

## State Massive 5-65 2-3 2CH Plan #2 Anti-Collision Summary Report

**Analysis Date-24hr Time:** April 24, 2020 - 10:26

**Client:** Crestone Peak Resources

**Field:** CO, Arapahoe County (NAD 83 CZ)

**Structure:** Crestone Peak 02-05S-65W (State Massive 5-65 2-3 Pad)

**Slot:** State Massive 5-65 2-3 2CH

**Well:** State Massive 5-65 2-3 2CH

**Borehole:** Original Hole

**Scan MD Range:** 0.00ft - 17993.99ft

**Analysis Method:** 3D Least Distance

**Reference Trajectory:** State Massive 5-65 2-3 2CH Plan #2 (Def Plan)

**Depth Interval:** Every 10.00 Measured Depth (ft)

**Rule Set:** D&M AntiCollision Standard S002 v5.1/5.2

**Min Pts:** All local minima indicated.

**Version / Patch:** 2.10.787.0

**Database \ Project:** us1164app01\drilling-CO, Arapahoe County 2.10

**Trajectory Error Model:** ISCSA0 3-D 95.000% Confidence 2.7955 sigma, for subject well. For offset wells, error model version is specified with each well respectively.

### Offset Trajectories Summary

#### Offset Selection Criteria

Wellhead distance scan: Restricted within 59004.49 ft

Selection filters: Definitive Surveys - Definitive Plans - Definitive surveys exclude definitive plans

- All Non-Def Surveys when no Def-Survey is set in a borehole - All Non-Def Plans when no Def-Plan is set in a borehole

Offset Trajectory	Separation			Allow Dev. (ft)	Sep. Fact.	Controlling Rule	Reference Trajectory		Risk Level			Alert	Status
	Ct-Ct (ft)	MAS (ft)	EOU (ft)				MD (ft)	TVD (ft)	Alert	Minor	Major		

Results highlighted: Sep-Factor separation &lt;= 1.50 ft

#### State Challenger 5-65 2-3 3BYH

MWD 2370' to 17847' - PR (Def Survey)

Fail Minor

2361.10	32.81	2359.29	2328.30	N/A	MAS = 10.00 (m)	0.00	0.00					Surface
2361.10	32.81	2359.24	2328.29	42780.98	MAS = 10.00 (m)	28.00	28.00					WRP
2360.77	32.81	2357.65	2327.98	1800.67	MAS = 10.00 (m)	320.00	320.00					MinPts
2357.36	32.81	2346.01	2324.55	246.87	MAS = 10.00 (m)	2190.00	2190.00					MINPT-O-EOU
2357.11	32.81	2345.71	2324.30	240.59	MAS = 10.00 (m)	2300.00	2300.00					MinPt-O-SF
2357.02	32.81	2345.57	2324.21	239.33	MAS = 10.00 (m)	2570.00	2570.00					MinPts
2357.05	32.81	2345.55	2324.25	237.91	MAS = 10.00 (m)	2640.00	2640.00					MINPT-O-EOU
2357.09	32.81	2345.21	2324.28	229.18	MAS = 10.00 (m)	2970.00	2970.00					MinPts
2355.44	32.81	2343.45	2322.63	226.86	MAS = 10.00 (m)	3100.00	3099.98					MinPt-O-SF
511.15	155.67	406.31	355.48	5.00	OSF1.50	9270.00	7840.00	OSF<5.00				Enter Alert
510.11	158.93	403.06	351.18	4.88	OSF1.50	9340.00	7840.00					MinPt-CtCt
518.83	182.54	396.01	336.29	4.32	OSF1.50	9700.00	7840.00					MINPT-O-EOU
538.31	206.79	399.32	331.52	3.95	OSF1.50	10050.00	7840.00					MinPt-O-ADP
589.02	325.15	371.19	263.87	2.73	OSF1.50	11530.00	7840.00					MinPt-CtCt
607.08	377.18	354.54	229.90	2.42	OSF1.50	12250.00	7840.00					MINPT-O-EOU
620.76	398.54	353.97	222.21	2.34	OSF1.50	12530.00	7840.00					MINPT-O-EOU
615.79	492.50	286.40	123.29	1.88	OSF1.50	13710.00	7840.00					MinPt-CtCt
629.04	539.53	268.28	89.51	1.75	OSF1.50	14370.00	7840.00					MINPT-O-EOU
631.74	542.89	268.73	88.85	1.75	OSF1.50	14430.00	7840.00					MinPt-O-ADP
633.99	544.98	269.58	89.01	1.75	OSF1.50	14470.00	7840.00					MinPt-O-SF
633.75	634.41	209.85	-0.65	1.50	OSF1.50	15530.00	7840.00		OSF<1.50			Enter Minor
999.68	771.35	84.40	-171.67	1.15	OSF1.50	17410.00	7840.00					MinPts
674.32	676.35	222.06	-2.04	1.50	OSF1.50	17720.00	7840.00		OSF<1.50			Exit Minor
835.91	539.58	474.81	296.34	2.33	OSF1.50	17993.99	7840.00					TD

#### State Massive 5-65 2-3 4AH

Plan #2 (Def Plan)

Warning Alert

25.14	20.30	24.15	4.83	N/A	MAS = 6.19 (m)	0.00	0.00	CtCt<=15m<15.00				Enter Alert
25.14	20.30	24.15	4.83	54355.35	MAS = 6.19 (m)	28.00	28.00					WRP
25.14	21.02	10.79	4.11	1.81	OSF1.50	2190.00	2190.00					MinPt-CtCt
25.15	21.17	10.71	3.99	1.80	OSF1.50	2210.00	2210.00					MinPts
25.20	21.21	10.73	3.98	1.80	OSF1.50	2220.00	2220.00					MinPt-O-SF
69.30	21.80	54.45	47.51	4.92	OSF1.50	2710.00	2710.00	OSF<5.00				Exit Alert
2309.49	533.76	1953.33	1775.73	6.50	OSF1.50	17993.99	7840.00					MinPts

#### State Massive 5-65 2-3 2AH

Plan #1 (Def Plan)

Warning Alert

49.91	32.81	48.92	17.10	N/A	MAS = 10.00 (m)	0.00	0.00					Surface
49.91	32.81	48.92	17.10	12234.01	MAS = 10.00 (m)	28.00	28.00					WRP
49.91	32.81	39.08	17.10	4.97	MAS = 10.00 (m)	1630.00	1630.00	OSF<5.00				Enter Alert
49.91	32.81	34.40	17.10	3.37	MAS = 10.00 (m)	3000.00	3000.00					MinPts
49.92	32.81	34.40	17.11	3.37	MAS = 10.00 (m)	3010.00	3010.00					MINPT-O-EOU
49.95	32.81	34.41	17.14	3.37	MAS = 10.00 (m)	3020.00	3020.00					MinPt-O-SF
75.80	32.81	59.76	42.99	4.97	MAS = 10.00 (m)	3450.00	3448.15	OSF<5.00				Exit Alert
614.79	185.56	490.75	429.23	4.99	OSF1.50	11310.00	7840.00	OSF<5.00				Enter Alert
614.85	528.14	262.42	86.70	1.75	OSF1.50	17993.99	7840.00					MinPts

#### State Massive 5-65 2-3 1CH

Plan #0 (Def Plan)

Warning Alert

99.81	32.81	98.83	67.00	N/A	MAS = 10.00 (m)	0.00	0.00					Surface
99.81	32.81	98.82	67.00	11121.05	MAS = 10.00 (m)	28.00	28.00					WRP
99.81	32.81	85.01	67.00	7.15	MAS = 10.00 (m)	2490.00	2490.00					MinPts
99.81	32.81	85.00	67.01	7.15	MAS = 10.00 (m)	2500.00	2500.00					MINPT-O-EOU
99.87	32.81	85.05	67.06	7.14	MAS = 10.00 (m)	2520.00	2520.00					MinPt-O-SF
1209.54	363.87	966.63	845.67	5.00	OSF1.50	14760.00	7840.00	OSF<5.00				Enter Alert
1209.43	530.70	855.30	678.73	3.42	OSF1.50	17980.00	7840.00					MinPt-CtCt
1209.51	531.05	855.15	678.46	3.42	OSF1.50	17993.99	7840.00					MinPts

#### State Massive 1H MWD 0' to

16841' - PR (Def Survey)

Warning Alert

605.88	32.81	604.06	573.08	83677.79	MAS = 10.00 (m)	0.00	0.00					Surface
605.88	32.81	604.00	573.07	8670.29	MAS = 10.00 (m)	28.00	28.00					WRP
605.79	32.81	603.31	572.98	906.06	MAS = 10.00 (m)	180.00	180.00					MinPts
605.59	32.81	600.27	572.78	172.24	MAS = 10.00 (m)	850.00	850.00					MinPts
605.31	32.81	597.63	572.50	102.82	MAS = 10.00 (m)	1360.00	1360.00					MinPts
603.43	32.81	592.08	570.62	63.04	MAS = 10.00 (m)	2190.00	2190.00					MINPT-O-EOU
603.35	32.81	592.07	570.54	62.22	MAS = 10.00 (m)	2240.00	2240.00					MinPts
603.37	32.81	592.07	570.56	62.08	MAS = 10.00 (m)	2250.00	2250.00					MINPT-O-EOU
603.77	32.81	592.37	570.97	61.42	MAS = 10.00 (m)	2300.00	2300.00					MinPt-O-SF
1301.76	32.81	1285.14	1268.95	86.55	MAS = 10.00 (m)	5340.00	5300.64					MinPt-O-SF
1822.54	36.57	1797.62	1785.97	78.12	OSF1.50	7100.00	7025.25					MinPt-O-SF
1809.54	45.63	1778.58	1763.91	61.59	OSF1.50	8540.00	7840.00					MinPt-CtCt
1809.75	51.24	1775.05	1758.51	54.64	OSF1.50	8660.00	7840.00					MinPt-CtCt
1804.15	109.96	1730.30	1694.18	24.95	OSF1.50	9550.00	7840.00					MinPt-CtCt
1803.94	126.13	1719.32	1677.81	21.71	OSF1.50	9770.00	7840.00					MinPt-CtCt
1803.61	210.88	1662.49	1592.73	12.92	OSF1.50	10880.00	7840.00					MinPt-CtCt
1811.77	274.86	1627.99	1536.91	9.94	OSF1.50	11700.00	7840.00					MinPt-CtCt

...State Massive 5-65 2-3 2CH\Original Hole\State Massive 5-65 2-3 2CH Plan #2

Offset Trajectory	Separation			Allow Dev. (ft)	Sep. Fact.	Controlling Rule	Reference Trajectory		Risk Level			Alert	Status
	Ct-Ct (ft)	MAS (ft)	EOU (ft)				MD (ft)	TVD (ft)	Alert	Minor	Major		
	1804.51	334.12	1581.24	1470.40	8.13	OSF1.50	12460.00	7840.00				MinPt-CtCt	
	1808.00	441.48	1513.14	1366.51	6.16	OSF1.50	13830.00	7840.00				MinPt-CtCt	
	1808.62	472.01	1493.41	1336.61	5.76	OSF1.50	14220.00	7840.00				MinPt-CtCt	
	1809.25	503.32	1473.16	1305.92	5.40	OSF1.50	14620.00	7840.00				MinPt-CtCt	
	1811.31	538.47	1451.80	1272.85	5.06	OSF1.50	15070.00	7840.00				MinPt-CtCt	
	1811.77	545.28	1447.71	1266.49	4.99	OSF1.50	15170.00	7840.00	OSF<5.00			Enter Alert	
	1814.54	574.41	1431.07	1240.13	4.75	OSF1.50	15530.00	7840.00				MinPt-CtCt	
	1786.72	721.22	1305.37	1065.50	3.72	OSF1.50	17400.00	7840.00				MinPt-CtCt	
	1786.80	721.57	1305.22	1065.23	3.72	OSF1.50	17420.00	7840.00				MINPT-O-EOU	
	1786.93	721.72	1305.25	1065.22	3.72	OSF1.50	17430.00	7840.00				MinPt-O-ADP	
	1787.36	721.94	1305.53	1065.42	3.72	OSF1.50	17450.00	7840.00				MinPt-O-SF	
	1882.20	696.02	1417.65	1186.18	4.06	OSF1.50	17993.99	7840.00				TD	

State Challenger 5-65 2-3 3BYH  
MWD 0' to 17613' - PR (Def Survey)

Warning Alert

2361.10	32.81	2359.29	2328.30	N/A	MAS = 10.00 (m)	0.00	0.00					Surface	
2361.10	32.81	2359.24	2328.29	42780.98	MAS = 10.00 (m)	28.00	28.00					WRP	
2360.77	32.81	2357.65	2327.96	1800.67	MAS = 10.00 (m)	320.00	320.00					MinPts	
2357.36	32.81	2346.01	2324.55	246.87	MAS = 10.00 (m)	2190.00	2190.00					MINPT-O-EOU	
2357.11	32.81	2345.71	2324.30	240.58	MAS = 10.00 (m)	2300.00	2300.00					MinPt-O-SF	
2357.05	32.81	2345.62	2324.24	239.65	MAS = 10.00 (m)	2550.00	2550.00					MinPts	
2357.09	32.81	2345.59	2324.28	238.06	MAS = 10.00 (m)	2630.00	2630.00					MINPT-O-EOU	
2355.48	32.81	2343.52	2322.67	227.35	MAS = 10.00 (m)	3100.00	3099.98					MinPt-O-SF	
1375.33	59.70	1334.77	1315.64	35.87	OSF1.50	7830.00	7673.89					MinPt-CtCt	
1375.34	59.77	1334.73	1315.57	35.83	OSF1.50	7840.00	7680.21					MINPT-O-EOU	
1375.42	59.85	1334.75	1315.57	35.79	OSF1.50	7850.00	7686.43					MinPt-O-ADP	
1341.02	101.13	1272.86	1239.89	20.31	OSF1.50	8490.00	7840.00					MinPt-CtCt	
1342.07	104.43	1271.68	1237.63	19.68	OSF1.50	8570.00	7840.00					MINPT-O-EOU	
1343.46	106.07	1271.97	1237.39	19.39	OSF1.50	8610.00	7840.00					MinPt-O-ADP	
1403.65	142.08	1308.12	1261.55	15.05	OSF1.50	9180.00	7840.00					MINPT-O-EOU	
1418.55	162.48	1309.48	1256.08	13.26	OSF1.50	9390.00	7840.00					MINPT-O-EOU	
1423.07	167.72	1310.49	1255.35	12.88	OSF1.50	9480.00	7840.00					MinPt-O-ADP	
1399.19	282.80	1209.93	1116.39	7.47	OSF1.50	10910.00	7840.00					MinPt-CtCt	
1400.10	340.33	1172.49	1059.77	6.20	OSF1.50	11650.00	7840.00					MinPt-CtCt	
1402.56	349.06	1169.14	1053.56	6.06	OSF1.50	11800.00	7840.00					MINPT-O-EOU	
1433.56	432.08	1144.80	1001.48	4.99	OSF1.50	12820.00	7840.00					Enter Alert	
1426.85	481.73	1104.98	945.12	4.46	OSF1.50	13460.00	7840.00					MinPt-CtCt	
1430.80	494.69	1100.27	936.12	4.35	OSF1.50	13670.00	7840.00					MINPT-O-EOU	
1444.64	513.45	1101.58	931.19	4.23	OSF1.50	13930.00	7840.00					MINPT-O-EOU	
1444.42	601.47	1042.73	842.95	3.61	OSF1.50	14990.00	7840.00					MinPt-CtCt	
1464.11	666.12	1019.39	797.99	3.30	OSF1.50	15860.00	7840.00					MINPT-O-EOU	
1471.19	674.56	1020.73	796.63	3.28	OSF1.50	16000.00	7840.00					MinPt-O-ADP	
1470.11	790.86	942.18	679.26	2.79	OSF1.50	17400.00	7840.00					MinPt-CtCt	
1470.20	791.34	941.93	678.86	2.79	OSF1.50	17420.00	7840.00					MINPT-O-EOU	
1470.34	791.52	941.95	678.82	2.79	OSF1.50	17430.00	7840.00					MinPt-O-ADP	
1470.55	791.67	942.06	678.89	2.79	OSF1.50	17440.00	7840.00					MinPt-O-SF	
1584.17	748.66	1084.13	835.51	3.18	OSF1.50	17993.99	7840.00					TD	

State Ebert 1H GYRO+MWD 0' to 12263' - PR (Def Survey)

Pass

565.35	32.81	563.52	532.54	31863.67	MAS = 10.00 (m)	0.00	0.00					Surface	
565.21	32.81	563.30	532.41	5750.36	MAS = 10.00 (m)	28.00	28.00					WRP	
556.39	32.81	542.56	523.58	46.18	MAS = 10.00 (m)	2190.00	2190.00					MINPT-O-EOU	
555.93	32.81	542.01	523.12	45.05	MAS = 10.00 (m)	2300.00	2300.00					MinPts	
556.14	32.81	542.22	523.33	45.03	MAS = 10.00 (m)	2350.00	2350.00					MinPt-O-SF	
1148.65	32.81	1130.65	1115.85	69.94	MAS = 10.00 (m)	4990.00	4957.68					MinPt-O-SF	
1272.06	32.81	1252.48	1239.25	70.68	MAS = 10.00 (m)	5420.00	5379.03					MinPt-O-SF	
1324.52	32.81	1304.17	1291.71	70.57	MAS = 10.00 (m)	5600.00	5555.41					MinPt-O-SF	
1727.73	40.81	1699.99	1686.93	66.04	OSF1.50	7087.25	7012.73					MinPt-O-SF	
1749.00	40.63	1721.37	1708.37	67.16	OSF1.50	7240.00	7163.91					MinPt-O-SF	
1766.98	40.46	1739.48	1726.53	68.16	OSF1.50	7620.00	7518.57					MinPt-O-SF	
1866.43	41.28	1838.38	1825.16	70.51	OSF1.50	8120.00	7809.78					MinPt-O-SF	
1902.09	42.07	1873.51	1860.03	70.45	OSF1.50	8240.00	7834.45					MinPt-O-SF	
2271.38	52.65	2235.74	2218.73	66.70	OSF1.50	9090.00	7840.00					MinPt-O-SF	
2294.60	53.18	2258.62	2241.43	66.69	OSF1.50	9130.00	7840.00					MinPt-O-SF	
10343.09	77.46	10290.91	10265.63	204.50	OSF1.50	17993.99	7840.00					TD	

Degen 1 Blind 0' to 1650' - DRY (Def Survey)

Pass

2678.38	32.81	2676.57	2645.57	N/A	MAS = 10.00 (m)	0.00	0.00					Surface	
2675.09	32.81	2672.76	2642.29	5233.39	MAS = 10.00 (m)	28.00	28.00					MinPt-O-SF	
2658.10	98.86	2591.59	2559.24	41.06	OSF1.50	1970.00	1970.00					MinPt-CtCt	
2658.10	99.41	2591.22	2558.69	40.83	OSF1.50	1980.00	1980.00					MinPts	
2658.28	99.43	2591.39	2558.85	40.82	OSF1.50	2010.00	2010.00					MinPt-O-SF	
8875.34	122.19	8793.35	8753.15	110.39	OSF1.50	13010.00	7840.00					MinPt-O-SF	
12976.18	152.59	12873.91	12823.58	128.90	OSF1.50	17993.99	7840.00					TD	

State Harvard 1H MWD 0' to 15236' - PR (Def Survey)

Pass

5188.99	32.81	5187.16	5156.18	417426.92	MAS = 10.00 (m)	0.00	0.00					MinPts	
5189.01	32.81	5187.13	5156.20	74768.78	MAS = 10.00 (m)	28.00	28.00					WRP	
5190.70	32.81	5186.42	5157.90	2102.88	MAS = 10.00 (m)	600.00	600.00					MINPT-O-EOU	
5193.36	32.81	5186.40	5160.55	1008.85	MAS = 10.00 (m)	1200.00	1200.00					MINPT-O-EOU	
5203.57	32.81	5192.06	5170.76	525.24	MAS = 10.00 (m)	2290.00	2290.00					MinPt-O-SF	
5151.23	32.81	5139.04	5118.42	487.85	MAS = 10.00 (m)	3120.00	3119.96					MinPt-O-SF	
5089.53	32.81	5077.22	5056.72	479.11	MAS = 10.00 (m)	3510.00	3507.31					MinPt-O-SF	
3449.59	213.76	3306.22	3235.83	24.49	OSF1.50	8280.00	7838.30					MinPt-CtCt	
3444.97	333.22	3221.97	3111.75	15.62	OSF1.50	9860.00	7840.00					MinPt-CtCt	
3452.01	412.67	3176.04	3039.34	12.62	OSF1.50	10900.00	7840.00					MinPt-CtCt	
3454.23	449.78	3153.53	3004.46	11.58	OSF1.50	11380.00	7840.00					MinPt-CtCt	
3454.44	465.16	3143.48	2989.28	11.19	OSF1.50	11580.00	7840.00					MinPt-CtCt	
3457.88	476.82	3139.12	2981.06	10.93	OSF1.50	11820.00	7840.00					MINPT-O-EOU	
3460.69	480.79	3139.25	2979.89	10.85	OSF1.50	11900.00	7840.00					MINPT-O-EOU	
3455.78	555.03	3084.92	2900.76	9.38	OSF1.50	12740.00	7840.00					MinPt-CtCt	
3455.94	555.40	3084.81	2900.54	9.37	OSF1.50	12770.00	7840.00					MINPT-O-EOU	
3456.05	555.52	3084.84	2900.54	9.37	OSF1.50	12780.00	7840.00					MinPt-O-ADP	
3458.35	556.36	3086.55	2901.99	9.36	OSF1.50	12870.00	7840.00					MinPt-O-SF	
6291.37	357.30	6052.63	5934.07	26.52	OSF1.50	17993.99	7840.00					TD	