

# **CRESTONE PEAK RESOURCES**

**ARAPAHOE COUNTY  
SEC 15-T4S-R65W  
LONE TREE 4-65 15-16 4BH**

**OWB**

**Design: FINAL SURVEY**

## **Standard Survey Report**

**21 December, 2022**

**Project:** ARAPAHOE COUNTY  
**Site:** SEC 15-T4S-R65W  
**Well:** LONE TREE 4-65 15-16 4BH  
**Wellbore:** OWB  
**Design:** FINAL SURVEY

PROJECT DETAILS: ARAPAHOE COUNTY  
 Geodetic System: US State Plane 1983  
 Datum: North American Datum 1983  
 Ellipsoid: GRS 1980  
 Zone: Colorado Central Zone  
 System Datum: Mean Sea Level



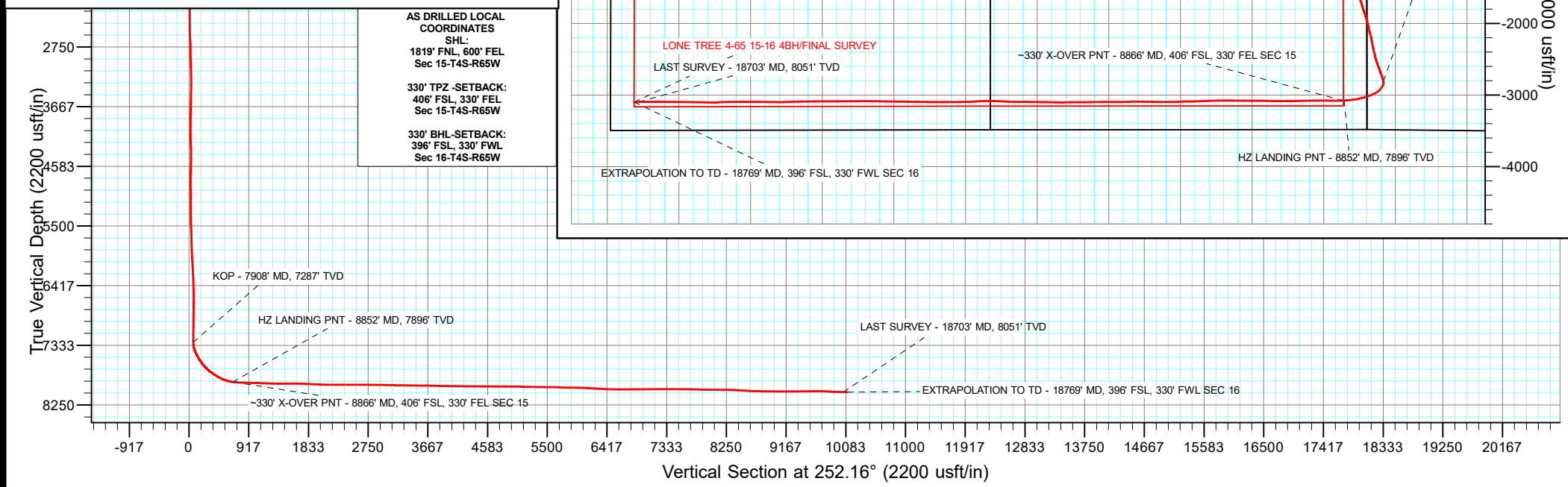
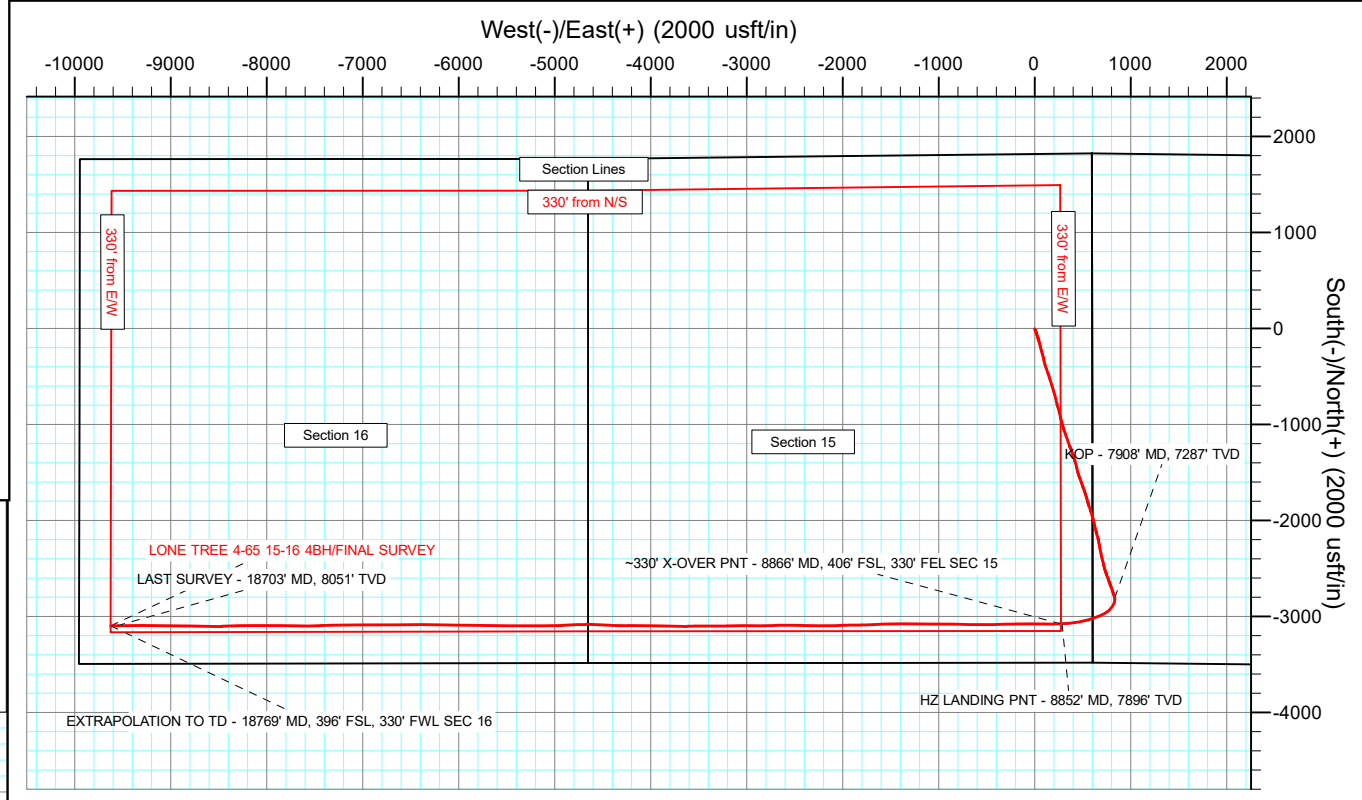
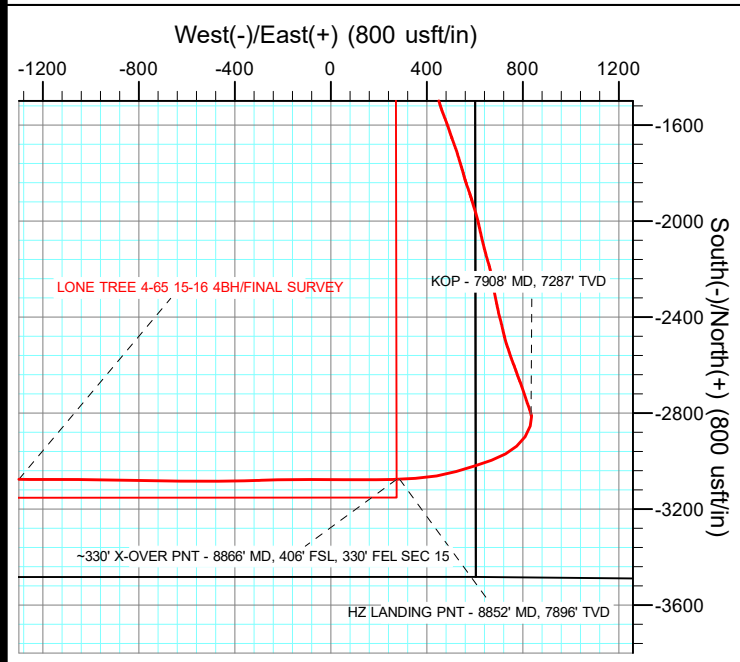
Azimuths to True North  
 Magnetic North: 7.65°  
 Magnetic Field  
 Strength: 51525.2nT  
 Dip Angle: 66.09°  
 Date: 2/10/2022  
 Model: IGRF2020

WELL DETAILS: LONE TREE 4-65 15-16 4BH

+N/-S	+E/-W	Northing	Easting	5693.30 Latitude	Longitude	Slot
0.00	0.00	1683230.10	3241111.13	39.706146°N	104.643032°W	

ANNOTATIONS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Vsect	Departure	Annotation
7908.00	22.22	167.62	7287.15	-2804.68	834.67	64.67	2926.49	KOP - 7908' MD, 7287' TVD
8852.00	82.34	267.45	7896.47	-3075.42	287.97	668.03	3593.68	HZ LANDING PNT - 8852' MD, 7896' TVD
8866.00	83.64	267.65	7898.18	-3076.02	274.08	681.43	3607.48	~330' X-OVER PNT - 8866' MD, 406' FSL, 330' FEL SEC 15
18703.00	88.54	268.74	8051.31	-3095.68	-9557.75	10046.57	13441.43	LAST SURVEY - 18703' MD, 8051' TVD
18769.00	88.54	268.74	8052.99	-3097.13	-9623.72	10109.80	13507.41	EXTRAPOLATION TO TD - 18769' MD, 396' FSL, 330' FWL SEC 16



**AS DRILLED LOCAL COORDINATES SHL:**  
 1819' FNL, 600' FEL  
 Sec 15-T4S-R65W  
**330' TPZ -SETBACK:**  
 406' FSL, 330' FEL  
 Sec 15-T4S-R65W  
**330' BHL -SETBACK:**  
 396' FSL, 330' FWL  
 Sec 16-T4S-R65W

## Survey Report

<b>Company:</b> CRESTONE PEAK RESOURCES	<b>Local Co-ordinate Reference:</b> Well LONE TREE 4-65 15-16 4BH
<b>Project:</b> ARAPAHOE COUNTY	<b>TVD Reference:</b> KB 25' @ 5718.30usft
<b>Site:</b> SEC 15-T4S-R65W	<b>MD Reference:</b> KB 25' @ 5718.30usft
<b>Well:</b> LONE TREE 4-65 15-16 4BH	<b>North Reference:</b> True
<b>Wellbore:</b> OWB	<b>Survey Calculation Method:</b> Minimum Curvature
<b>Design:</b> FINAL SURVEY	<b>Database:</b> EDT_32Bit_ODBC

<b>Project</b> ARAPAHOE COUNTY		
<b>Map System:</b> US State Plane 1983	<b>System Datum:</b> Mean Sea Level	
<b>Geo Datum:</b> North American Datum 1983		
<b>Map Zone:</b> Colorado Central Zone	Using geodetic scale factor	

<b>Site</b> SEC 15-T4S-R65W			
<b>Site Position:</b>	<b>Northing:</b> 1,685,061.36 usft	<b>Latitude:</b> 39.711158°N	
<b>From:</b> Lat/Long	<b>Easting:</b> 3,241,690.88 usft	<b>Longitude:</b> 104.640910°W	
<b>Position Uncertainty:</b> 0.00 usft	<b>Slot Radius:</b> 13.200 in	<b>Grid Convergence:</b> 0.54 °	

<b>Well</b> LONE TREE 4-65 15-16 4BH					
<b>Well Position</b>	<b>+N/-S</b> 0.00 usft	<b>Northing:</b> 1,683,230.10 usft	<b>Latitude:</b> 39.706146°N		
	<b>+E/-W</b> 0.00 usft	<b>Easting:</b> 3,241,111.13 usft	<b>Longitude:</b> 104.643032°W		
<b>Position Uncertainty</b>	0.00 usft	<b>Wellhead Elevation:</b> usft	<b>Ground Level:</b> 5,693.30 usft		

<b>Wellbore</b> OWB					
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2020	2/10/2022	7.65	66.09	51,525.17044212

<b>Design</b> FINAL SURVEY					
<b>Audit Notes:</b>					
<b>Version:</b> 1.0	<b>Phase:</b> ACTUAL	<b>Tie On Depth:</b> 0.00			
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>	
	0.00	0.00	0.00	252.16	

<b>Survey Program</b>		<b>Date</b> 12/21/2022
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>
303.00	3,691.00	SURFACE SURVEY (OWB)
3,846.00	18,769.00	FINAL SURVEY (OWB)
		<b>Tool Name</b>
		MWD OWSG
		MWD OWSG
		<b>Description</b>
		OWSG MWD - Standard
		OWSG MWD - Standard

<b>Survey</b>										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
211.00	1.90	155.70	210.96	-3.04	1.37	-0.37	0.00	0.00	0.00	
303.00	2.50	160.80	302.89	-6.32	2.66	-0.59	0.69	0.65	5.54	
377.00	3.20	163.70	376.80	-9.83	3.77	-0.57	0.97	0.95	3.92	
464.00	3.40	163.00	463.66	-14.63	5.20	-0.47	0.23	0.23	-0.80	
551.00	4.70	155.70	550.44	-20.35	7.42	-0.84	1.60	1.49	-8.39	
638.00	5.60	156.70	637.08	-27.49	10.57	-1.64	1.04	1.03	1.15	
725.00	7.50	159.90	723.51	-36.72	14.20	-2.27	2.22	2.18	3.68	
812.00	10.10	161.40	809.48	-49.29	18.59	-2.59	3.00	2.99	1.72	
900.00	13.10	161.70	895.67	-66.07	24.18	-2.78	3.41	3.41	0.34	
987.00	14.80	161.00	980.11	-85.94	30.89	-3.08	1.96	1.95	-0.80	

## Survey Report

<b>Company:</b>	CRESTONE PEAK RESOURCES	<b>Local Co-ordinate Reference:</b>	Well LONE TREE 4-65 15-16 4BH
<b>Project:</b>	ARAPAHOE COUNTY	<b>TVD Reference:</b>	KB 25' @ 5718.30usft
<b>Site:</b>	SEC 15-T4S-R65W	<b>MD Reference:</b>	KB 25' @ 5718.30usft
<b>Well:</b>	LONE TREE 4-65 15-16 4BH	<b>North Reference:</b>	True
<b>Wellbore:</b>	OWB	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	FINAL SURVEY	<b>Database:</b>	EDT_32Bit_ODBC

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
1,074.00	17.30	162.60	1,063.71	-108.80	38.38	-3.21	2.92	2.87	1.84	
1,161.00	18.70	164.50	1,146.45	-134.58	45.98	-2.54	1.74	1.61	2.18	
1,249.00	20.00	164.90	1,229.48	-162.71	53.67	-1.24	1.48	1.48	0.45	
1,336.00	21.80	167.20	1,310.75	-192.83	61.12	0.89	2.27	2.07	2.64	
1,424.00	21.50	163.80	1,392.55	-224.25	69.24	2.78	1.47	-0.34	-3.86	
1,511.00	22.90	164.30	1,473.09	-255.85	78.27	3.87	1.62	1.61	0.57	
1,598.00	23.90	165.50	1,552.94	-289.21	87.27	5.53	1.27	1.15	1.38	
1,685.00	24.50	168.70	1,632.30	-323.97	95.21	8.61	1.66	0.69	3.68	
1,772.00	25.40	165.60	1,711.18	-359.73	103.39	11.79	1.82	1.03	-3.56	
1,859.00	24.30	160.90	1,790.13	-394.72	113.89	12.51	2.60	-1.26	-5.40	
1,947.00	25.20	160.30	1,870.05	-429.47	126.13	11.50	1.06	1.02	-0.68	
2,034.00	28.38	160.34	1,947.70	-466.39	139.33	10.25	3.66	3.66	0.05	
2,121.00	26.35	161.98	2,024.96	-504.23	152.26	9.53	2.49	-2.33	1.89	
2,208.00	24.70	162.40	2,103.47	-539.91	163.73	9.54	1.91	-1.90	0.48	
2,295.00	24.78	162.70	2,182.48	-574.65	174.65	9.79	0.17	0.09	0.34	
2,383.00	23.20	163.40	2,262.88	-608.87	185.09	10.34	1.82	-1.80	0.80	
2,470.00	23.70	163.10	2,342.69	-642.02	195.06	11.00	0.59	0.57	-0.34	
2,557.00	22.70	163.50	2,422.65	-674.85	204.92	11.68	1.16	-1.15	0.46	
2,644.00	23.40	164.70	2,502.71	-707.61	214.24	12.83	0.97	0.80	1.38	
2,731.00	23.80	167.00	2,582.43	-741.38	222.75	15.08	1.15	0.46	2.64	
2,818.00	24.00	168.10	2,661.97	-775.79	230.35	18.39	0.56	0.23	1.26	
2,905.00	25.70	163.70	2,740.92	-811.22	239.29	20.73	2.89	1.95	-5.06	
2,993.00	25.70	163.70	2,820.22	-847.85	250.00	21.75	0.00	0.00	0.00	
3,080.00	25.20	166.00	2,898.78	-883.92	259.78	23.50	1.27	-0.57	2.64	
3,167.00	25.30	166.70	2,977.46	-919.99	268.54	26.21	0.36	0.11	0.80	
3,254.00	26.50	164.20	3,055.73	-956.76	278.10	28.38	1.86	1.38	-2.87	
3,342.00	25.80	165.50	3,134.72	-994.19	288.24	30.19	1.03	-0.80	1.48	
3,429.00	24.25	164.53	3,213.55	-1,029.74	297.74	32.03	1.84	-1.78	-1.11	
3,516.00	23.20	160.80	3,293.20	-1,063.15	308.15	32.36	2.10	-1.21	-4.29	
3,603.00	22.80	159.30	3,373.29	-1,095.10	319.74	31.11	0.82	-0.46	-1.72	
3,691.00	21.90	161.60	3,454.68	-1,126.62	330.95	30.10	1.43	-1.02	2.61	
3,846.00	21.88	160.53	3,598.50	-1,181.28	349.70	29.00	0.26	-0.01	-0.69	
3,940.00	22.55	160.02	3,685.52	-1,214.73	361.70	27.83	0.74	0.71	-0.54	
4,035.00	21.36	156.59	3,773.64	-1,247.73	374.80	25.47	1.84	-1.25	-3.61	
4,129.00	22.67	161.00	3,860.79	-1,280.57	387.50	23.44	2.24	1.39	4.69	
4,223.00	24.16	160.32	3,947.04	-1,315.82	399.87	22.45	1.61	1.59	-0.72	
4,318.00	26.39	163.63	4,032.95	-1,354.39	412.37	22.37	2.78	2.35	3.48	
4,413.00	23.39	162.58	4,119.11	-1,392.64	423.97	23.05	3.19	-3.16	-1.11	
4,507.00	23.54	166.61	4,205.35	-1,428.71	433.90	24.64	1.71	0.16	4.29	
4,602.00	25.40	167.33	4,291.81	-1,467.05	442.77	27.95	1.98	1.96	0.76	
4,697.00	25.79	163.58	4,377.49	-1,506.75	453.08	30.30	1.75	0.41	-3.95	
4,792.00	22.93	159.50	4,464.03	-1,543.92	465.40	29.95	3.49	-3.01	-4.29	
4,887.00	24.89	159.02	4,550.88	-1,579.92	479.04	28.00	2.07	2.06	-0.51	

## Survey Report

<b>Company:</b>	CRESTONE PEAK RESOURCES	<b>Local Co-ordinate Reference:</b>	Well LONE TREE 4-65 15-16 4BH
<b>Project:</b>	ARAPAHOE COUNTY	<b>TVD Reference:</b>	KB 25' @ 5718.30usft
<b>Site:</b>	SEC 15-T4S-R65W	<b>MD Reference:</b>	KB 25' @ 5718.30usft
<b>Well:</b>	LONE TREE 4-65 15-16 4BH	<b>North Reference:</b>	True
<b>Wellbore:</b>	OWB	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	FINAL SURVEY	<b>Database:</b>	EDT_32Bit_ODBC

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
4,981.00	27.23	161.58	4,635.32	-1,618.80	492.92	26.69	2.76	2.49	2.72	
5,076.00	24.36	160.24	4,720.84	-1,657.87	506.42	25.82	3.08	-3.02	-1.41	
5,171.00	25.34	160.11	4,807.04	-1,695.43	519.96	24.43	1.03	1.03	-0.14	
5,265.00	25.28	163.75	4,892.03	-1,733.61	532.42	24.27	1.66	-0.06	3.87	
5,359.00	23.62	162.58	4,977.59	-1,770.85	543.68	24.96	1.84	-1.77	-1.24	
5,454.00	25.91	165.38	5,063.86	-1,809.10	554.61	26.27	2.71	2.41	2.95	
5,549.00	23.47	160.03	5,150.17	-1,846.98	566.32	26.73	3.48	-2.57	-5.63	
5,643.00	23.22	161.92	5,236.48	-1,882.19	578.46	25.96	0.84	-0.27	2.01	
5,738.00	28.01	162.88	5,322.12	-1,921.33	590.85	26.16	5.06	5.04	1.01	
5,832.00	27.83	163.39	5,405.18	-1,963.45	603.62	26.91	0.32	-0.19	0.54	
5,927.00	29.85	167.77	5,510.30	-2,019.49	617.95	30.43	2.43	1.68	3.65	
6,046.00	27.67	167.01	5,592.70	-2,063.63	627.82	34.56	2.35	-2.32	-0.81	
6,140.00	25.99	165.81	5,676.58	-2,104.86	637.77	37.72	1.88	-1.79	-1.28	
6,235.00	23.32	164.20	5,762.91	-2,143.15	648.00	39.71	2.90	-2.81	-1.69	
6,330.00	23.26	163.47	5,850.17	-2,179.22	658.45	40.81	0.31	-0.06	-0.77	
6,425.00	25.70	170.15	5,936.64	-2,217.51	667.32	44.10	3.88	2.57	7.03	
6,519.00	23.20	169.96	6,022.20	-2,255.83	674.03	49.45	2.66	-2.66	-0.20	
6,614.00	24.29	168.48	6,109.16	-2,293.40	681.20	54.14	1.31	1.15	-1.56	
6,709.00	26.73	168.48	6,194.89	-2,333.49	689.37	58.64	2.57	2.57	0.00	
6,803.00	24.37	167.59	6,279.70	-2,373.15	697.76	62.80	2.54	-2.51	-0.95	
6,897.00	24.59	164.92	6,365.25	-2,410.98	707.01	65.58	1.20	0.23	-2.84	
6,992.00	25.54	167.56	6,451.30	-2,450.06	716.57	68.46	1.54	1.00	2.78	
7,087.00	22.49	165.80	6,538.07	-2,487.69	725.44	71.54	3.30	-3.21	-1.85	
7,181.00	21.42	160.63	6,625.26	-2,521.31	735.54	72.22	2.35	-1.14	-5.50	
7,275.00	23.60	162.17	6,712.10	-2,555.42	747.00	71.77	2.40	2.32	1.64	
7,370.00	23.31	158.22	6,799.25	-2,590.98	759.80	70.48	1.68	-0.31	-4.16	
7,464.00	25.97	161.09	6,884.69	-2,627.73	773.37	68.81	3.10	2.83	3.05	
7,559.00	23.46	158.30	6,970.98	-2,664.99	787.11	67.15	2.91	-2.64	-2.94	
7,653.00	25.37	161.61	7,056.58	-2,701.48	800.38	65.70	2.50	2.03	3.52	
7,747.00	26.65	161.80	7,141.05	-2,740.62	813.32	65.37	1.36	1.36	0.20	
7,842.00	24.84	159.19	7,226.62	-2,779.52	827.06	64.20	2.25	-1.91	-2.75	
7,908.00	22.22	167.62	7,287.15	-2,804.68	834.67	64.67	6.45	-3.97	12.77	
<b>KOP - 7908' MD, 7287' TVD</b>										
7,936.00	21.26	171.75	7,313.16	-2,814.87	836.53	66.02	6.45	-3.43	14.76	
8,030.00	28.79	198.53	7,398.54	-2,853.38	831.76	82.36	14.29	8.01	28.49	
8,125.00	34.35	212.81	7,479.56	-2,897.69	809.92	116.72	9.77	5.85	15.03	
8,219.00	34.64	230.28	7,557.23	-2,937.15	774.92	162.13	10.50	0.31	18.59	
8,314.00	38.99	240.46	7,633.33	-2,969.18	728.08	216.53	7.87	4.58	10.72	
8,408.00	47.66	249.14	7,701.71	-2,996.21	669.73	280.36	11.17	9.22	9.23	
8,502.00	55.34	253.04	7,760.20	-3,019.90	600.16	353.83	8.79	8.17	4.15	
8,597.00	59.06	254.07	7,811.65	-3,042.49	523.59	433.65	4.02	3.92	1.08	
8,692.00	67.15	259.78	7,854.62	-3,061.48	441.14	517.95	10.06	8.52	6.01	
8,786.00	76.19	266.48	7,884.18	-3,072.00	352.69	605.37	11.75	9.62	7.13	

## Survey Report

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<b>Well:</b>	LONE TREE 4-65 15-16 4BH	<b>North Reference:</b>	True
<b>Wellbore:</b>	OWB	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	FINAL SURVEY	<b>Database:</b>	EDT_32Bit_ODBC

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
8,852.00	82.34	267.45	7,896.47	-3,075.42	287.97	668.03	9.43	9.31	1.47	
<b>HZ LANDING PNT - 8852' MD, 7896' TVD</b>										
8,866.00	83.64	267.65	7,898.18	-3,076.02	274.08	681.43	9.43	9.32	1.44	
<b>~330' X-OVER PNT - 8866' MD, 406' FSL, 330' FEL SEC 15</b>										
8,881.00	85.04	267.87	7,899.66	-3,076.60	259.17	695.80	9.43	9.32	1.44	
8,976.00	87.94	270.61	7,905.48	-3,077.85	164.37	786.43	4.20	3.05	2.88	
9,070.00	87.91	270.40	7,908.88	-3,077.02	70.44	875.59	0.23	-0.03	-0.22	
9,259.00	89.32	270.07	7,913.45	-3,076.25	-118.50	1,055.21	0.77	0.75	-0.17	
9,354.00	87.77	268.03	7,915.86	-3,077.82	-213.45	1,146.07	2.70	-1.63	-2.15	
9,448.00	87.94	269.06	7,919.38	-3,080.21	-307.35	1,236.19	1.11	0.18	1.10	
9,543.00	88.65	268.43	7,922.20	-3,082.29	-402.28	1,327.20	1.00	0.75	-0.66	
9,637.00	90.32	269.79	7,923.05	-3,083.75	-496.26	1,417.10	2.29	1.78	1.45	
9,732.00	90.93	270.18	7,922.01	-3,083.77	-591.26	1,507.54	0.76	0.64	0.41	
9,826.00	89.19	270.83	7,921.91	-3,082.94	-685.25	1,596.76	1.98	-1.85	0.69	
9,921.00	89.84	271.84	7,922.72	-3,080.73	-780.22	1,686.48	1.26	0.68	1.06	
10,016.00	87.64	271.00	7,924.81	-3,078.38	-875.16	1,776.14	2.48	-2.32	-0.88	
10,206.00	86.86	269.95	7,933.92	-3,076.80	-1,064.93	1,956.30	0.69	-0.41	-0.55	
10,300.00	89.65	270.41	7,936.79	-3,076.51	-1,158.88	2,045.64	3.01	2.97	0.49	
10,395.00	89.06	270.07	7,937.85	-3,076.11	-1,253.87	2,135.94	0.72	-0.62	-0.36	
10,489.00	89.58	270.55	7,938.97	-3,075.60	-1,347.86	2,225.26	0.75	0.55	0.51	
10,679.00	89.80	268.21	7,940.00	-3,077.66	-1,537.83	2,406.73	1.24	0.12	-1.23	
10,868.00	90.83	267.12	7,938.96	-3,085.36	-1,726.67	2,588.84	0.79	0.54	-0.58	
10,963.00	89.41	269.61	7,938.76	-3,088.07	-1,821.62	2,680.06	3.02	-1.49	2.62	
11,058.00	89.41	268.85	7,939.74	-3,089.34	-1,916.60	2,770.87	0.80	0.00	-0.80	
11,153.00	89.19	268.05	7,940.90	-3,091.91	-2,011.56	2,862.05	0.87	-0.23	-0.84	
11,341.00	88.65	270.25	7,944.44	-3,094.70	-2,199.50	3,041.80	1.20	-0.29	1.17	
11,436.00	88.91	269.63	7,946.47	-3,094.80	-2,294.47	3,132.24	0.71	0.27	-0.65	
11,530.00	89.10	271.67	7,948.10	-3,093.74	-2,388.45	3,221.37	2.18	0.20	2.17	
11,720.00	89.58	270.09	7,950.29	-3,090.82	-2,578.41	3,401.30	0.87	0.25	-0.83	
11,815.00	89.39	268.93	7,951.14	-3,091.63	-2,673.40	3,491.98	1.24	-0.20	-1.22	
11,909.00	89.36	268.04	7,952.17	-3,094.12	-2,767.36	3,582.18	0.95	-0.03	-0.95	
12,004.00	89.09	270.66	7,953.45	-3,095.19	-2,862.34	3,672.92	2.77	-0.28	2.76	
12,099.00	88.99	270.53	7,955.04	-3,094.21	-2,957.32	3,763.03	0.17	-0.11	-0.14	
12,193.00	89.14	269.41	7,956.58	-3,094.26	-3,051.30	3,852.52	1.20	0.16	-1.19	
12,383.00	89.21	267.64	7,959.31	-3,099.15	-3,241.21	4,034.79	0.93	0.04	-0.93	
12,478.00	89.15	271.34	7,960.67	-3,099.99	-3,336.18	4,125.46	3.89	-0.06	3.89	
12,762.00	88.98	267.84	7,965.31	-3,102.02	-3,620.09	4,396.34	1.23	-0.06	-1.23	
12,856.00	89.85	271.93	7,966.27	-3,102.21	-3,714.07	4,485.85	4.45	0.93	4.35	
12,951.00	90.67	271.33	7,965.84	-3,099.51	-3,809.03	4,575.42	1.07	0.86	-0.63	
13,046.00	91.59	271.04	7,963.96	-3,097.54	-3,903.99	4,665.21	1.02	0.97	-0.31	
13,140.00	89.35	271.05	7,963.19	-3,095.83	-3,997.96	4,754.14	2.38	-2.38	0.01	
13,235.00	89.13	270.69	7,964.45	-3,094.39	-4,092.94	4,844.11	0.44	-0.23	-0.38	
13,330.00	89.13	270.34	7,965.90	-3,093.53	-4,187.93	4,934.27	0.37	0.00	-0.37	
13,425.00	89.43	268.68	7,967.09	-3,094.35	-4,282.91	5,024.94	1.78	0.32	-1.75	

## Survey Report

<b>Company:</b>	CRESTONE PEAK RESOURCES	<b>Local Co-ordinate Reference:</b>	Well LONE TREE 4-65 15-16 4BH
<b>Project:</b>	ARAPAHOE COUNTY	<b>TVD Reference:</b>	KB 25' @ 5718.30usft
<b>Site:</b>	SEC 15-T4S-R65W	<b>MD Reference:</b>	KB 25' @ 5718.30usft
<b>Well:</b>	LONE TREE 4-65 15-16 4BH	<b>North Reference:</b>	True
<b>Wellbore:</b>	OWB	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	FINAL SURVEY	<b>Database:</b>	EDT_32Bit_ODBC

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
13,519.00	87.77	272.15	7,969.39	-3,093.67	-4,376.86	5,114.16	4.09	-1.77	3.69	
13,614.00	89.14	273.45	7,971.95	-3,089.03	-4,471.71	5,203.03	1.99	1.44	1.37	
13,708.00	89.32	272.72	7,973.21	-3,083.97	-4,565.57	5,290.82	0.80	0.19	-0.78	
13,803.00	88.91	269.72	7,974.68	-3,081.95	-4,660.52	5,380.59	3.19	-0.43	-3.16	
13,898.00	89.24	268.57	7,976.21	-3,083.37	-4,755.50	5,471.44	1.26	0.35	-1.21	
13,993.00	89.54	265.36	7,977.23	-3,088.39	-4,850.35	5,563.27	3.39	0.32	-3.38	
14,088.00	88.27	269.97	7,979.04	-3,092.26	-4,945.22	5,654.77	5.03	-1.34	4.85	
14,183.00	88.10	268.94	7,982.05	-3,093.17	-5,040.17	5,745.42	1.10	-0.18	-1.08	
14,277.00	89.35	269.51	7,984.14	-3,094.44	-5,134.14	5,835.26	1.46	1.33	0.61	
14,372.00	90.25	268.38	7,984.47	-3,096.19	-5,229.12	5,926.21	1.52	0.95	-1.19	
14,467.00	87.64	269.90	7,986.22	-3,097.61	-5,324.08	6,017.04	3.18	-2.75	1.60	
14,561.00	87.16	270.13	7,990.49	-3,097.59	-5,417.98	6,106.42	0.57	-0.51	0.24	
14,656.00	86.46	269.91	7,995.77	-3,097.56	-5,512.83	6,196.71	0.77	-0.74	-0.23	
14,750.00	88.28	270.90	8,000.09	-3,096.89	-5,606.73	6,285.88	2.20	1.94	1.05	
14,845.00	87.26	271.22	8,003.78	-3,095.13	-5,701.64	6,375.69	1.13	-1.07	0.34	
15,034.00	87.94	271.42	8,011.70	-3,090.78	-5,890.42	6,554.06	0.38	0.36	0.11	
15,129.00	90.85	271.38	8,012.70	-3,088.46	-5,985.38	6,643.74	3.06	3.06	-0.04	
15,224.00	91.96	272.38	8,010.37	-3,085.35	-6,080.29	6,733.14	1.57	1.17	1.05	
15,318.00	89.23	270.54	8,009.40	-3,082.95	-6,174.25	6,821.84	3.50	-2.90	-1.96	
15,507.00	91.35	269.93	8,008.44	-3,082.18	-6,363.23	7,001.50	1.17	1.12	-0.32	
15,602.00	89.16	269.26	8,008.02	-3,082.85	-6,458.22	7,092.13	2.41	-2.31	-0.71	
15,697.00	89.57	269.23	8,009.07	-3,084.10	-6,553.21	7,182.94	0.43	0.43	-0.03	
15,981.00	90.67	269.38	8,008.47	-3,087.55	-6,837.18	7,454.31	0.39	0.39	0.05	
16,170.00	88.98	270.51	8,009.05	-3,087.73	-7,026.17	7,634.27	1.08	-0.89	0.60	
16,265.00	89.32	269.09	8,010.46	-3,088.06	-7,121.16	7,724.79	1.54	0.36	-1.49	
16,359.00	88.58	269.76	8,012.18	-3,089.00	-7,215.13	7,814.54	1.06	-0.79	0.71	
16,643.00	90.17	267.30	8,015.28	-3,096.29	-7,498.99	8,086.98	1.03	0.56	-0.87	
16,738.00	89.23	269.80	8,015.78	-3,098.69	-7,593.95	8,178.11	2.81	-0.99	2.63	
16,832.00	89.18	271.22	8,017.08	-3,097.86	-7,687.94	8,267.32	1.51	-0.05	1.51	
16,927.00	86.66	272.21	8,020.53	-3,095.02	-7,782.82	8,356.77	2.85	-2.65	1.04	
17,022.00	87.44	270.67	8,025.42	-3,092.63	-7,877.66	8,446.33	1.82	0.82	-1.62	
17,116.00	85.99	269.57	8,030.81	-3,092.43	-7,971.51	8,535.59	1.94	-1.54	-1.17	
17,211.00	88.11	270.51	8,035.70	-3,092.37	-8,066.37	8,625.88	2.44	2.23	0.99	
17,400.00	89.02	268.42	8,040.43	-3,094.13	-8,255.29	8,806.26	1.21	0.48	-1.11	
17,589.00	90.24	267.34	8,041.65	-3,101.12	-8,444.15	8,988.18	0.86	0.65	-0.57	
17,684.00	89.33	271.53	8,042.01	-3,102.06	-8,539.13	9,078.87	4.51	-0.96	4.41	
17,779.00	89.83	271.45	8,042.70	-3,099.59	-8,634.09	9,168.51	0.53	0.53	-0.08	
17,967.00	90.40	270.06	8,042.33	-3,097.11	-8,822.07	9,346.70	0.80	0.30	-0.74	
18,062.00	91.06	269.56	8,041.11	-3,097.43	-8,917.06	9,437.22	0.87	0.69	-0.53	
18,156.00	90.38	271.50	8,039.93	-3,096.56	-9,011.04	9,526.41	2.19	-0.72	2.06	
18,250.00	90.95	270.72	8,038.84	-3,094.74	-9,105.02	9,615.31	1.03	0.61	-0.83	
18,344.00	88.13	271.18	8,039.60	-3,093.18	-9,198.99	9,704.29	3.04	-3.00	0.49	
18,439.00	87.35	269.02	8,043.34	-3,093.01	-9,293.91	9,794.60	2.42	-0.82	-2.27	

## Survey Report

<b>Company:</b>	CRESTONE PEAK RESOURCES	<b>Local Co-ordinate Reference:</b>	Well LONE TREE 4-65 15-16 4BH
<b>Project:</b>	ARAPAHOE COUNTY	<b>TVD Reference:</b>	KB 25' @ 5718.30usft
<b>Site:</b>	SEC 15-T4S-R65W	<b>MD Reference:</b>	KB 25' @ 5718.30usft
<b>Well:</b>	LONE TREE 4-65 15-16 4BH	<b>North Reference:</b>	True
<b>Wellbore:</b>	OWB	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	FINAL SURVEY	<b>Database:</b>	EDT_32Bit_ODBC

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
18,534.00	88.45	270.71	8,046.83	-3,093.24	-9,388.84	9,885.03	2.12	1.16	1.78	
18,628.00	88.47	268.51	8,049.35	-3,093.88	-9,482.80	9,974.67	2.34	0.02	-2.34	
18,703.00	88.54	268.74	8,051.31	-3,095.68	-9,557.75	10,046.57	0.32	0.09	0.31	
<b>LAST SURVEY - 18703' MD, 8051' TVD</b>										
18,769.00	88.54	268.74	8,052.99	-3,097.13	-9,623.72	10,109.80	0.00	0.00	0.00	
<b>EXTRAPOLATION TO TD - 18769' MD, 396' FSL, 330' FWL SEC 16</b>										

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
LP-LT 4-65 4BH	0.00	0.00	7,910.00	-3,081.69	274.08	1,680,151.16	3,241,414.26	39.697686°N	104.642058°W	
- actual wellpath misses target center by 13.02usft at 8867.39usft MD (7898.33 TVD, -3076.07 N, 272.70 E)										
- Point										
PBHL-LT 4-65 4BH	0.00	0.00	8,050.00	-3,093.36	-9,623.97	1,680,046.12	3,231,516.85	39.697649°N	104.677233°W	
- actual wellpath misses target center by 4.81usft at 18769.00usft MD (8052.99 TVD, -3097.13 N, -9623.72 E)										
- Point										

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
7,908.00	7,287.15	-2,804.68	834.67	KOP - 7908' MD, 7287' TVD	
8,852.00	7,896.47	-3,075.42	287.97	HZ LANDING PNT - 8852' MD, 7896' TVD	
8,866.00	7,898.18	-3,076.02	274.08	~330' X-OVER PNT - 8866' MD, 406' FSL, 330' FEL SEC 15	
18,703.00	8,051.31	-3,095.68	-9,557.75	LAST SURVEY - 18703' MD, 8051' TVD	
18,769.00	8,052.99	-3,097.13	-9,623.72	EXTRAPOLATION TO TD - 18769' MD, 396' FSL, 330' FWL SEC 16	

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_