.63	9.891	
5,900.00	5,831.19	5,874.25	5,848.87	24.47	22.04	158.16	-392.49	-279.07	431.53	388.25	43.28	9.971	
6,000.00	5,929.86	5,962.88	5,937.44	24.90	22.36	158.58	-395.25	-280.89	443.76	399.89	43.88	10.114	
6,100.00	6,028.54	6,053.99	6,028.54	25.34	22.66	159.21	-395.82	-281.27	458.33	413.87	44.46	10.310	
6,200.00	6,127.21	6,152.66	6,127.21	25.77	22.96	159.91	-395.82	-281.27	473.56	428.45	45.11	10.497	
6,300.00	6,225.88	6,251.33	6,225.88	26.20	23.27	160.56	-395.82	-281.27	488.86	443.09	45.77	10.680	
6,400.00	6,324.56	6,350.01	6,324.56	26.64	23.58	161.17	-395.82	-281.27	504.22	457.78	46.44	10.858	
6,500.00	6,423.23	6,448.68	6,423.23	27.07	23.88	161.75	-395.82	-281.27	519.63	472.52	47.11	11.031	
6,600.00	6,521.90	6,547.35	6,521.90	27.51	24.19	162.30	-395.82	-281.27	535.09	487.31	47.78	11.200	
6,700.00	6,620.58	6,646.03	6,620.58	27.94	24.51	162.81	-395.82	-281.27	550.59	502.14	48.45	11.364	
6,749.72	6,669.64	6,695.08	6,669.60	28.16	24.66	163.20	-395.80	-279.81	558.32	509.54	48.77	11.447	
6,800.00	6,719.29	6,744.22	6,718.49	28.37	24.81	-170.62	-395.75	-274.98	566.17	517.10	49.07	11.537	
6,850.00	6,768.59	6,792.74	6,766.33	28.57	24.95	-147.38	-395.67	-266.95	574.02	524.67	49.35	11.631	
6,900.00	6,817.56	6,840.94	6,813.21	28.75	25.08	-131.01	-395.56	-255.77	581.86	532.25	49.61	11.729	
6,950.00	6,865.97	6,888.84	6,858.94	28.92	25.21	-120.12	-395.41	-241.57	589.65	539.80	49.85	11.828	
7,000.00	6,913.59	6,936.46	6,903.37	29.08	25.32	-112.62	-395.24	-224.46	597.34	547.26	50.08	11.928	
7,050.00	6,960.18	6,983.82	6,946.33	29.23	25.44	-107.18	-395.04	-204.54	604.89	554.59	50.30	12.026	
7,100.00	7,005.51	7,030.95	6,987.68	29.37	25.54	-103.03	-394.81	-181.95	612.26	561.75	50.51	12.120	
7,150.00	7,049.37	7,077.86	7,027.28	29.50	25.64	-99.75	-394.55	-156.81	619.41	568.67	50.74	12.208	
7,200.00	7,091.54	7,124.58	7,064.99	29.61	25.74	-97.07	-394.27	-129.25	626.30	575.32	50.97	12.286	
7,250.00	7,131.81	7,171.12	7,100.70	29.72	25.84	-94.84	-393.97	-99.41	632.89	581.65	51.24	12.352	
7,300.00	7,169.99	7,217.51	7,134.28	29.81	25.94	-92.95	-393.64	-67.43	639.14	587.60	51.55	12.400	
7,350.00	7,205.90	7,263.75	7,165.63	29.90	26.06	-91.34	-393.30	-33.45	645.03	593.13	51.91	12.427	
7,400.00	7,239.35	7,309.87	7,194.65	29.97	26.21	-89.95	-392.94	2.39	650.53	598.19	52.34	12.429	
7,450.00	7,270.19	7,355.88	7,221.23	30.04	26.42	-88.75	-392.55	39.92	655.60	602.74	52.86	12.402	
7,500.00	7,298.26	7,400.00	7,244.42	30.10	26.69	-87.73	-392.17	77.46	660.22	606.76	53.46	12.350	
7,550.00	7,323.42	7,447.61	7,266.80	30.17	27.08	-86.85	-391.75	119.47	664.36	610.13	54.23	12.251	
7,600.00	7,345.57	7,493.37	7,285.62	30.24	27.53	-86.10	-391.32	161.17	668.00	612.90	55.10	12.123	
7,650.00	7,364.58	7,539.07	7,301.73	30.33	28.05	-85.49	-390.89	203.92	671.14	615.03	56.11	11.962	
7,700.00	7,380.36	7,584.72	7,315.07	30.50	28.63	-84.99	-390.44	247.57	673.74	616.49	57.25	11.769	
7,750.00	7,392.85	7,630.33	7,325.59	30.84	29.27	-84.60	-389.99	291.94	675.79	617.27	58.52	11.548	
7,800.00	7,401.97	7,675.91	7,333.26	31.39	29.97	-84.32	-389.54	336.86	677.30	617.38	59.92	11.304	
7,850.00	7,407.68	7,721.47	7,338.06	32.09	30.72	-84.15	-389.08	382.16	678.24	616.81	61.43	11.040	
7,900.00	7,409.96	7,767.02	7,339.96	32.90	31.51	-84.08	-388.61	427.66	678.61	615.57	63.04	10.764	
7,908.04	7,410.00	7,774.35	7,340.00	33.03	31.64	-84.08	-388.54	434.98	678.62	615.31	63.31	10.719	
8,000.00	7,410.00	7,866.31	7,340.00	34.69	33.41	-84.08	-387.60	526.94	678.62	611.86	66.77	10.164	
8,100.00	7,410.00	7,966.31	7,340.00	36.70	35.49	-84.08	-386.59	626.94	678.62	607.76	70.86	9.577	
8,200.00	7,410.00	8,066.31	7,340.00	38.87	37.72	-84.08	-385.57	726.93	678.62	603.35	75.27	9.015	
8,300.00	7,410.00	8,166.31	7,340.00	41.18	40.09	-84.08	-384.56	826.93	678.62	598.67	79.95	8.488	
8,400.00	7,410.00	8,266.31	7,340.00	43.61	42.57	-84.08	-383.54	926.92	678.62	593.77	84.86	7.997	
8,500.00	7,410.00	8,366.31	7,340.00	46.13	45.14	-84.08	-382.52	1,026.92	678.62	588.68	89.94	7.545	
8,600.00	7,410.00	8,466.31	7,340.00	48.73	47.79	-84.08	-381.51	1,126.91	678.62	583.43	95.19	7.129	
8,700.00	7,410.00	8,566.31	7,340.00	51.39	50.50	-84.08	-380.49	1,226.91	678.62	578.06	100.56	6.748	
8,800.00	7,410.00	8,666.31	7,340.00	54.12	53.27	-84.08	-379.47	1,326.90	678.62	572.57	106.05	6.399	
8,900.00	7,410.00	8,766.31	7,340.00	56.90	56.08	-84.08	-378.46	1,426.90	678.62	566.99	111.63	6.079	

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

Cathedral Energy Services

Anticollision Report

Company:	Crestone Peak Resources	Local Co-ordinate Reference:	Well SAM 3M-25H-M166
Project:	DJ BASIN	TVD Reference:	23' KB @ 5109.00usft
Reference Site:	S25-T1N-R66W (SAM)	MD Reference:	23' KB @ 5109.00usft
Site Error:	0.00usft	North Reference:	Grid
Reference Well:	SAM 3M-25H-M166	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #1	Offset TVD Reference:	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
9,000.00	7,410.00	8,866.31	7,340.00	59.71	58.94	-84.08	-377.44	1,526.89	678.62	561.32		117.30	5.785
9,100.00	7,410.00	8,966.31	7,340.00	62.57	61.83	-84.08	-376.43	1,626.89	678.62	555.59		123.03	5.516
9,200.00	7,410.00	9,066.31	7,340.00	65.46	64.74	-84.08	-375.41	1,726.88	678.62	549.79		128.83	5.268
9,300.00	7,410.00	9,166.31	7,340.00	68.37	67.69	-84.08	-374.39	1,826.88	678.62	543.94		134.68	5.039
9,400.00	7,410.00	9,266.31	7,340.00	71.31	70.66	-84.08	-373.38	1,926.87	678.62	538.05		140.57	4.828
9,500.00	7,410.00	9,366.31	7,340.00	74.28	73.64	-84.08	-372.36	2,026.87	678.62	532.11		146.51	4.632
9,600.00	7,410.00	9,466.31	7,340.00	77.26	76.65	-84.08	-371.34	2,126.86	678.62	526.14		152.48	4.451
9,700.00	7,410.00	9,566.31	7,340.00	80.26	79.67	-84.08	-370.33	2,226.86	678.62	520.14		158.48	4.282
9,800.00	7,410.00	9,666.31	7,340.00	83.27	82.70	-84.08	-369.31	2,326.85	678.62	514.11		164.51	4.125
9,900.00	7,410.00	9,766.31	7,340.00	86.30	85.75	-84.08	-368.29	2,426.85	678.62	508.05		170.57	3.979
10,000.00	7,410.00	9,866.31	7,340.00	89.34	88.81	-84.08	-367.28	2,526.84	678.62	501.97		176.65	3.842
10,100.00	7,410.00	9,966.31	7,340.00	92.39	91.88	-84.08	-366.26	2,626.84	678.62	495.87		182.75	3.713
10,200.00	7,410.00	10,066.31	7,340.00	95.46	94.96	-84.08	-365.25	2,726.83	678.62	489.75		188.87	3.593
10,300.00	7,410.00	10,166.31	7,340.00	98.53	98.04	-84.08	-364.23	2,826.83	678.62	483.61		195.01	3.480
10,400.00	7,410.00	10,266.31	7,340.00	101.61	101.13	-84.08	-363.21	2,926.82	678.62	477.46		201.16	3.374
10,500.00	7,410.00	10,366.31	7,340.00	104.69	104.24	-84.08	-362.20	3,026.82	678.62	471.29		207.32	3.273
10,600.00	7,410.00	10,466.31	7,340.00	107.79	107.34	-84.08	-361.18	3,126.81	678.62	465.12		213.50	3.178
10,700.00	7,410.00	10,566.31	7,340.00	110.89	110.45	-84.08	-360.16	3,226.81	678.62	458.93		219.69	3.089
10,800.00	7,410.00	10,666.31	7,340.00	113.99	113.57	-84.08	-359.15	3,326.80	678.62	452.72		225.89	3.004
10,900.00	7,410.00	10,766.31	7,340.00	117.11	116.69	-84.08	-358.13	3,426.79	678.62	446.51		232.10	2.924
11,000.00	7,410.00	10,866.31	7,340.00	120.22	119.82	-84.08	-357.12	3,526.79	678.62	440.29		238.32	2.847
11,100.00	7,410.00	10,966.31	7,340.00	123.34	122.95	-84.08	-356.10	3,626.78	678.62	434.07		244.55	2.775
11,200.00	7,410.00	11,066.31	7,340.00	126.47	126.09	-84.08	-355.08	3,726.78	678.62	427.83		250.79	2.706
11,300.00	7,410.00	11,166.31	7,340.00	129.60	129.22	-84.08	-354.07	3,826.77	678.62	421.59		257.03	2.640
11,400.00	7,410.00	11,266.31	7,340.00	132.73	132.36	-84.08	-353.05	3,926.77	678.62	415.34		263.28	2.578
11,500.00	7,410.00	11,366.31	7,340.00	135.87	135.51	-84.08	-352.03	4,026.76	678.62	409.08		269.53	2.518
11,600.00	7,410.00	11,466.31	7,340.00	139.01	138.66	-84.08	-351.02	4,126.76	678.62	402.82		275.79	2.461
11,700.00	7,410.00	11,566.31	7,340.00	142.15	141.81	-84.08	-350.00	4,226.75	678.62	396.56		282.06	2.406
11,800.00	7,410.00	11,666.31	7,340.00	145.30	144.96	-84.08	-348.99	4,326.75	678.62	390.28		288.33	2.354
11,900.00	7,410.00	11,766.31	7,340.00	148.44	148.11	-84.08	-347.97	4,426.74	678.62	384.01		294.61	2.303
11,975.04	7,410.00	11,841.35	7,340.00	150.81	149.93	-84.08	-347.21	4,501.77	678.62	379.85		298.77	2.271 SF

Cathedral Energy Services

Anticollision Report

Company:	Crestone Peak Resources	Local Co-ordinate Reference:	Well SAM 3M-25H-M166
Project:	DJ BASIN	TVD Reference:	23' KB @ 5109.00usft
Reference Site:	S25-T1N-R66W (SAM)	MD Reference:	23' KB @ 5109.00usft
Site Error:	0.00usft	North Reference:	Grid
Reference Well:	SAM 3M-25H-M166	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #1	Offset TVD Reference:	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	0.31	20.04	0.11	20.04					
100.00	100.00	100.00	100.00	0.14	0.14	0.31	20.04	0.11	20.04	19.76	0.28	72.592		
200.00	200.00	200.00	200.00	0.50	0.50	0.31	20.04	0.11	20.04	19.04	0.99	20.179		
300.00	300.00	300.00	300.00	0.85	0.85	0.31	20.04	0.11	20.04	18.33	1.71	11.718		
400.00	400.00	400.00	400.00	1.21	1.21	0.31	20.04	0.11	20.04	17.61	2.43	8.256 CC, ES		
500.00	499.98	499.98	499.98	1.56	1.57	165.48	20.04	0.11	21.72	18.59	3.13	6.943		
600.00	599.84	599.84	599.84	1.90	1.93	168.27	20.04	0.11	26.82	22.99	3.83	7.010		
700.00	699.45	700.61	700.58	2.24	2.27	170.30	18.42	-0.59	33.72	29.20	4.53	7.449		
800.00	798.70	801.62	801.45	2.61	2.61	171.01	13.53	-2.71	40.72	35.48	5.24	7.770		
867.08	865.01	869.51	869.11	2.86	2.85	171.05	8.41	-4.92	45.45	39.72	5.73	7.929		
900.00	897.50	902.88	902.32	2.99	2.96	170.94	5.35	-6.24	47.59	41.62	5.97	7.966		
1,000.00	996.17	1,004.41	1,003.07	3.39	3.32	169.92	-6.12	-11.20	51.86	45.14	6.71	7.723		
1,100.00	1,094.84	1,104.37	1,102.05	3.80	3.69	168.53	-18.90	-16.73	54.58	47.16	7.42	7.358		
1,200.00	1,193.52	1,204.32	1,201.03	4.21	4.07	167.28	-31.69	-22.26	57.34	49.20	8.13	7.049		
1,300.00	1,292.19	1,304.27	1,300.01	4.62	4.46	166.14	-44.47	-27.79	60.11	51.26	8.86	6.786		
1,400.00	1,390.87	1,404.23	1,398.99	5.04	4.85	165.10	-57.26	-33.31	62.91	53.32	9.59	6.561		
1,500.00	1,489.54	1,504.18	1,497.97	5.46	5.24	164.15	-70.04	-38.84	65.73	55.41	10.33	6.365		
1,600.00	1,588.21	1,604.14	1,596.95	5.89	5.64	163.28	-82.83	-44.37	68.57	57.50	11.07	6.194		
1,700.00	1,686.89	1,704.09	1,695.92	6.31	6.04	162.48	-95.61	-49.90	71.42	59.60	11.82	6.044		
1,800.00	1,785.56	1,804.05	1,794.90	6.74	6.45	161.74	-108.40	-55.43	74.28	61.71	12.57	5.911		
1,900.00	1,884.23	1,904.00	1,893.88	7.17	6.85	161.05	-121.18	-60.95	77.15	63.84	13.32	5.793		
2,000.00	1,982.91	2,003.96	1,992.86	7.59	7.26	160.42	-133.97	-66.48	80.04	65.96	14.08	5.686		
2,100.00	2,081.58	2,103.91	2,091.84	8.02	7.66	159.82	-146.75	-72.01	82.93	68.10	14.84	5.590		
2,200.00	2,180.26	2,203.87	2,190.82	8.45	8.07	159.27	-159.54	-77.54	85.84	70.24	15.60	5.504		
2,300.00	2,278.93	2,303.82	2,289.80	8.88	8.48	158.76	-172.33	-83.07	88.74	72.38	16.36	5.425		
2,400.00	2,377.60	2,403.77	2,388.78	9.31	8.89	158.27	-185.11	-88.60	91.66	74.54	17.12	5.353		
2,500.00	2,476.28	2,503.73	2,487.76	9.74	9.30	157.82	-197.90	-94.12	94.58	76.69	17.89	5.286		
2,600.00	2,574.95	2,603.68	2,586.74	10.17	9.71	157.39	-210.68	-99.65	97.51	78.85	18.66	5.226		
2,700.00	2,673.63	2,703.64	2,685.72	10.60	10.12	156.99	-223.47	-105.18	100.44	81.01	19.43	5.170		
2,800.00	2,772.30	2,803.59	2,784.70	11.04	10.53	156.62	-236.25	-110.71	103.38	83.18	20.20	5.118		
2,900.00	2,870.97	2,903.55	2,883.68	11.47	10.94	156.26	-249.04	-116.24	106.32	85.35	20.97	5.070		
3,000.00	2,969.65	3,003.50	2,982.65	11.90	11.35	155.92	-261.82	-121.76	109.27	87.52	21.74	5.025		
3,100.00	3,068.32	3,103.46	3,081.63	12.33	11.77	155.60	-274.61	-127.29	112.22	89.70	22.52	4.983		
3,200.00	3,166.99	3,203.41	3,180.61	12.76	12.18	155.30	-287.39	-132.82	115.17	91.88	23.29	4.944		
3,300.00	3,265.67	3,303.37	3,279.59	13.20	12.59	155.01	-300.18	-138.35	118.13	94.06	24.07	4.908		
3,400.00	3,364.34	3,403.32	3,378.57	13.63	13.01	154.73	-312.96	-143.88	121.08	96.24	24.85	4.874		
3,500.00	3,463.02	3,503.28	3,477.55	14.06	13.42	154.47	-325.75	-149.40	124.05	98.42	25.62	4.841		
3,600.00	3,561.69	3,603.23	3,576.53	14.50	13.83	154.22	-338.53	-154.93	127.01	100.61	26.40	4.811		
3,700.00	3,660.36	3,703.18	3,675.51	14.93	14.25	153.98	-351.32	-160.46	129.98	102.80	27.18	4.782		
3,800.00	3,759.04	3,803.14	3,774.49	15.36	14.66	153.76	-364.10	-165.99	132.94	104.99	27.96	4.755		
3,900.00	3,857.71	3,903.09	3,873.47	15.79	15.07	153.54	-376.89	-171.52	135.91	107.18	28.74	4.730		
4,000.00	3,956.39	4,003.05	3,972.45	16.23	15.49	153.33	-389.67	-177.05	138.89	109.37	29.51	4.706		
4,100.00	4,055.06	4,103.00	4,071.43	16.66	15.90	153.13	-402.46	-182.57	141.86	111.56	30.30	4.683		
4,200.00	4,153.73	4,202.96	4,170.41	17.09	16.32	152.94	-415.24	-188.10	144.83	113.76	31.08	4.661		
4,300.00	4,252.41	4,302.91	4,269.39	17.53	16.73	152.76	-428.03	-193.63	147.81	115.95	31.86	4.640		
4,400.00	4,351.08	4,402.87	4,368.36	17.96	17.15	152.58	-440.81	-199.16	150.79	118.15	32.64	4.620		
4,500.00	4,449.75	4,502.82	4,467.34	18.39	17.56	152.41	-453.60	-204.69	153.77	120.35	33.42	4.601		
4,600.00	4,548.43	4,602.78	4,566.32	18.83	17.98	152.25	-466.38	-210.21	156.75	122.55	34.20	4.583		
4,700.00	4,647.10	4,702.73	4,665.30	19.26	18.39	152.09	-479.17	-215.74	159.73	124.75	34.98	4.566		
4,800.00	4,745.78	4,802.69	4,764.28	19.70	18.81	151.94	-491.96	-221.27	162.72	126.95	35.77	4.549		
4,900.00	4,844.45	4,902.64	4,863.26	20.13	19.22	151.79	-504.74	-226.80	165.70	129.15	36.55	4.534		
5,000.00	4,943.12	5,002.59	4,962.24	20.56	19.64	151.65	-517.53	-232.33	168.69	131.35	37.33	4.519		

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

Cathedral Energy Services

Anticollision Report

Company:	Crestone Peak Resources	Local Co-ordinate Reference:	Well SAM 3M-25H-M166
Project:	DJ BASIN	TVD Reference:	23' KB @ 5109.00usft
Reference Site:	S25-T1N-R66W (SAM)	MD Reference:	23' KB @ 5109.00usft
Site Error:	0.00usft	North Reference:	Grid
Reference Well:	SAM 3M-25H-M166	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #1	Offset TVD Reference:	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							
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	5,041.80	5,102.55	5,061.22	21.00	20.05	151.52	-530.31	-237.85	171.67	133.56	38.11	4.504	
5,200.00	5,140.47	5,202.50	5,160.20	21.43	20.47	151.39	-543.10	-243.38	174.66	135.76	38.90	4.490	
5,300.00	5,239.14	5,302.46	5,259.18	21.86	20.88	151.26	-555.88	-248.91	177.65	137.97	39.68	4.477	
5,400.00	5,337.82	5,402.41	5,358.16	22.30	21.30	151.14	-568.67	-254.44	180.64	140.17	40.47	4.464	
5,500.00	5,436.49	5,502.37	5,457.14	22.73	21.71	151.02	-581.45	-259.97	183.63	142.38	41.25	4.452	
5,600.00	5,535.17	5,602.32	5,556.12	23.17	22.13	150.91	-594.24	-265.49	186.62	144.58	42.03	4.440	
5,700.00	5,633.84	5,700.00	5,652.91	23.60	22.53	150.88	-606.29	-270.71	190.01	147.21	42.80	4.440	
5,800.00	5,732.51	5,794.17	5,746.55	24.03	22.90	151.35	-615.35	-274.62	195.80	152.33	43.47	4.504	
5,900.00	5,831.19	5,888.39	5,840.52	24.47	23.25	152.30	-621.59	-277.32	204.29	160.23	44.06	4.637	
6,000.00	5,929.86	5,981.95	5,934.00	24.90	23.57	153.63	-624.97	-278.78	215.56	170.98	44.58	4.836	
6,100.00	6,028.54	6,076.48	6,028.54	25.34	23.86	155.25	-625.66	-279.08	229.55	184.50	45.05	5.095	
6,200.00	6,127.21	6,175.16	6,127.21	25.77	24.15	156.84	-625.66	-279.08	244.42	198.80	45.62	5.357	
6,300.00	6,225.88	6,273.83	6,225.88	26.20	24.44	158.24	-625.66	-279.08	259.45	213.24	46.21	5.614	
6,400.00	6,324.56	6,372.51	6,324.56	26.64	24.73	159.50	-625.66	-279.08	274.62	227.80	46.82	5.866	
6,500.00	6,423.23	6,471.18	6,423.23	27.07	25.02	160.62	-625.66	-279.08	289.90	242.46	47.44	6.111	
6,600.00	6,521.90	6,569.85	6,521.90	27.51	25.31	161.63	-625.66	-279.08	305.28	257.22	48.06	6.352	
6,700.00	6,620.58	6,668.53	6,620.58	27.94	25.61	162.54	-625.66	-279.08	320.75	272.05	48.70	6.586	
6,749.72	6,669.64	6,717.59	6,669.64	28.16	25.76	162.96	-625.66	-279.08	328.46	279.44	49.02	6.701	
6,800.00	6,719.29	6,767.25	6,719.29	28.37	25.90	-171.24	-625.66	-278.63	336.29	286.93	49.35	6.814	
6,850.00	6,768.59	6,816.62	6,768.53	28.57	26.05	-148.42	-625.62	-275.17	344.06	294.38	49.67	6.927	
6,900.00	6,817.56	6,865.96	6,817.39	28.75	26.19	-132.48	-625.55	-268.34	351.78	301.80	49.97	7.039	
6,950.00	6,865.97	6,915.29	6,865.65	28.92	26.32	-122.00	-625.45	-258.16	359.41	309.15	50.26	7.151	
7,000.00	6,913.59	6,964.62	6,913.10	29.08	26.45	-114.90	-625.31	-244.69	366.91	316.38	50.53	7.261	
7,050.00	6,960.18	7,013.96	6,959.51	29.23	26.57	-109.84	-625.14	-227.97	374.26	323.46	50.80	7.368	
7,100.00	7,005.51	7,063.32	7,004.68	29.37	26.68	-106.05	-624.94	-208.10	381.40	330.35	51.06	7.470	
7,150.00	7,049.37	7,112.71	7,048.39	29.50	26.78	-103.11	-624.71	-185.15	388.31	337.00	51.32	7.567	
7,200.00	7,091.54	7,162.12	7,090.45	29.61	26.88	-100.75	-624.45	-159.22	394.96	343.37	51.59	7.656	
7,250.00	7,131.81	7,211.59	7,130.66	29.72	26.96	-98.82	-624.15	-130.43	401.31	349.42	51.89	7.734	
7,300.00	7,169.99	7,261.10	7,168.81	29.81	27.05	-97.22	-623.83	-98.90	407.32	355.11	52.22	7.800	
7,350.00	7,205.90	7,310.66	7,204.74	29.90	27.12	-95.87	-623.49	-64.78	412.98	360.38	52.60	7.851	
7,400.00	7,239.35	7,360.27	7,238.25	29.97	27.19	-94.72	-623.11	-28.21	418.25	365.19	53.06	7.883	
7,450.00	7,270.19	7,409.94	7,269.19	30.04	27.26	-93.74	-622.72	10.64	423.11	369.51	53.60	7.893	
7,500.00	7,298.26	7,459.66	7,297.39	30.10	27.34	-92.90	-622.30	51.58	427.54	373.28	54.25	7.880	
7,550.00	7,323.42	7,509.44	7,322.70	30.17	27.46	-92.20	-621.87	94.42	431.50	376.48	55.02	7.842	
7,600.00	7,345.57	7,559.27	7,345.00	30.24	27.71	-91.60	-621.41	138.97	434.99	379.07	55.93	7.778	
7,650.00	7,364.58	7,609.14	7,364.17	30.33	28.16	-91.11	-620.95	185.00	437.99	381.02	56.97	7.688	
7,700.00	7,380.36	7,659.05	7,380.09	30.50	28.73	-90.72	-620.47	232.29	440.48	382.32	58.16	7.573	
7,750.00	7,392.85	7,709.00	7,392.70	30.84	29.39	-90.41	-619.98	280.61	442.44	382.95	59.49	7.437	
7,800.00	7,401.97	7,758.97	7,401.91	31.39	30.13	-90.19	-619.48	329.71	443.88	382.92	60.96	7.281	
7,850.00	7,407.68	7,808.96	7,407.67	32.09	30.94	-90.06	-618.97	379.35	444.78	382.22	62.56	7.110	
7,900.00	7,409.96	7,858.96	7,409.96	32.90	31.80	-90.00	-618.46	429.29	445.14	380.88	64.26	6.927	
7,908.04	7,410.00	7,867.00	7,410.00	33.03	31.94	-90.00	-618.38	437.32	445.15	380.61	64.54	6.897	
8,000.00	7,410.00	7,958.96	7,410.00	34.69	33.69	-90.00	-617.45	529.28	445.15	377.16	67.99	6.548	
8,100.00	7,410.00	8,058.96	7,410.00	36.70	35.75	-90.00	-616.43	629.28	445.15	373.08	72.07	6.177	
8,200.00	7,410.00	8,158.96	7,410.00	38.87	37.97	-90.00	-615.42	729.27	445.15	368.67	76.47	5.821	
8,300.00	7,410.00	8,258.96	7,410.00	41.18	40.33	-90.00	-614.40	829.27	445.15	364.00	81.15	5.486	
8,400.00	7,410.00	8,358.96	7,410.00	43.61	42.79	-90.00	-613.38	929.26	445.15	359.10	86.04	5.174	
8,500.00	7,410.00	8,458.96	7,410.00	46.13	45.34	-90.00	-612.37	1,029.25	445.15	354.02	91.13	4.885	
8,600.00	7,410.00	8,558.96	7,410.00	48.73	47.98	-90.00	-611.35	1,129.25	445.15	348.77	96.37	4.619	
8,700.00	7,410.00	8,658.96	7,410.00	51.39	50.68	-90.00	-610.33	1,229.24	445.15	343.40	101.75	4.375	
8,800.00	7,410.00	8,758.96	7,410.00	54.12	53.43	-90.00	-609.32	1,329.24	445.15	337.90	107.24	4.151	
8,900.00	7,410.00	8,858.96	7,410.00	56.90	56.24	-90.00	-608.30	1,429.23	445.15	332.32	112.83	3.945	

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

Cathedral Energy Services

Anticollision Report

Company:	Crestone Peak Resources	Local Co-ordinate Reference:	Well SAM 3M-25H-M166
Project:	DJ BASIN	TVD Reference:	23' KB @ 5109.00usft
Reference Site:	S25-T1N-R66W (SAM)	MD Reference:	23' KB @ 5109.00usft
Site Error:	0.00usft	North Reference:	Grid
Reference Well:	SAM 3M-25H-M166	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #1	Offset TVD Reference:	Offset Datum

Offset Design S25-T1N-R66W (SAM) - SAM 3K-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		
9,000.00	7,410.00	8,958.96	7,410.00	59.71	59.08	-90.00	-607.29	1,529.23	445.15	326.64	118.50	3.756		
9,100.00	7,410.00	9,058.96	7,410.00	62.57	61.96	-90.00	-606.27	1,629.22	445.14	320.90	124.25	3.583		
9,200.00	7,410.00	9,158.96	7,410.00	65.46	64.87	-90.00	-605.25	1,729.22	445.14	315.09	130.05	3.423		
9,300.00	7,410.00	9,258.96	7,410.00	68.37	67.81	-90.00	-604.24	1,829.21	445.14	309.23	135.92	3.275		
9,400.00	7,410.00	9,358.96	7,410.00	71.31	70.77	-90.00	-603.22	1,929.21	445.14	303.32	141.83	3.139		
9,500.00	7,410.00	9,458.96	7,410.00	74.28	73.75	-90.00	-602.20	2,029.20	445.14	297.37	147.78	3.012		
9,600.00	7,410.00	9,558.96	7,410.00	77.26	76.75	-90.00	-601.19	2,129.20	445.14	291.38	153.77	2.895		
9,700.00	7,410.00	9,658.96	7,410.00	80.26	79.76	-90.00	-600.17	2,229.19	445.14	285.36	159.79	2.786		
9,800.00	7,410.00	9,758.96	7,410.00	83.27	82.79	-90.00	-599.16	2,329.19	445.14	279.31	165.84	2.684		
9,900.00	7,410.00	9,858.96	7,410.00	86.30	85.83	-90.00	-598.14	2,429.18	445.14	273.23	171.92	2.589		
10,000.00	7,410.00	9,958.96	7,410.00	89.34	88.89	-90.00	-597.12	2,529.18	445.14	267.13	178.02	2.501		
10,100.00	7,410.00	10,058.96	7,410.00	92.39	91.95	-90.00	-596.11	2,629.17	445.14	261.01	184.14	2.417		
10,200.00	7,410.00	10,158.96	7,410.00	95.46	95.03	-90.00	-595.09	2,729.17	445.14	254.86	190.28	2.339		
10,300.00	7,410.00	10,258.96	7,410.00	98.53	98.11	-90.00	-594.07	2,829.16	445.14	248.71	196.44	2.266		
10,400.00	7,410.00	10,358.96	7,410.00	101.61	101.20	-90.00	-593.06	2,929.16	445.14	242.53	202.61	2.197		
10,500.00	7,410.00	10,458.96	7,410.00	104.69	104.29	-90.00	-592.04	3,029.15	445.14	236.34	208.80	2.132		
10,600.00	7,410.00	10,558.96	7,410.00	107.79	107.40	-90.00	-591.02	3,129.15	445.14	230.14	215.00	2.070		
10,700.00	7,410.00	10,658.96	7,410.00	110.89	110.51	-90.00	-590.01	3,229.14	445.14	223.93	221.22	2.012		
10,800.00	7,410.00	10,758.96	7,410.00	113.99	113.62	-90.00	-588.99	3,329.14	445.14	217.70	227.44	1.957		
10,900.00	7,410.00	10,858.96	7,410.00	117.11	116.74	-90.00	-587.98	3,429.13	445.14	211.47	233.68	1.905		
11,000.00	7,410.00	10,958.96	7,410.00	120.22	119.86	-90.00	-586.96	3,529.13	445.14	205.22	239.92	1.855		
11,100.00	7,410.00	11,058.96	7,410.00	123.34	122.99	-90.00	-585.94	3,629.12	445.14	199.97	246.17	1.808		
11,200.00	7,410.00	11,158.96	7,410.00	126.47	126.13	-90.00	-584.93	3,729.12	445.14	192.71	252.43	1.763		
11,300.00	7,410.00	11,258.96	7,410.00	129.60	129.26	-90.00	-583.91	3,829.11	445.14	186.44	258.70	1.721		
11,400.00	7,410.00	11,358.96	7,410.00	132.73	132.40	-90.00	-582.89	3,929.11	445.14	180.16	264.98	1.680		
11,500.00	7,410.00	11,458.96	7,410.00	135.87	135.54	-90.00	-581.88	4,029.10	445.14	173.88	271.26	1.641		
11,600.00	7,410.00	11,558.96	7,410.00	139.01	138.69	-90.00	-580.86	4,129.09	445.14	167.59	277.55	1.604		
11,700.00	7,410.00	11,658.96	7,410.00	142.15	141.84	-90.00	-579.85	4,229.09	445.14	161.30	283.84	1.568		
11,800.00	7,410.00	11,758.96	7,410.00	145.30	144.99	-90.00	-578.83	4,329.08	445.14	155.00	290.14	1.534		
11,900.00	7,410.00	11,858.96	7,410.00	148.44	148.14	-90.00	-577.81	4,429.08	445.14	148.70	296.44	1.502		
11,975.04	7,410.00	11,934.00	7,410.00	150.81	150.05	-90.00	-577.05	4,504.11	445.14	144.42	300.72	1.480	Level 3, SF	

Cathedral Energy Services

Anticollision Report

Company:	Crestone Peak Resources	Local Co-ordinate Reference:	Well SAM 3M-25H-M166
Project:	DJ BASIN	TVD Reference:	23' KB @ 5109.00usft
Reference Site:	S25-T1N-R66W (SAM)	MD Reference:	23' KB @ 5109.00usft
Site Error:	0.00usft	North Reference:	Grid
Reference Well:	SAM 3M-25H-M166	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #1	Offset TVD Reference:	Offset Datum

Offset Design S25-T1N-R66W (SAM) - SAM 3L-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	-0.50	10.19	-0.09	10.19				
100.00	100.00	100.00	100.00	0.14	0.14	-0.50	10.19	-0.09	10.19	9.92	0.28	36.922	
200.00	200.00	200.00	200.00	0.50	0.50	-0.50	10.19	-0.09	10.19	9.20	0.99	10.263	
300.00	300.00	300.00	300.00	0.85	0.85	-0.50	10.19	-0.09	10.19	8.48	1.71	5.960	
400.00	400.00	400.00	400.00	1.21	1.21	-0.50	10.19	-0.09	10.19	7.76	2.43	4.199 CC	
500.00	499.98	499.98	499.98	1.56	1.57	165.83	10.19	-0.09	11.87	8.75	3.13	3.796	
600.00	599.84	600.38	600.36	1.90	1.92	168.78	8.52	-0.64	15.29	11.47	3.82	3.999	
700.00	699.45	700.90	700.74	2.24	2.25	170.21	3.51	-2.30	18.74	14.21	4.54	4.131	
800.00	798.70	801.55	800.99	2.61	2.60	170.83	-4.86	-5.08	22.21	16.94	5.27	4.212	
867.08	865.01	869.12	868.10	2.86	2.84	170.96	-12.35	-7.56	24.53	18.76	5.77	4.249	
900.00	897.50	902.32	900.99	2.99	2.96	170.90	-16.58	-8.97	25.49	19.47	6.02	4.234	
1,000.00	996.17	1,002.82	1,000.30	3.39	3.34	169.87	-31.29	-13.84	26.41	19.67	6.75	3.914	
1,100.00	1,094.84	1,102.82	1,099.01	3.80	3.74	168.62	-46.46	-18.88	26.79	19.33	7.45	3.593	
1,200.00	1,193.52	1,202.82	1,197.72	4.21	4.13	167.41	-61.64	-23.91	27.17	19.00	8.17	3.325	
1,300.00	1,292.19	1,302.81	1,296.43	4.62	4.54	166.23	-76.82	-28.95	27.57	18.67	8.90	3.098	
1,400.00	1,390.87	1,402.81	1,395.14	5.04	4.95	165.09	-91.99	-33.98	27.97	18.34	9.63	2.904	
1,500.00	1,489.54	1,502.81	1,493.85	5.46	5.36	163.98	-107.17	-39.01	28.39	18.02	10.38	2.737	
1,600.00	1,588.21	1,602.81	1,592.56	5.89	5.78	162.90	-122.35	-44.05	28.82	17.70	11.12	2.591	
1,700.00	1,686.89	1,702.80	1,691.27	6.31	6.20	161.86	-137.52	-49.08	29.26	17.38	11.87	2.464	
1,800.00	1,785.56	1,802.80	1,789.98	6.74	6.62	160.84	-152.70	-54.11	29.71	17.07	12.63	2.352	
1,900.00	1,884.23	1,902.80	1,888.69	7.17	7.04	159.86	-167.88	-59.15	30.16	16.77	13.39	2.252	
2,000.00	1,982.91	2,002.80	1,987.41	7.59	7.46	158.91	-183.05	-64.18	30.63	16.47	14.16	2.163	
2,100.00	2,081.58	2,102.79	2,086.12	8.02	7.89	157.98	-198.23	-69.21	31.10	16.17	14.93	2.083	
2,200.00	2,180.26	2,202.79	2,184.83	8.45	8.31	157.08	-213.41	-74.25	31.59	15.88	15.71	2.011	
2,300.00	2,278.93	2,302.79	2,283.54	8.88	8.74	156.21	-228.59	-79.28	32.07	15.59	16.48	1.946	
2,400.00	2,377.60	2,402.79	2,382.25	9.31	9.17	155.37	-243.76	-84.31	32.57	15.31	17.27	1.886	
2,500.00	2,476.28	2,502.79	2,480.96	9.74	9.59	154.55	-258.94	-89.35	33.07	15.02	18.05	1.832	
2,600.00	2,574.95	2,602.78	2,579.67	10.17	10.02	153.76	-274.12	-94.38	33.58	14.75	18.84	1.783	
2,700.00	2,673.63	2,702.78	2,678.38	10.60	10.45	152.99	-289.29	-99.42	34.10	14.47	19.63	1.737	
2,800.00	2,772.30	2,802.78	2,777.09	11.04	10.88	152.24	-304.47	-104.45	34.62	14.20	20.42	1.695	
2,900.00	2,870.97	2,902.78	2,875.80	11.47	11.31	151.52	-319.65	-109.48	35.15	13.93	21.22	1.657	
3,000.00	2,969.65	3,002.77	2,974.52	11.90	11.73	150.82	-334.82	-114.52	35.68	13.67	22.02	1.621	
3,100.00	3,068.32	3,102.77	3,073.23	12.33	12.16	150.13	-350.00	-119.55	36.22	13.40	22.82	1.587	
3,200.00	3,166.99	3,202.77	3,171.94	12.76	12.59	149.47	-365.18	-124.58	36.76	13.14	23.62	1.556	
3,300.00	3,265.67	3,302.77	3,270.65	13.20	13.02	148.83	-380.35	-129.62	37.31	12.88	24.43	1.527	
3,400.00	3,364.34	3,402.76	3,369.36	13.63	13.45	148.21	-395.53	-134.65	37.87	12.63	25.24	1.500	
3,500.00	3,463.02	3,502.76	3,468.07	14.06	13.88	147.60	-410.71	-139.68	38.42	12.38	26.05	1.475 Level 3	
3,600.00	3,561.69	3,602.76	3,566.78	14.50	14.31	147.01	-425.88	-144.72	38.98	12.12	26.86	1.451 Level 3	
3,700.00	3,660.36	3,702.76	3,665.49	14.93	14.74	146.44	-441.06	-149.75	39.55	11.88	27.67	1.429 Level 3	
3,800.00	3,759.04	3,802.75	3,764.20	15.36	15.17	145.89	-456.24	-154.79	40.12	11.63	28.49	1.408 Level 3	
3,900.00	3,857.71	3,902.75	3,862.91	15.79	15.60	145.35	-471.41	-159.82	40.69	11.39	29.30	1.389 Level 3	
4,000.00	3,956.39	4,002.75	3,961.62	16.23	16.03	144.82	-486.59	-164.85	41.27	11.14	30.12	1.370 Level 3	
4,100.00	4,055.06	4,102.75	4,060.34	16.66	16.46	144.31	-501.77	-169.89	41.85	10.90	30.94	1.352 Level 3	
4,200.00	4,153.73	4,202.75	4,159.05	17.09	16.90	143.81	-516.95	-174.92	42.43	10.66	31.77	1.336 Level 3	
4,300.00	4,252.41	4,302.74	4,257.76	17.53	17.33	143.33	-532.12	-179.95	43.01	10.43	32.59	1.320 Level 3	
4,400.00	4,351.08	4,402.74	4,356.47	17.96	17.76	142.86	-547.30	-184.99	43.60	10.19	33.41	1.305 Level 3	
4,500.00	4,449.75	4,502.74	4,455.18	18.39	18.19	142.40	-562.48	-190.02	44.20	9.96	34.24	1.291 Level 3	
4,600.00	4,548.43	4,602.74	4,553.89	18.83	18.62	141.96	-577.65	-195.05	44.79	9.73	35.06	1.277 Level 3	
4,700.00	4,647.10	4,702.73	4,652.60	19.26	19.05	141.52	-592.83	-200.09	45.39	9.49	35.89	1.265 Level 3	
4,800.00	4,745.78	4,802.73	4,751.31	19.70	19.48	141.10	-608.01	-205.12	45.99	9.27	36.72	1.252 Level 3	
4,900.00	4,844.45	4,902.73	4,850.02	20.13	19.91	140.69	-623.18	-210.15	46.59	9.04	37.55	1.241 Level 2	
5,000.00	4,943.12	5,002.73	4,948.73	20.56	20.35	140.29	-638.36	-215.19	47.19	8.81	38.38	1.230 Level 2	

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

Cathedral Energy Services

Anticollision Report

Company:	Crestone Peak Resources	Local Co-ordinate Reference:	Well SAM 3M-25H-M166
Project:	DJ BASIN	TVD Reference:	23' KB @ 5109.00usft
Reference Site:	S25-T1N-R66W (SAM)	MD Reference:	23' KB @ 5109.00usft
Site Error:	0.00usft	North Reference:	Grid
Reference Well:	SAM 3M-25H-M166	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #1	Offset TVD Reference:	Offset Datum

Offset Design S25-T1N-R66W (SAM) - SAM 3L-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	5,041.80	5,102.72	5,047.45	21.00	20.78	139.90	-653.54	-220.22	47.80	8.59	39.21	1.219	Level 2
5,200.00	5,140.47	5,202.72	5,146.16	21.43	21.21	139.52	-668.71	-225.26	48.41	8.36	40.05	1.209	Level 2
5,300.00	5,239.14	5,302.72	5,244.87	21.86	21.64	139.15	-683.89	-230.29	49.02	8.14	40.88	1.199	Level 2
5,400.00	5,337.82	5,402.72	5,343.58	22.30	22.07	138.78	-699.07	-235.32	49.63	7.92	41.71	1.190	Level 2
5,500.00	5,436.49	5,502.71	5,442.29	22.73	22.50	138.43	-714.24	-240.36	50.25	7.70	42.55	1.181	Level 2
5,600.00	5,535.17	5,602.71	5,541.00	23.17	22.93	138.09	-729.42	-245.39	50.86	7.48	43.38	1.172	Level 2
5,700.00	5,633.84	5,702.71	5,639.71	23.60	23.37	137.75	-744.60	-250.42	51.48	7.26	44.22	1.164	Level 2
5,800.00	5,732.51	5,802.71	5,738.42	24.03	23.80	137.42	-759.77	-255.46	52.10	7.05	45.06	1.156	Level 2
5,900.00	5,831.19	5,902.71	5,837.13	24.47	24.23	137.10	-774.95	-260.49	52.72	6.83	45.89	1.149	Level 2
6,000.00	5,929.86	6,002.70	5,935.84	24.90	24.66	136.79	-790.13	-265.52	53.35	6.62	46.73	1.142	Level 2
6,100.00	6,028.54	6,101.45	6,033.54	25.34	25.08	137.60	-803.71	-270.03	55.04	7.60	47.44	1.160	Level 2
6,200.00	6,127.21	6,200.00	6,131.48	25.77	25.47	140.64	-814.08	-273.47	59.27	11.38	47.88	1.238	Level 2
6,300.00	6,225.88	6,297.85	6,229.04	26.20	25.83	145.08	-821.20	-275.83	66.34	18.23	48.11	1.379	Level 3
6,400.00	6,324.56	6,395.13	6,326.23	26.64	26.16	150.02	-825.15	-277.14	76.59	28.36	48.23	1.588	
6,500.00	6,423.23	6,492.14	6,423.23	27.07	26.45	154.76	-826.05	-277.44	90.18	41.82	48.36	1.865	
6,600.00	6,521.90	6,590.82	6,521.90	27.51	26.72	158.53	-826.05	-277.44	105.12	56.40	48.72	2.157	
6,700.00	6,620.58	6,689.49	6,620.58	27.94	27.00	161.35	-826.05	-277.44	120.39	71.20	49.19	2.447	
6,749.72	6,669.64	6,738.58	6,669.64	28.16	27.14	163.17	-826.03	-275.97	128.07	78.66	49.40	2.592	
6,800.00	6,719.29	6,787.75	6,718.56	28.37	27.27	-168.90	-825.98	-271.14	136.01	86.45	49.56	2.745	
6,850.00	6,768.59	6,836.31	6,768.43	28.57	27.40	-144.18	-825.90	-263.09	144.07	94.38	49.69	2.899	
6,900.00	6,817.56	6,884.54	6,813.34	28.75	27.52	-126.58	-825.79	-251.90	152.22	102.40	49.82	3.056	
6,950.00	6,865.97	6,932.47	6,859.10	28.92	27.63	-114.66	-825.64	-237.68	160.39	110.46	49.92	3.213	
7,000.00	6,913.59	6,980.12	6,903.55	29.08	27.74	-106.31	-825.47	-220.55	168.49	118.49	50.01	3.369	
7,050.00	6,960.18	7,027.51	6,946.53	29.23	27.83	-100.15	-825.26	-200.61	176.48	126.41	50.07	3.524	
7,100.00	7,005.51	7,074.66	6,987.90	29.37	27.92	-95.42	-825.03	-177.99	184.30	134.17	50.13	3.676	
7,150.00	7,049.37	7,121.60	7,027.51	29.50	28.00	-91.65	-824.77	-152.82	191.89	141.71	50.18	3.824	
7,200.00	7,091.54	7,168.35	7,065.23	29.61	28.08	-88.58	-824.49	-125.23	199.20	148.97	50.23	3.965	
7,250.00	7,131.81	7,214.91	7,100.94	29.72	28.14	-86.02	-824.18	-95.36	206.20	155.89	50.31	4.099	
7,300.00	7,169.99	7,261.32	7,134.53	29.81	28.20	-83.87	-823.86	-63.35	212.84	162.42	50.41	4.222	
7,350.00	7,205.90	7,307.58	7,165.87	29.90	28.26	-82.05	-823.51	-29.34	219.08	168.51	50.57	4.332	
7,400.00	7,239.35	7,353.72	7,194.88	29.97	28.30	-80.49	-823.14	6.53	224.91	174.10	50.80	4.427	
7,450.00	7,270.19	7,400.00	7,221.60	30.04	28.34	-79.16	-822.75	44.31	230.27	179.14	51.13	4.504	
7,500.00	7,298.26	7,445.66	7,245.52	30.10	28.37	-78.02	-822.35	83.20	235.15	183.61	51.54	4.562	
7,550.00	7,323.42	7,491.51	7,266.99	30.17	28.40	-77.06	-821.94	123.69	239.53	187.44	52.09	4.598	
7,600.00	7,345.57	7,537.27	7,285.79	30.24	28.44	-76.25	-821.51	165.41	243.38	190.61	52.78	4.612	
7,650.00	7,364.58	7,582.98	7,301.88	30.33	28.55	-75.58	-821.07	208.18	246.69	193.09	53.60	4.602	
7,700.00	7,380.36	7,628.64	7,315.19	30.50	29.02	-75.04	-820.62	251.84	249.44	194.86	54.58	4.570	
7,750.00	7,392.85	7,674.25	7,325.68	30.84	29.65	-74.62	-820.17	296.22	251.61	195.92	55.70	4.518	
7,800.00	7,401.97	7,719.84	7,333.32	31.39	30.34	-74.32	-819.71	341.15	253.21	196.25	56.96	4.445	
7,850.00	7,407.68	7,765.40	7,338.09	32.09	31.08	-74.13	-819.25	386.46	254.21	195.86	58.35	4.357	
7,900.00	7,409.96	7,810.96	7,339.97	32.90	31.86	-74.05	-818.78	431.96	254.62	194.76	59.86	4.254	
7,908.04	7,410.00	7,818.33	7,340.00	33.03	31.99	-74.04	-818.70	439.34	254.63	194.51	60.11	4.236	
8,000.00	7,410.00	7,910.29	7,340.00	34.69	33.73	-74.04	-817.76	531.30	254.63	191.19	63.44	4.014	
8,100.00	7,410.00	8,010.29	7,340.00	36.70	35.79	-74.04	-816.74	631.29	254.64	187.23	67.41	3.777	
8,200.00	7,410.00	8,110.29	7,340.00	38.87	38.01	-74.04	-815.71	731.29	254.65	182.95	71.70	3.552	
8,300.00	7,410.00	8,210.29	7,340.00	41.18	40.36	-74.05	-814.69	831.28	254.66	178.41	76.25	3.340	
8,400.00	7,410.00	8,310.29	7,340.00	43.61	42.82	-74.05	-813.66	931.27	254.67	173.65	81.01	3.144	
8,500.00	7,410.00	8,410.29	7,340.00	46.13	45.37	-74.05	-812.64	1,031.27	254.67	168.72	85.96	2.963	
8,600.00	7,410.00	8,510.29	7,340.00	48.73	48.00	-74.05	-811.61	1,131.26	254.68	163.63	91.05	2.797	
8,700.00	7,410.00	8,610.29	7,340.00	51.39	50.70	-74.05	-810.59	1,231.26	254.69	158.41	96.28	2.645	
8,800.00	7,410.00	8,710.29	7,340.00	54.12	53.45	-74.05	-809.56	1,331.25	254.70	153.09	101.61	2.507	
8,900.00	7,410.00	8,810.29	7,340.00	56.90	56.25	-74.05	-808.54	1,431.25	254.71	147.67	107.03	2.380	

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

Cathedral Energy Services

Anticollision Report

Company:	Crestone Peak Resources	Local Co-ordinate Reference:	Well SAM 3M-25H-M166
Project:	DJ BASIN	TVD Reference:	23' KB @ 5109.00usft
Reference Site:	S25-T1N-R66W (SAM)	MD Reference:	23' KB @ 5109.00usft
Site Error:	0.00usft	North Reference:	Grid
Reference Well:	SAM 3M-25H-M166	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #1	Offset TVD Reference:	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							
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
9,000.00	7,410.00	8,910.29	7,340.00	59.71	59.09	-74.05	-807.51	1,531.24	254.71	142.18	112.54	2.263	
9,100.00	7,410.00	9,010.29	7,340.00	62.57	61.97	-74.05	-806.49	1,631.24	254.72	136.62	118.11	2.157	
9,200.00	7,410.00	9,110.29	7,340.00	65.46	64.88	-74.05	-805.46	1,731.23	254.73	131.00	123.73	2.059	
9,300.00	7,410.00	9,210.29	7,340.00	68.37	67.81	-74.05	-804.44	1,831.23	254.74	125.32	129.41	1.968	
9,400.00	7,410.00	9,310.29	7,340.00	71.31	70.77	-74.05	-803.41	1,931.22	254.75	119.61	135.14	1.885	
9,500.00	7,410.00	9,410.29	7,340.00	74.28	73.75	-74.05	-802.39	2,031.22	254.75	113.86	140.90	1.808	
9,600.00	7,410.00	9,510.29	7,340.00	77.26	76.75	-74.05	-801.36	2,131.21	254.76	108.07	146.70	1.737	
9,700.00	7,410.00	9,610.29	7,340.00	80.26	79.76	-74.05	-800.34	2,231.21	254.77	102.25	152.52	1.670	
9,800.00	7,410.00	9,710.29	7,340.00	83.27	82.79	-74.05	-799.32	2,331.20	254.78	96.40	158.38	1.609	
9,900.00	7,410.00	9,810.29	7,340.00	86.30	85.83	-74.05	-798.29	2,431.20	254.79	90.53	164.26	1.551	
10,000.00	7,410.00	9,910.29	7,340.00	89.34	88.88	-74.05	-797.27	2,531.19	254.79	84.64	170.16	1.497 Level 3	
10,100.00	7,410.00	10,010.29	7,340.00	92.39	91.94	-74.05	-796.24	2,631.19	254.80	78.73	176.08	1.447 Level 3	
10,200.00	7,410.00	10,110.29	7,340.00	95.46	95.02	-74.06	-795.22	2,731.18	254.81	72.80	182.01	1.400 Level 3	
10,300.00	7,410.00	10,210.29	7,340.00	98.53	98.10	-74.06	-794.19	2,831.17	254.82	66.85	187.97	1.356 Level 3	
10,400.00	7,410.00	10,310.29	7,340.00	101.61	101.18	-74.06	-793.17	2,931.17	254.83	60.89	193.93	1.314 Level 3	
10,500.00	7,410.00	10,410.29	7,340.00	104.69	104.28	-74.06	-792.14	3,031.16	254.83	54.92	199.91	1.275 Level 3	
10,600.00	7,410.00	10,510.29	7,340.00	107.79	107.38	-74.06	-791.12	3,131.16	254.84	48.94	205.91	1.238 Level 2	
10,700.00	7,410.00	10,610.29	7,340.00	110.89	110.49	-74.06	-790.09	3,231.15	254.85	42.94	211.91	1.203 Level 2	
10,800.00	7,410.00	10,710.29	7,340.00	113.99	113.60	-74.06	-789.07	3,331.15	254.86	36.93	217.92	1.169 Level 2	
10,900.00	7,410.00	10,810.29	7,340.00	117.11	116.72	-74.06	-788.04	3,431.14	254.87	30.92	223.95	1.138 Level 2	
11,000.00	7,410.00	10,910.29	7,340.00	120.22	119.84	-74.06	-787.02	3,531.14	254.87	24.89	229.98	1.108 Level 2	
11,100.00	7,410.00	11,010.29	7,340.00	123.34	122.97	-74.06	-785.99	3,631.13	254.88	18.86	236.02	1.080 Level 2	
11,200.00	7,410.00	11,110.29	7,340.00	126.47	126.10	-74.06	-784.97	3,731.13	254.89	12.82	242.07	1.053 Level 2	
11,300.00	7,410.00	11,210.29	7,340.00	129.60	129.24	-74.06	-783.94	3,831.12	254.90	6.78	248.12	1.027 Level 2	
11,400.00	7,410.00	11,310.29	7,340.00	132.73	132.38	-74.06	-782.92	3,931.12	254.91	0.73	254.18	1.003 Level 2	
11,500.00	7,410.00	11,410.29	7,340.00	135.87	135.52	-74.06	-781.89	4,031.11	254.91	-5.33	260.25	0.980 Level 1	
11,600.00	7,410.00	11,510.29	7,340.00	139.01	138.66	-74.06	-780.87	4,131.11	254.92	-11.40	266.32	0.957 Level 1	
11,700.00	7,410.00	11,610.29	7,340.00	142.15	141.81	-74.06	-779.84	4,231.10	254.93	-17.46	272.40	0.936 Level 1	
11,800.00	7,410.00	11,710.29	7,340.00	145.30	144.96	-74.06	-778.82	4,331.10	254.94	-23.54	278.48	0.915 Level 1	
11,900.00	7,410.00	11,810.29	7,340.00	148.44	148.11	-74.06	-777.79	4,431.09	254.95	-29.62	284.56	0.896 Level 1	
11,975.04	7,410.00	11,885.33	7,340.00	150.81	150.48	-74.06	-777.03	4,506.12	254.95	-34.18	289.13	0.882 Level 1, ES, SF	

Cathedral Energy Services

Anticollision Report

Company:	Crestone Peak Resources	Local Co-ordinate Reference:	Well SAM 3M-25H-M166
Project:	DJ BASIN	TVD Reference:	23' KB @ 5109.00usft
Reference Site:	S25-T1N-R66W (SAM)	MD Reference:	23' KB @ 5109.00usft
Site Error:	0.00usft	North Reference:	Grid
Reference Well:	SAM 3M-25H-M166	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #1	Offset TVD Reference:	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	179.50	-9.84	0.08	9.84					
100.00	100.00	100.00	100.00	0.14	0.14	179.50	-9.84	0.08	9.84	9.56	0.28	35.633		
200.00	200.00	200.00	200.00	0.50	0.50	179.50	-9.84	0.08	9.84	8.84	0.99	9.905		
300.00	300.00	300.00	300.00	0.85	0.85	179.50	-9.84	0.08	9.84	8.13	1.71	5.752	CC, ES	
400.00	400.00	399.63	399.61	1.21	1.20	-178.22	-11.51	-0.36	11.52	9.08	2.44	4.724		
500.00	499.98	499.12	498.96	1.56	1.54	-11.43	-16.52	-1.68	14.93	11.76	3.17	4.705		
600.00	599.84	598.49	597.95	1.90	1.89	-9.88	-24.86	-3.88	18.35	14.44	3.91	4.691		
700.00	699.45	697.74	696.47	2.24	2.26	-9.02	-36.49	-6.95	21.77	17.11	4.66	4.668		
800.00	798.70	796.99	794.50	2.61	2.65	-8.59	-51.38	-10.89	25.15	19.74	5.41	4.648		
867.08	865.01	864.06	860.61	2.86	2.92	-8.74	-62.30	-13.77	26.36	20.49	5.87	4.489		
900.00	897.50	896.98	893.06	2.99	3.05	-8.93	-67.65	-15.19	26.58	20.48	6.10	4.358		
1,000.00	996.17	996.97	991.64	3.39	3.47	-9.51	-83.92	-19.48	27.23	20.43	6.80	4.003		
1,100.00	1,094.84	1,096.97	1,090.21	3.80	3.89	-10.06	-100.19	-23.78	27.88	20.37	7.52	3.710		
1,200.00	1,193.52	1,196.97	1,188.78	4.21	4.31	-10.59	-116.46	-28.08	28.54	20.30	8.24	3.464		
1,300.00	1,292.19	1,296.97	1,287.35	4.62	4.74	-11.09	-132.73	-32.38	29.20	20.23	8.97	3.256		
1,400.00	1,390.87	1,396.96	1,385.92	5.04	5.17	-11.57	-149.00	-36.67	29.86	20.16	9.70	3.077		
1,500.00	1,489.54	1,496.96	1,484.49	5.46	5.60	-12.03	-165.27	-40.97	30.52	20.08	10.44	2.923		
1,600.00	1,588.21	1,596.96	1,583.07	5.89	6.03	-12.47	-181.54	-45.27	31.19	20.00	11.19	2.788		
1,700.00	1,686.89	1,696.96	1,681.64	6.31	6.46	-12.89	-197.81	-49.56	31.85	19.92	11.93	2.670		
1,800.00	1,785.56	1,796.95	1,780.21	6.74	6.90	-13.29	-214.08	-53.86	32.52	19.84	12.68	2.565		
1,900.00	1,884.23	1,896.95	1,878.78	7.17	7.33	-13.68	-230.34	-58.16	33.19	19.76	13.43	2.472		
2,000.00	1,982.91	1,996.95	1,977.35	7.59	7.77	-14.05	-246.61	-62.46	33.87	19.68	14.18	2.388		
2,100.00	2,081.58	2,096.95	2,075.92	8.02	8.20	-14.41	-262.88	-66.75	34.54	19.60	14.94	2.312		
2,200.00	2,180.26	2,196.94	2,174.49	8.45	8.64	-14.75	-279.15	-71.05	35.21	19.52	15.69	2.244		
2,300.00	2,278.93	2,296.94	2,273.07	8.88	9.08	-15.08	-295.42	-75.35	35.89	19.44	16.45	2.181		
2,400.00	2,377.60	2,396.94	2,371.64	9.31	9.51	-15.40	-311.69	-79.65	36.57	19.35	17.21	2.125		
2,500.00	2,476.28	2,496.94	2,470.21	9.74	9.95	-15.71	-327.96	-83.94	37.24	19.27	17.97	2.072		
2,600.00	2,574.95	2,596.93	2,568.78	10.17	10.39	-16.00	-344.23	-88.24	37.92	19.19	18.73	2.024		
2,700.00	2,673.63	2,696.93	2,667.35	10.60	10.82	-16.29	-360.50	-92.54	38.60	19.11	19.49	1.980		
2,800.00	2,772.30	2,796.93	2,765.92	11.04	11.26	-16.56	-376.77	-96.83	39.28	19.02	20.26	1.939		
2,900.00	2,870.97	2,896.93	2,864.50	11.47	11.70	-16.83	-393.04	-101.13	39.96	18.94	21.02	1.901		
3,000.00	2,969.65	2,996.92	2,963.07	11.90	12.14	-17.09	-409.31	-105.43	40.65	18.86	21.79	1.866		
3,100.00	3,068.32	3,096.92	3,061.64	12.33	12.57	-17.34	-425.58	-109.73	41.33	18.78	22.55	1.832		
3,200.00	3,166.99	3,196.92	3,160.21	12.76	13.01	-17.58	-441.85	-114.02	42.01	18.69	23.32	1.802		
3,300.00	3,265.67	3,296.92	3,258.78	13.20	13.45	-17.81	-458.12	-118.32	42.70	18.61	24.09	1.773		
3,400.00	3,364.34	3,396.91	3,357.35	13.63	13.89	-18.04	-474.38	-122.62	43.38	18.53	24.86	1.745		
3,500.00	3,463.02	3,496.91	3,455.92	14.06	14.33	-18.26	-490.65	-126.92	44.07	18.44	25.63	1.720		
3,600.00	3,561.69	3,596.91	3,554.50	14.50	14.76	-18.47	-506.92	-131.21	44.76	18.36	26.39	1.696		
3,700.00	3,660.36	3,696.91	3,653.07	14.93	15.20	-18.67	-523.19	-135.51	45.44	18.28	27.16	1.673		
3,800.00	3,759.04	3,796.90	3,751.64	15.36	15.64	-18.87	-539.46	-139.81	46.13	18.20	27.94	1.651		
3,900.00	3,857.71	3,896.90	3,850.21	15.79	16.08	-19.07	-555.73	-144.10	46.82	18.11	28.71	1.631		
4,000.00	3,956.39	3,996.90	3,948.78	16.23	16.52	-19.25	-572.00	-148.40	47.51	18.03	29.48	1.612		
4,100.00	4,055.06	4,096.90	4,047.35	16.66	16.96	-19.44	-588.27	-152.70	48.20	17.95	30.25	1.593		
4,200.00	4,153.73	4,196.89	4,145.93	17.09	17.40	-19.61	-604.54	-157.00	48.89	17.87	31.02	1.576		
4,300.00	4,252.41	4,296.89	4,244.50	17.53	17.83	-19.79	-620.81	-161.29	49.58	17.78	31.79	1.559		
4,400.00	4,351.08	4,396.89	4,343.07	17.96	18.27	-19.95	-637.08	-165.59	50.27	17.70	32.57	1.544		
4,500.00	4,449.75	4,496.89	4,441.64	18.39	18.71	-20.12	-653.35	-169.89	50.96	17.62	33.34	1.528		
4,600.00	4,548.43	4,596.88	4,540.21	18.83	19.15	-20.28	-669.62	-174.19	51.65	17.54	34.12	1.514		
4,700.00	4,647.10	4,696.88	4,638.78	19.26	19.59	-20.43	-685.89	-178.48	52.34	17.45	34.89	1.500		
4,800.00	4,745.78	4,796.88	4,737.35	19.70	20.03	-20.58	-702.16	-182.78	53.04	17.37	35.66	1.487	Level 3	
4,900.00	4,844.45	4,896.88	4,835.93	20.13	20.47	-20.73	-718.42	-187.08	53.73	17.29	36.44	1.474	Level 3	
5,000.00	4,943.12	4,996.87	4,934.50	20.56	20.91	-20.87	-734.69	-191.37	54.42	17.21	37.22	1.462	Level 3	

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

Cathedral Energy Services

Anticollision Report

Company:	Crestone Peak Resources	Local Co-ordinate Reference:	Well SAM 3M-25H-M166
Project:	DJ BASIN	TVD Reference:	23' KB @ 5109.00usft
Reference Site:	S25-T1N-R66W (SAM)	MD Reference:	23' KB @ 5109.00usft
Site Error:	0.00usft	North Reference:	Grid
Reference Well:	SAM 3M-25H-M166	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #1	Offset TVD Reference:	Offset Datum

Offset Design S25-T1N-R66W (SAM) - SAM 3N-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	5,041.80	5,096.87	5,033.07	21.00	21.35	-21.01	-750.96	-195.67	55.12	17.12	37.99	1.451	Level 3
5,200.00	5,140.47	5,196.87	5,131.64	21.43	21.78	-21.15	-767.23	-199.97	55.81	17.04	38.77	1.440	Level 3
5,300.00	5,239.14	5,296.87	5,230.21	21.86	22.22	-21.28	-783.50	-204.27	56.50	16.96	39.54	1.429	Level 3
5,400.00	5,337.82	5,396.86	5,328.78	22.30	22.66	-21.41	-799.77	-208.56	57.20	16.88	40.32	1.419	Level 3
5,500.00	5,436.49	5,496.86	5,427.35	22.73	23.10	-21.54	-816.04	-212.86	57.89	16.80	41.10	1.409	Level 3
5,600.00	5,535.17	5,596.86	5,525.93	23.17	23.54	-21.66	-832.31	-217.16	58.59	16.71	41.87	1.399	Level 3
5,700.00	5,633.84	5,696.86	5,624.50	23.60	23.98	-21.78	-848.58	-221.46	59.28	16.63	42.65	1.390	Level 3
5,800.00	5,732.51	5,796.85	5,723.07	24.03	24.42	-21.90	-864.85	-225.75	59.98	16.55	43.43	1.381	Level 3
5,900.00	5,831.19	5,896.85	5,821.64	24.47	24.86	-22.01	-881.12	-230.05	60.67	16.47	44.21	1.373	Level 3
6,000.00	5,929.86	5,996.85	5,920.21	24.90	25.30	-22.12	-897.39	-234.35	61.37	16.38	44.98	1.364	Level 3
6,100.00	6,028.54	6,096.85	6,018.78	25.34	25.74	-22.23	-913.66	-238.64	62.06	16.30	45.76	1.356	Level 3
6,200.00	6,127.21	6,196.84	6,117.36	25.77	26.18	-22.34	-929.93	-242.94	62.76	16.22	46.54	1.349	Level 3
6,300.00	6,225.88	6,296.84	6,215.93	26.20	26.61	-22.45	-946.19	-247.24	63.46	16.14	47.32	1.341	Level 3
6,400.00	6,324.56	6,396.84	6,314.50	26.64	27.05	-22.55	-962.46	-251.54	64.15	16.06	48.10	1.334	Level 3
6,500.00	6,423.23	6,496.84	6,413.07	27.07	27.49	-22.65	-978.73	-255.83	64.85	15.97	48.88	1.327	Level 3
6,600.00	6,521.90	6,596.83	6,511.64	27.51	27.93	-22.75	-995.00	-260.13	65.55	15.89	49.66	1.320	Level 3
6,700.00	6,620.58	6,696.83	6,610.21	27.94	28.37	-22.84	-1,011.27	-264.43	66.25	15.81	50.43	1.313	Level 3
6,749.72	6,669.64	6,746.55	6,659.22	28.16	28.59	-22.89	-1,019.36	-266.57	66.59	15.77	50.82	1.310	Level 3
6,800.00	6,719.29	6,796.79	6,708.75	28.37	28.81	3.53	-1,027.54	-268.72	66.77	15.69	51.08	1.307	Level 3
6,850.00	6,768.59	6,846.51	6,757.76	28.57	29.03	30.02	-1,035.63	-270.86	66.85	15.75	51.11	1.308	Level 3
6,900.00	6,817.56	6,895.75	6,806.30	28.75	29.25	52.41	-1,043.64	-272.98	67.65	16.59	51.07	1.325	Level 3
6,950.00	6,865.97	6,944.63	6,854.49	28.92	29.46	71.46	-1,051.59	-274.96	70.37	19.10	51.27	1.373	Level 3
7,000.00	6,913.59	6,994.80	6,903.97	29.08	29.67	87.01	-1,059.73	-274.46	75.31	23.42	51.89	1.451	Level 3
7,050.00	6,960.18	7,045.92	6,954.25	29.23	29.87	99.31	-1,067.96	-270.33	81.95	29.29	52.65	1.556	
7,100.00	7,005.51	7,098.06	7,005.10	29.37	30.07	109.08	-1,076.25	-262.40	89.85	36.57	53.28	1.686	
7,150.00	7,049.37	7,151.25	7,056.25	29.50	30.25	116.90	-1,084.55	-250.46	98.62	45.04	53.58	1.841	
7,200.00	7,091.54	7,205.56	7,107.43	29.61	30.42	123.19	-1,092.81	-234.35	107.93	54.45	53.48	2.018	
7,250.00	7,131.81	7,261.00	7,158.30	29.72	30.58	128.30	-1,100.97	-213.89	117.50	64.56	52.94	2.219	
7,300.00	7,169.99	7,317.61	7,208.47	29.81	30.73	132.48	-1,108.97	-188.95	127.12	75.15	51.97	2.446	
7,350.00	7,205.90	7,375.41	7,257.54	29.90	30.87	135.92	-1,116.75	-159.43	136.61	86.02	50.59	2.700	
7,400.00	7,239.35	7,434.41	7,305.04	29.97	31.00	138.77	-1,124.22	-125.27	145.80	96.99	48.81	2.987	
7,450.00	7,270.19	7,494.61	7,350.48	30.04	31.11	141.13	-1,131.30	-86.47	154.56	107.88	46.68	3.311	
7,500.00	7,298.26	7,555.97	7,393.34	30.10	31.21	143.10	-1,137.91	-43.08	162.76	118.51	44.25	3.678	
7,550.00	7,323.42	7,618.45	7,433.05	30.17	31.31	144.72	-1,143.96	4.75	170.30	128.71	41.58	4.095	
7,600.00	7,345.57	7,681.99	7,469.07	30.24	31.39	146.06	-1,149.35	56.79	177.06	138.30	38.77	4.567	
7,650.00	7,364.58	7,746.49	7,500.85	30.33	31.48	147.14	-1,154.01	112.70	182.97	147.07	35.90	5.097	
7,700.00	7,380.36	7,811.85	7,527.85	30.50	31.58	147.99	-1,157.85	172.07	187.94	154.74	33.20	5.660	
7,750.00	7,392.85	7,877.93	7,549.61	30.84	31.73	148.65	-1,160.79	234.37	191.90	161.07	30.83	6.224	
7,800.00	7,401.97	7,944.57	7,565.73	31.39	32.07	149.11	-1,162.78	298.98	194.81	165.75	29.06	6.704	
7,850.00	7,407.68	8,011.60	7,575.91	32.09	32.74	149.39	-1,163.78	365.20	196.62	168.49	28.13	6.989	
7,900.00	7,409.96	8,078.85	7,579.93	32.90	33.68	149.49	-1,163.75	432.30	197.30	169.09	28.21	6.994	
7,908.04	7,410.00	8,089.42	7,580.00	33.03	33.85	149.50	-1,163.65	442.87	197.31	168.98	28.33	6.966	
8,000.00	7,410.00	8,181.38	7,580.00	34.69	35.44	149.50	-1,162.71	534.83	197.30	166.87	30.43	6.484	
8,100.00	7,410.00	8,281.38	7,580.00	36.70	37.39	149.50	-1,161.69	634.83	197.30	164.38	32.92	5.994	
8,200.00	7,410.00	8,381.38	7,580.00	38.87	39.52	149.50	-1,160.66	734.82	197.30	161.71	35.58	5.545	
8,300.00	7,410.00	8,481.38	7,580.00	41.18	41.79	149.50	-1,159.64	834.82	197.29	158.90	38.39	5.139	
8,400.00	7,410.00	8,581.38	7,580.00	43.61	44.18	149.51	-1,158.61	934.81	197.29	155.98	41.30	4.777	
8,500.00	7,410.00	8,681.38	7,580.00	46.13	46.66	149.51	-1,157.59	1,034.80	197.28	152.97	44.31	4.452	
8,600.00	7,410.00	8,781.38	7,580.00	48.73	49.23	149.51	-1,156.56	1,134.80	197.28	149.89	47.39	4.163	
8,700.00	7,410.00	8,881.38	7,580.00	51.39	51.87	149.51	-1,155.54	1,234.79	197.27	146.75	50.52	3.905	
8,800.00	7,410.00	8,981.38	7,580.00	54.12	54.58	149.51	-1,154.51	1,334.79	197.27	143.56	53.71	3.673	
8,900.00	7,410.00	9,081.38	7,580.00	56.90	57.33	149.52	-1,153.49	1,434.78	197.27	140.33	56.93	3.465	

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

Cathedral Energy Services

Anticollision Report

Company:	Crestone Peak Resources	Local Co-ordinate Reference:	Well SAM 3M-25H-M166
Project:	DJ BASIN	TVD Reference:	23' KB @ 5109.00usft
Reference Site:	S25-T1N-R66W (SAM)	MD Reference:	23' KB @ 5109.00usft
Site Error:	0.00usft	North Reference:	Grid
Reference Well:	SAM 3M-25H-M166	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #1	Offset TVD Reference:	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						
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
9,000.00	7,410.00	9,181.38	7,580.00	59.71	60.13	149.52	-1,152.46	1,534.78	197.26	137.07	60.19	3.277	
9,100.00	7,410.00	9,281.38	7,580.00	62.57	62.96	149.52	-1,151.44	1,634.77	197.26	133.78	63.48	3.108	
9,200.00	7,410.00	9,381.38	7,580.00	65.46	65.83	149.52	-1,150.41	1,734.77	197.25	130.47	66.79	2.953	
9,300.00	7,410.00	9,481.38	7,580.00	68.37	68.73	149.53	-1,149.39	1,834.76	197.25	127.13	70.12	2.813	
9,400.00	7,410.00	9,581.38	7,580.00	71.31	71.66	149.53	-1,148.36	1,934.76	197.24	123.77	73.47	2.685	
9,500.00	7,410.00	9,681.38	7,580.00	74.28	74.61	149.53	-1,147.34	2,034.75	197.24	120.41	76.84	2.567	
9,600.00	7,410.00	9,781.38	7,580.00	77.26	77.58	149.53	-1,146.31	2,134.75	197.24	117.02	80.21	2.459	
9,700.00	7,410.00	9,881.38	7,580.00	80.26	80.57	149.53	-1,145.29	2,234.74	197.23	113.63	83.60	2.359	
9,800.00	7,410.00	9,981.38	7,580.00	83.27	83.57	149.54	-1,144.26	2,334.74	197.23	110.22	87.01	2.267	
9,900.00	7,410.00	10,081.38	7,580.00	86.30	86.59	149.54	-1,143.24	2,434.73	197.22	106.81	90.42	2.181	
10,000.00	7,410.00	10,181.38	7,580.00	89.34	89.62	149.54	-1,142.21	2,534.73	197.22	103.39	93.83	2.102	
10,100.00	7,410.00	10,281.38	7,580.00	92.39	92.66	149.54	-1,141.19	2,634.72	197.21	99.96	97.26	2.028	
10,200.00	7,410.00	10,381.38	7,580.00	95.46	95.72	149.54	-1,140.16	2,734.72	197.21	96.52	100.69	1.959	
10,300.00	7,410.00	10,481.38	7,580.00	98.53	98.78	149.55	-1,139.14	2,834.71	197.21	93.08	104.13	1.894	
10,400.00	7,410.00	10,581.38	7,580.00	101.61	101.85	149.55	-1,138.12	2,934.70	197.20	89.63	107.57	1.833	
10,500.00	7,410.00	10,681.38	7,580.00	104.69	104.93	149.55	-1,137.09	3,034.70	197.20	86.18	111.02	1.776	
10,600.00	7,410.00	10,781.38	7,580.00	107.79	108.02	149.55	-1,136.07	3,134.69	197.19	82.72	114.47	1.723	
10,700.00	7,410.00	10,881.38	7,580.00	110.89	111.11	149.56	-1,135.04	3,234.69	197.19	79.26	117.93	1.672	
10,800.00	7,410.00	10,981.38	7,580.00	113.99	114.21	149.56	-1,134.02	3,334.68	197.18	75.80	121.39	1.624	
10,900.00	7,410.00	11,081.38	7,580.00	117.11	117.32	149.56	-1,132.99	3,434.68	197.18	72.33	124.85	1.579	
11,000.00	7,410.00	11,181.38	7,580.00	120.22	120.43	149.56	-1,131.97	3,534.67	197.18	68.86	128.31	1.537	
11,100.00	7,410.00	11,281.38	7,580.00	123.34	123.54	149.56	-1,130.94	3,634.67	197.17	65.39	131.78	1.496 Level 3	
11,200.00	7,410.00	11,381.38	7,580.00	126.47	126.66	149.57	-1,129.92	3,734.66	197.17	61.92	135.25	1.458 Level 3	
11,300.00	7,410.00	11,481.38	7,580.00	129.60	129.79	149.57	-1,128.89	3,834.66	197.16	58.44	138.72	1.421 Level 3	
11,400.00	7,410.00	11,581.38	7,580.00	132.73	132.92	149.57	-1,127.87	3,934.65	197.16	54.96	142.20	1.387 Level 3	
11,500.00	7,410.00	11,681.38	7,580.00	135.87	136.05	149.57	-1,126.84	4,034.65	197.15	51.48	145.67	1.353 Level 3	
11,600.00	7,410.00	11,781.38	7,580.00	139.01	139.19	149.57	-1,125.82	4,134.64	197.15	48.00	149.15	1.322 Level 3	
11,700.00	7,410.00	11,881.38	7,580.00	142.15	142.32	149.58	-1,124.79	4,234.64	197.15	44.52	152.63	1.292 Level 3	
11,800.00	7,410.00	11,981.38	7,580.00	145.30	145.47	149.58	-1,123.77	4,334.63	197.14	41.03	156.11	1.263 Level 3	
11,900.00	7,410.00	12,081.38	7,580.00	148.44	148.61	149.58	-1,122.74	4,434.63	197.14	37.55	159.59	1.235 Level 2	
11,973.05	7,410.00	12,154.43	7,580.00	150.74	150.91	149.58	-1,121.99	4,507.67	197.13	35.00	162.14	1.216 Level 2	
11,975.04	7,410.00	12,155.71	7,580.00	150.81	150.95	149.58	-1,121.98	4,508.95	197.14	34.90	162.23	1.215 Level 2, SF	

Cathedral Energy Services

Anticollision Report

Company:	Crestone Peak Resources	Local Co-ordinate Reference:	Well SAM 3M-25H-M166
Project:	DJ BASIN	TVD Reference:	23' KB @ 5109.00usft
Reference Site:	S25-T1N-R66W (SAM)	MD Reference:	23' KB @ 5109.00usft
Site Error:	0.00usft	North Reference:	Grid
Reference Well:	SAM 3M-25H-M166	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #1	Offset TVD Reference:	Offset Datum

Offset Design S25-T1N-R66W (SAM) - SAM 30-25H-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	19.77	0.28	72.607		
200.00	200.00	200.00	200.00	0.50	0.50	-179.69	-20.04	-0.11	20.04	19.05	0.99	20.183	CC	
300.00	300.00	299.28	299.26	0.85	0.84	-178.64	-21.71	-0.52	21.73	19.99	1.74	12.514		
400.00	400.00	398.33	398.17	1.21	1.19	-176.28	-26.71	-1.74	26.83	24.32	2.51	10.695		
500.00	499.98	497.06	496.53	1.56	1.54	-10.42	-34.99	-3.76	33.65	30.38	3.27	10.291		
600.00	599.84	595.56	594.31	1.90	1.91	-9.34	-46.53	-6.58	40.47	36.45	4.02	10.061		
700.00	699.45	693.84	691.40	2.24	2.31	-8.75	-61.29	-10.18	47.27	42.48	4.78	9.887		
800.00	798.70	793.03	788.93	2.61	2.72	-8.53	-78.81	-14.46	53.35	47.87	5.48	9.732		
867.08	865.01	860.07	854.83	2.86	3.01	-8.69	-90.80	-17.39	55.66	49.73	5.93	9.382		
900.00	897.50	892.98	887.17	2.99	3.15	-8.83	-96.69	-18.83	56.42	50.25	6.17	9.150		
1,000.00	996.17	992.95	985.44	3.39	3.59	-9.22	-114.57	-23.20	58.71	51.84	6.87	8.544		
1,100.00	1,094.84	1,092.93	1,083.70	3.80	4.03	-9.58	-132.45	-27.57	61.00	53.42	7.59	8.040		
1,200.00	1,193.52	1,192.90	1,181.96	4.21	4.47	-9.92	-150.34	-31.94	63.30	54.99	8.31	7.616		
1,300.00	1,292.19	1,292.87	1,280.23	4.62	4.92	-10.24	-168.22	-36.31	65.60	56.56	9.04	7.255		
1,400.00	1,390.87	1,392.85	1,378.49	5.04	5.36	-10.53	-186.11	-40.68	67.90	58.12	9.78	6.944		
1,500.00	1,489.54	1,492.82	1,476.75	5.46	5.81	-10.80	-203.99	-45.05	70.20	59.68	10.52	6.674		
1,600.00	1,588.21	1,592.79	1,575.02	5.89	6.26	-11.06	-221.87	-49.42	72.50	61.24	11.26	6.438		
1,700.00	1,686.89	1,692.76	1,673.28	6.31	6.71	-11.30	-239.76	-53.79	74.81	62.80	12.01	6.230		
1,800.00	1,785.56	1,792.74	1,771.54	6.74	7.15	-11.52	-257.64	-58.16	77.12	64.36	12.76	6.046		
1,900.00	1,884.23	1,892.71	1,869.81	7.17	7.60	-11.74	-275.53	-62.53	79.42	65.92	13.51	5.880		
2,000.00	1,982.91	1,992.68	1,968.07	7.59	8.05	-11.94	-293.41	-66.90	81.73	67.47	14.26	5.732		
2,100.00	2,081.58	2,092.66	2,066.33	8.02	8.51	-12.13	-311.29	-71.27	84.04	69.03	15.01	5.598		
2,200.00	2,180.26	2,192.63	2,164.60	8.45	8.96	-12.31	-329.18	-75.64	86.35	70.58	15.77	5.477		
2,300.00	2,278.93	2,292.60	2,262.86	8.88	9.41	-12.48	-347.06	-80.01	88.66	72.14	16.52	5.366		
2,400.00	2,377.60	2,392.57	2,361.12	9.31	9.86	-12.64	-364.95	-84.38	90.97	73.69	17.28	5.265		
2,500.00	2,476.28	2,492.55	2,459.39	9.74	10.31	-12.79	-382.83	-88.74	93.29	75.25	18.04	5.172		
2,600.00	2,574.95	2,592.52	2,557.65	10.17	10.76	-12.94	-400.71	-93.11	95.60	76.80	18.80	5.086		
2,700.00	2,673.63	2,692.49	2,655.91	10.60	11.21	-13.08	-418.60	-97.48	97.91	78.36	19.56	5.007		
2,800.00	2,772.30	2,792.47	2,754.18	11.04	11.66	-13.21	-436.48	-101.85	100.23	79.91	20.32	4.933		
2,900.00	2,870.97	2,892.44	2,852.44	11.47	12.12	-13.34	-454.36	-106.22	102.54	81.46	21.08	4.865		
3,000.00	2,969.65	2,992.41	2,950.70	11.90	12.57	-13.46	-472.25	-110.59	104.86	83.02	21.84	4.802		
3,100.00	3,068.32	3,092.39	3,048.97	12.33	13.02	-13.57	-490.13	-114.96	107.17	84.57	22.60	4.742		
3,200.00	3,166.99	3,192.36	3,147.23	12.76	13.47	-13.69	-508.02	-119.33	109.49	86.13	23.36	4.687		
3,300.00	3,265.67	3,292.33	3,245.49	13.20	13.92	-13.79	-525.90	-123.70	111.80	87.68	24.12	4.635		
3,400.00	3,364.34	3,392.30	3,343.76	13.63	14.38	-13.89	-543.78	-128.07	114.12	89.23	24.89	4.586		
3,500.00	3,463.02	3,492.28	3,442.02	14.06	14.83	-13.99	-561.67	-132.44	116.44	90.79	25.65	4.539		
3,600.00	3,561.69	3,592.25	3,540.28	14.50	15.28	-14.09	-579.55	-136.81	118.76	92.34	26.41	4.496		
3,700.00	3,660.36	3,692.22	3,638.55	14.93	15.73	-14.18	-597.44	-141.18	121.07	93.90	27.18	4.455		
3,800.00	3,759.04	3,792.20	3,736.81	15.36	16.19	-14.26	-615.32	-145.55	123.39	95.45	27.94	4.416		
3,900.00	3,857.71	3,892.17	3,835.07	15.79	16.64	-14.35	-633.20	-149.92	125.71	97.00	28.71	4.379		
4,000.00	3,956.39	3,992.14	3,933.34	16.23	17.09	-14.43	-651.09	-154.29	128.03	98.56	29.47	4.344		
4,100.00	4,055.06	4,092.11	4,031.60	16.66	17.54	-14.51	-668.97	-158.66	130.35	100.11	30.24	4.311		
4,200.00	4,153.73	4,192.09	4,129.86	17.09	18.00	-14.58	-686.86	-163.03	132.67	101.66	31.00	4.279		
4,300.00	4,252.41	4,292.06	4,228.13	17.53	18.45	-14.66	-704.74	-167.40	134.99	103.22	31.77	4.249		
4,400.00	4,351.08	4,392.03	4,326.39	17.96	18.90	-14.73	-722.62	-171.76	137.30	104.77	32.53	4.221		
4,500.00	4,449.75	4,492.01	4,424.65	18.39	19.35	-14.79	-740.51	-176.13	139.62	106.33	33.30	4.193		
4,600.00	4,548.43	4,591.98	4,522.91	18.83	19.81	-14.86	-758.39	-180.50	141.94	107.88	34.06	4.167		
4,700.00	4,647.10	4,691.95	4,621.18	19.26	20.26	-14.92	-776.28	-184.87	144.26	109.44	34.83	4.142		
4,800.00	4,745.78	4,791.93	4,719.44	19.70	20.71	-14.99	-794.16	-189.24	146.58	110.99	35.60	4.118		
4,900.00	4,844.45	4,891.90	4,817.70	20.13	21.17	-15.04	-812.04	-193.61	148.90	112.54	36.36	4.095		
5,000.00	4,943.12	4,991.87	4,915.97	20.56	21.62	-15.10	-829.93	-197.98	151.23	114.10	37.13	4.073		

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

Cathedral Energy Services

Anticollision Report

Company:	Crestone Peak Resources	Local Co-ordinate Reference:	Well SAM 3M-25H-M166
Project:	DJ BASIN	TVD Reference:	23' KB @ 5109.00usft
Reference Site:	S25-T1N-R66W (SAM)	MD Reference:	23' KB @ 5109.00usft
Site Error:	0.00usft	North Reference:	Grid
Reference Well:	SAM 3M-25H-M166	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #1	Offset TVD Reference:	Offset Datum

Offset Design S25-T1N-R66W (SAM) - SAM 30-25H-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	5,041.80	5,091.84	5,014.23	21.00	22.07	-15.16	-847.81	-202.35	153.55	115.65	37.89	4.052	
5,200.00	5,140.47	5,191.82	5,112.49	21.43	22.52	-15.21	-865.70	-206.72	155.87	117.21	38.66	4.032	
5,300.00	5,239.14	5,291.79	5,210.76	21.86	22.98	-15.27	-883.58	-211.09	158.19	118.76	39.43	4.012	
5,400.00	5,337.82	5,391.76	5,309.02	22.30	23.43	-15.32	-901.46	-215.46	160.51	120.31	40.19	3.993	
5,500.00	5,436.49	5,491.74	5,407.28	22.73	23.88	-15.37	-919.35	-219.83	162.83	121.87	40.96	3.975	
5,600.00	5,535.17	5,591.71	5,505.55	23.17	24.34	-15.42	-937.23	-224.20	165.15	123.42	41.73	3.958	
5,700.00	5,633.84	5,691.68	5,603.81	23.60	24.79	-15.46	-955.12	-228.57	167.47	124.98	42.50	3.941	
5,800.00	5,732.51	5,791.66	5,702.07	24.03	25.24	-15.51	-973.00	-232.94	169.79	126.53	43.26	3.925	
5,900.00	5,831.19	5,891.63	5,800.34	24.47	25.69	-15.55	-990.88	-237.31	172.12	128.09	44.03	3.909	
6,000.00	5,929.86	5,991.60	5,898.60	24.90	26.15	-15.60	-1,008.77	-241.68	174.44	129.64	44.80	3.894	
6,100.00	6,028.54	6,091.57	5,996.86	25.34	26.60	-15.64	-1,026.65	-246.05	176.76	131.19	45.57	3.879	
6,200.00	6,127.21	6,191.55	6,095.13	25.77	27.05	-15.68	-1,044.53	-250.41	179.08	132.75	46.33	3.865	
6,300.00	6,225.88	6,291.52	6,193.39	26.20	27.51	-15.72	-1,062.42	-254.78	181.40	134.30	47.10	3.851	
6,400.00	6,324.56	6,391.49	6,291.65	26.64	27.96	-15.76	-1,080.30	-259.15	183.73	135.86	47.87	3.838	
6,500.00	6,423.23	6,491.47	6,389.92	27.07	28.41	-15.80	-1,098.19	-263.52	186.05	137.41	48.64	3.825	
6,600.00	6,521.90	6,591.44	6,488.18	27.51	28.86	-15.83	-1,116.07	-267.89	188.37	138.97	49.40	3.813	
6,700.00	6,620.58	6,691.41	6,586.44	27.94	29.32	-15.87	-1,133.95	-272.26	190.69	140.52	50.17	3.801	
6,749.72	6,669.64	6,741.17	6,635.37	28.16	29.54	-16.11	-1,142.85	-273.69	191.84	141.28	50.57	3.794	
6,800.00	6,719.29	6,791.36	6,684.72	28.37	29.76	8.08	-1,151.79	-271.84	193.02	142.03	50.98	3.786	
6,850.00	6,768.59	6,841.11	6,733.39	28.57	29.95	29.41	-1,160.57	-266.54	194.21	142.84	51.37	3.780	
6,900.00	6,817.56	6,890.71	6,781.44	28.75	30.14	43.90	-1,169.21	-257.86	195.42	143.68	51.73	3.777	
6,950.00	6,865.97	6,940.15	6,828.64	28.92	30.31	52.97	-1,177.66	-245.86	196.64	144.57	52.07	3.777	
7,000.00	6,913.59	6,989.44	6,874.78	29.08	30.47	58.71	-1,185.88	-230.63	197.87	145.49	52.38	3.778	
7,050.00	6,960.18	7,038.58	6,919.66	29.23	30.62	62.46	-1,193.84	-212.28	199.09	146.42	52.67	3.780	
7,100.00	7,005.51	7,087.59	6,963.08	29.37	30.75	65.00	-1,201.50	-190.91	200.29	147.36	52.93	3.784	
7,150.00	7,049.37	7,136.46	7,004.85	29.50	30.88	66.75	-1,208.84	-166.64	201.48	148.29	53.19	3.788	
7,200.00	7,091.54	7,185.20	7,044.80	29.61	30.99	67.98	-1,215.82	-139.62	202.64	149.20	53.44	3.792	
7,250.00	7,131.81	7,233.83	7,082.76	29.72	31.09	68.84	-1,222.41	-109.97	203.76	150.06	53.70	3.795	
7,300.00	7,169.99	7,282.34	7,118.58	29.81	31.19	69.46	-1,228.59	-77.86	204.84	150.86	53.98	3.795	
7,350.00	7,205.90	7,330.74	7,152.11	29.90	31.27	69.89	-1,234.33	-43.44	205.86	151.57	54.30	3.791	
7,400.00	7,239.35	7,379.05	7,183.23	29.97	31.35	70.19	-1,239.60	-6.88	206.83	152.16	54.67	3.783	
7,450.00	7,270.19	7,427.26	7,211.79	30.04	31.42	70.40	-1,244.40	31.65	207.72	152.61	55.12	3.769	
7,500.00	7,298.26	7,475.40	7,237.71	30.10	31.49	70.53	-1,248.69	71.97	208.54	152.89	55.66	3.747	
7,550.00	7,323.42	7,523.45	7,260.87	30.17	31.56	70.62	-1,252.47	113.90	209.29	152.98	56.31	3.717	
7,600.00	7,345.57	7,571.45	7,281.19	30.24	31.64	70.67	-1,255.72	157.25	209.94	152.87	57.08	3.678	
7,650.00	7,364.58	7,619.39	7,298.60	30.33	31.73	70.70	-1,258.43	201.82	210.51	152.53	57.98	3.630	
7,700.00	7,380.36	7,667.28	7,313.02	30.50	31.86	70.71	-1,260.58	247.43	210.99	151.95	59.03	3.574	
7,750.00	7,392.85	7,715.13	7,324.40	30.84	32.07	70.72	-1,262.17	293.87	211.36	151.14	60.23	3.509	
7,800.00	7,401.97	7,762.95	7,332.70	31.39	32.39	70.71	-1,263.20	340.95	211.64	150.08	61.56	3.438	
7,850.00	7,407.68	7,810.75	7,337.90	32.09	32.88	70.71	-1,263.66	388.46	211.81	148.79	63.02	3.361	
7,900.00	7,409.96	7,858.54	7,339.96	32.90	33.51	70.71	-1,263.55	436.19	211.88	147.28	64.60	3.280	
7,908.04	7,410.00	7,866.23	7,340.00	33.03	33.62	70.71	-1,263.48	443.88	211.88	147.02	64.87	3.266	
8,000.00	7,410.00	7,958.19	7,340.00	34.69	35.16	70.71	-1,262.55	535.84	211.88	143.81	68.08	3.112	
8,100.00	7,410.00	8,058.19	7,340.00	36.70	37.09	70.71	-1,261.53	635.83	211.88	140.01	71.87	2.948	
8,200.00	7,410.00	8,158.19	7,340.00	38.87	39.21	70.71	-1,260.51	735.83	211.88	135.92	75.97	2.789	
8,300.00	7,410.00	8,258.19	7,340.00	41.18	41.49	70.71	-1,259.50	835.82	211.88	131.57	80.31	2.638	
8,400.00	7,410.00	8,358.19	7,340.00	43.61	43.89	70.71	-1,258.48	935.82	211.88	127.01	84.87	2.497	
8,500.00	7,410.00	8,458.19	7,340.00	46.13	46.39	70.71	-1,257.47	1,035.81	211.88	122.28	89.61	2.365	
8,600.00	7,410.00	8,558.19	7,340.00	48.73	48.97	70.71	-1,256.45	1,135.81	211.88	117.39	94.50	2.242	
8,700.00	7,410.00	8,658.19	7,340.00	51.39	51.62	70.71	-1,255.43	1,235.80	211.88	112.37	99.52	2.129	
8,800.00	7,410.00	8,758.19	7,340.00	54.12	54.33	70.71	-1,254.42	1,335.80	211.88	107.24	104.65	2.025	
8,900.00	7,410.00	8,858.19	7,340.00	56.90	57.10	70.71	-1,253.40	1,435.79	211.88	102.01	109.88	1.928	

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

Cathedral Energy Services

Anticollision Report

Company:	Crestone Peak Resources	Local Co-ordinate Reference:	Well SAM 3M-25H-M166
Project:	DJ BASIN	TVD Reference:	23' KB @ 5109.00usft
Reference Site:	S25-T1N-R66W (SAM)	MD Reference:	23' KB @ 5109.00usft
Site Error:	0.00usft	North Reference:	Grid
Reference Well:	SAM 3M-25H-M166	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #1	Offset TVD Reference:	Offset Datum

Offset Design S25-T1N-R66W (SAM) - SAM 3O-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				Separation Factor	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)			
9,000.00	7,410.00	8,958.19	7,340.00	59.71	59.90	70.71	-1,252.38	1,535.79	211.88	96.70	115.19	1.839	
9,100.00	7,410.00	9,058.19	7,340.00	62.57	62.75	70.71	-1,251.37	1,635.78	211.88	91.31	120.57	1.757	
9,200.00	7,410.00	9,158.19	7,340.00	65.46	65.63	70.71	-1,250.35	1,735.78	211.88	85.87	126.01	1.681	
9,300.00	7,410.00	9,258.19	7,340.00	68.37	68.54	70.71	-1,249.33	1,835.77	211.88	80.37	131.51	1.611	
9,400.00	7,410.00	9,358.19	7,340.00	71.31	71.47	70.71	-1,248.32	1,935.76	211.88	74.82	137.06	1.546	
9,500.00	7,410.00	9,458.19	7,340.00	74.28	74.43	70.71	-1,247.30	2,035.76	211.88	69.23	142.65	1.485	Level 3
9,600.00	7,410.00	9,558.19	7,340.00	77.26	77.40	70.71	-1,246.28	2,135.75	211.88	63.60	148.28	1.429	Level 3
9,700.00	7,410.00	9,658.19	7,340.00	80.26	80.40	70.71	-1,245.27	2,235.75	211.88	57.94	153.95	1.376	Level 3
9,800.00	7,410.00	9,758.19	7,340.00	83.27	83.41	70.71	-1,244.25	2,335.74	211.88	52.24	159.64	1.327	Level 3
9,900.00	7,410.00	9,858.19	7,340.00	86.30	86.43	70.71	-1,243.23	2,435.74	211.88	46.52	165.36	1.281	Level 3
10,000.00	7,410.00	9,958.19	7,340.00	89.34	89.47	70.71	-1,242.22	2,535.73	211.88	40.78	171.10	1.238	Level 2
10,100.00	7,410.00	10,058.19	7,340.00	92.39	92.51	70.71	-1,241.20	2,635.73	211.88	35.02	176.87	1.198	Level 2
10,200.00	7,410.00	10,158.19	7,340.00	95.46	95.57	70.71	-1,240.19	2,735.72	211.88	29.23	182.65	1.160	Level 2
10,300.00	7,410.00	10,258.19	7,340.00	98.53	98.64	70.71	-1,239.17	2,835.72	211.88	23.43	188.46	1.124	Level 2
10,400.00	7,410.00	10,358.19	7,340.00	101.61	101.71	70.71	-1,238.15	2,935.71	211.88	17.61	194.28	1.091	Level 2
10,500.00	7,410.00	10,458.19	7,340.00	104.69	104.80	70.71	-1,237.14	3,035.71	211.88	11.77	200.11	1.059	Level 2
10,600.00	7,410.00	10,558.19	7,340.00	107.79	107.89	70.71	-1,236.12	3,135.70	211.88	5.92	205.96	1.029	Level 2
10,700.00	7,410.00	10,658.19	7,340.00	110.89	110.99	70.71	-1,235.10	3,235.70	211.88	0.06	211.82	1.000	Level 2
10,800.00	7,410.00	10,758.19	7,340.00	113.99	114.09	70.71	-1,234.09	3,335.69	211.88	-5.81	217.70	0.973	Level 1
10,900.00	7,410.00	10,858.19	7,340.00	117.11	117.20	70.71	-1,233.07	3,435.69	211.88	-11.70	223.58	0.948	Level 1
11,000.00	7,410.00	10,958.19	7,340.00	120.22	120.31	70.71	-1,232.05	3,535.68	211.88	-17.59	229.47	0.923	Level 1
11,100.00	7,410.00	11,058.19	7,340.00	123.34	123.43	70.71	-1,231.04	3,635.68	211.88	-23.49	235.37	0.900	Level 1
11,200.00	7,410.00	11,158.19	7,340.00	126.47	126.55	70.71	-1,230.02	3,735.67	211.88	-29.40	241.29	0.878	Level 1
11,300.00	7,410.00	11,258.19	7,340.00	129.60	129.68	70.71	-1,229.00	3,835.67	211.88	-35.32	247.20	0.857	Level 1
11,400.00	7,410.00	11,358.19	7,340.00	132.73	132.81	70.71	-1,227.99	3,935.66	211.88	-41.25	253.13	0.837	Level 1
11,500.00	7,410.00	11,458.19	7,340.00	135.87	135.95	70.71	-1,226.97	4,035.66	211.88	-47.18	259.06	0.818	Level 1
11,600.00	7,410.00	11,558.19	7,340.00	139.01	139.08	70.71	-1,225.96	4,135.65	211.88	-53.12	265.00	0.800	Level 1
11,700.00	7,410.00	11,658.19	7,340.00	142.15	142.22	70.71	-1,224.94	4,235.65	211.88	-59.06	270.95	0.782	Level 1
11,800.00	7,410.00	11,758.19	7,340.00	145.30	145.37	70.71	-1,223.92	4,335.64	211.88	-65.01	276.90	0.765	Level 1
11,900.00	7,410.00	11,858.19	7,340.00	148.44	148.51	70.71	-1,222.91	4,435.64	211.88	-70.97	282.85	0.749	Level 1
11,972.46	7,410.00	11,930.65	7,340.00	150.73	150.79	70.71	-1,222.17	4,508.09	211.88	-75.29	287.17	0.738	Level 1
11,975.04	7,410.00	11,932.12	7,340.00	150.81	150.84	70.71	-1,222.15	4,509.56	211.89	-75.47	287.35	0.737	Level 1, ES, SF

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

Cathedral Energy Services

Anticollision Report

Company:	Crestone Peak Resources	Local Co-ordinate Reference:	Well SAM 3M-25H-M166
Project:	DJ BASIN	TVD Reference:	23' KB @ 5109.00usft
Reference Site:	S25-T1N-R66W (SAM)	MD Reference:	23' KB @ 5109.00usft
Site Error:	0.00usft	North Reference:	Grid
Reference Well:	SAM 3M-25H-M166	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #1	Offset TVD Reference:	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		
10,600.00	7,410.00	7,331.00	7,331.00	107.79	8.23	-90.00	96.26	4,047.07	1,454.87	1,357.86	97.01	14.997		
10,700.00	7,410.00	7,331.00	7,331.00	110.89	8.23	-90.00	96.26	4,047.07	1,393.44	1,290.89	102.55	13.588		
10,800.00	7,410.00	7,331.00	7,331.00	113.99	8.23	-90.00	96.26	4,047.07	1,336.68	1,228.35	108.32	12.340		
10,900.00	7,410.00	7,331.00	7,331.00	117.11	8.23	-90.00	96.26	4,047.07	1,285.20	1,170.96	114.24	11.250		
11,000.00	7,410.00	7,331.00	7,331.00	120.22	8.23	-90.00	96.26	4,047.07	1,239.66	1,119.48	120.18	10.315		
11,100.00	7,410.00	7,331.00	7,331.00	123.34	8.23	-90.00	96.26	4,047.07	1,200.74	1,074.76	125.99	9.531		
11,200.00	7,410.00	7,331.00	7,331.00	126.47	8.23	-90.00	96.26	4,047.07	1,169.11	1,037.63	131.47	8.892		
11,300.00	7,410.00	7,331.00	7,331.00	129.60	8.23	-90.00	96.26	4,047.07	1,145.36	1,008.91	136.44	8.394		
11,400.00	7,410.00	7,331.00	7,331.00	132.73	8.23	-90.00	96.26	4,047.07	1,129.99	989.29	140.70	8.031		
11,500.00	7,410.00	7,331.00	7,331.00	135.87	8.23	-90.00	96.26	4,047.07	1,123.34	979.28	144.06	7.798		
11,524.86	7,410.00	7,331.00	7,331.00	136.65	8.23	-90.00	96.26	4,047.07	1,123.07	978.32	144.75	7.759 CC, ES		
11,600.00	7,410.00	7,331.00	7,331.00	139.01	8.23	-90.00	96.26	4,047.07	1,125.58	979.15	146.42	7.687 SF		
11,700.00	7,410.00	7,331.00	7,331.00	142.15	8.23	-90.00	96.26	4,047.07	1,136.64	988.90	147.74	7.694		
11,800.00	7,410.00	7,331.00	7,331.00	145.30	8.23	-90.00	96.26	4,047.07	1,156.28	1,008.25	148.03	7.811		
11,900.00	7,410.00	7,331.00	7,331.00	148.44	8.23	-90.00	96.26	4,047.07	1,184.06	1,036.67	147.39	8.033		
11,975.04	7,410.00	7,331.00	7,331.00	150.81	8.23	-90.00	96.26	4,047.07	1,209.93	1,063.54	146.39	8.265		

Cathedral Energy Services

Anticollision Report

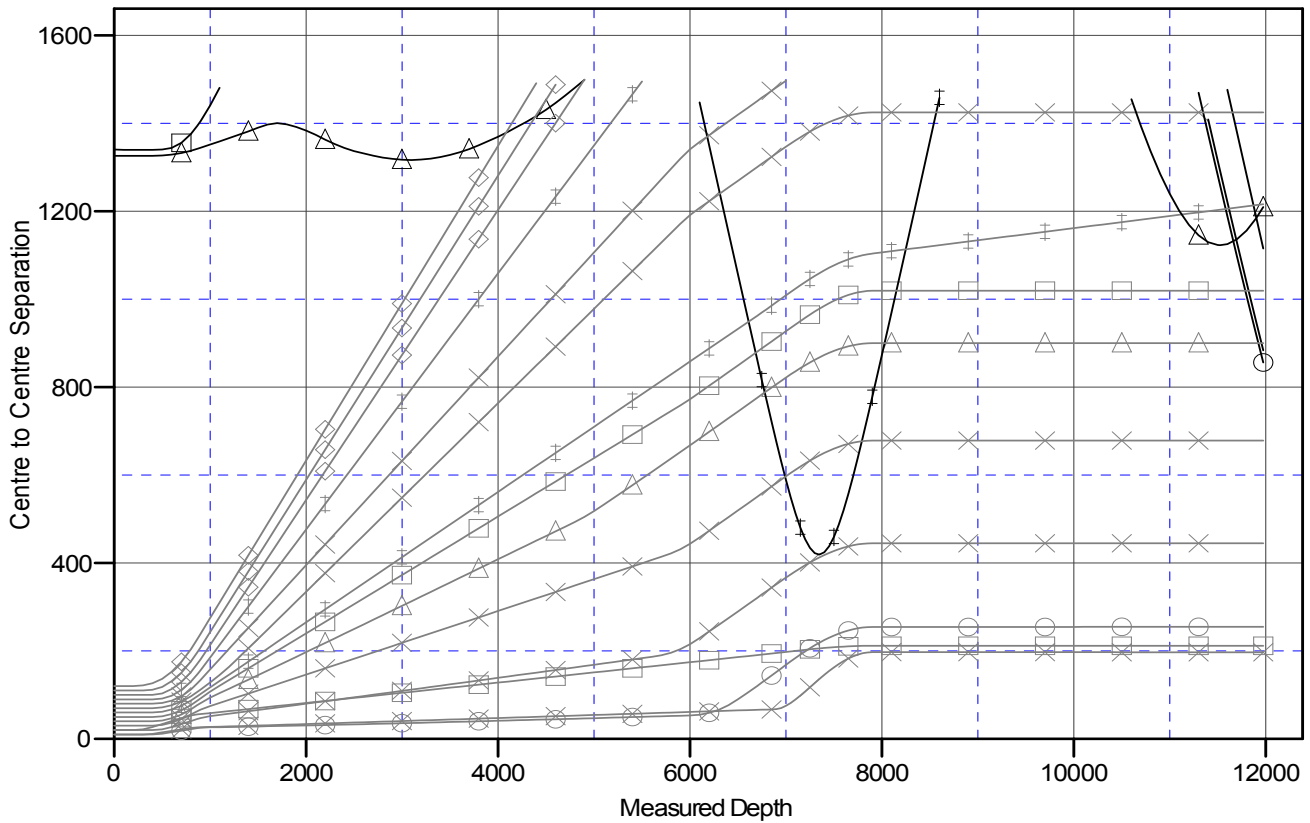
Company: Crestone Peak Resources
Project: DJ BASIN
Reference Site: S25-T1N-R66W (SAM)
Site Error: 0.00usft
Reference Well: SAM 3M-25H-M166
Well Error: 0.00usft
Reference Wellbore: OH
Reference Design: PLAN #1

Local Co-ordinate Reference: Well SAM 3M-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 3M-25H-M166
 Coordinate System is US State Plane 1983, Colorado Northern Zone
 Grid Convergence at Surface is: 0.50°

Ladder Plot



LEGEND

HN, GWOG WELL, GWOG WELL V0	◆ SAM3B-25H-M166, OH, PLAN#1 V0	✕ SAM3J-25H-M166, OH, PLAN#1 V0
D165 (EXISTING), CPR WELL, SURVEYS V0	◆ SAM3C-25H-M166, OH, PLAN#1 V0	✕ SAM3K-25H-M166, OH, PLAN#1 V0
D165 (EXISTING), CPR WELL, SURVEYS V0	◆ SAM3D-25H-M166, OH, PLAN#1 V0	○ SAM3L-25H-M166, OH, PLAN#1 V0
D165 (EXISTING), CPR WELL, SURVEYS V0	✕ SAM3E-25H-M166, OH, PLAN#1 V0	✕ SAM3N-25H-M166, OH, PLAN#1 V0
D165 (EXISTING), CPR WELL, SURVEYS V0	✕ SAM3F-25H-M166, OH, PLAN#1 V0	□ SAM3O-25H-M166, OH, PLAN#1 V0
i), CPR WELL, NO SURVEYS V0	◆ SAM3G-25H-M166, OH, PLAN#1 V0	▲ Wenzel 1 (EXISTING), CPR WELL, NO S
TING), CPR WELL, SURVEYS V0	□ SAM3H-25H-M166, OH, PLAN#1 V0	
36 OH, PLAN#1 V0	▲ SAM3I-25H-M166, OH, PLAN#1 V0	

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