

CRESTONE PEAK RESOURCES

ARAPAHOE COUNTY

SEC 8-T5S-R64W

STATE HARVARD 5-64 8-7-12 4AH

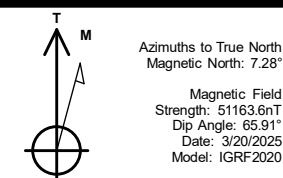
OWB

Plan: PROPOSAL 1

Standard Planning Report

15 May, 2025

Project: ARAPAHOE COUNTY
 Site: SEC 8-T5S-R64W
 Well: STATE HARVARD 5-64 8-7-12 4AH
 Wellbore: OWB
 Design: PROPOSAL 1



WELL DETAILS: STATE HARVARD 5-64 8-7-12 4AH

+N/-S	+E/-W	Northing	Easting	5927.00 Latitude	Longitude	Slot
0.00	0.00	1655771.41	3261979.46	39.630204°N	104.569865°W	

ANNOTATIONS

MD	Inc	Azi	TVD	+N/-S	+E/-W	VSec	Departure	Annotation
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	Start Build 2.00
1117.79	16.36	134.18	1106.73	-80.80	83.14	-73.82	115.93	Start 6295.75 hold at 1117.79 MD
7413.54	16.36	134.18	7147.70	-1316.39	1354.54	-1202.64	1888.83	Start DLS 10.00 TFO 135.31
8431.38	90.00	270.67	7824.00	-1446.46	792.10	-629.35	2517.71	Start 5129.25 hold at 8431.38 MD
13560.63	90.00	270.67	7824.00	-1386.37	-4336.80	4462.29	7646.96	Start DLS 2.00 TFO -90.00
13572.68	90.00	270.43	7824.00	-1386.25	-4348.85	4474.26	7659.01	Start 7737.26 hold at 13572.68 MD
21309.94	90.00	270.43	7824.00	-1328.15	-12085.89	12158.65	15396.27	TD at 21309.94

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	
3	1117.79	16.36	134.18	1106.73	-80.80	83.14	2.00	134.18	-73.82	
4	7413.54	16.36	134.18	7147.70	-1316.39	1354.54	0.00	0.00	-1202.64	
5	8431.38	90.00	270.67	7824.00	-1446.46	792.10	10.00	135.31	-629.35	LP-ST. HARVARD 5-64 8-7-12 4AH
6	13560.63	90.00	270.67	7824.00	-1386.37	-4336.80	0.00	0.00	4462.29	MP-ST. HARVARD 5-64 8-7-12 4AH
7	13572.68	90.00	270.43	7824.00	-1386.25	-4348.85	2.00	-90.00	4474.26	
8	21309.94	90.00	270.43	7824.00	-1328.15	-12085.89	0.00	0.00	12158.65	PBHL-ST. HARVARD 5-64 8-7-12 4AH

DESIGN TARGET DETAILS

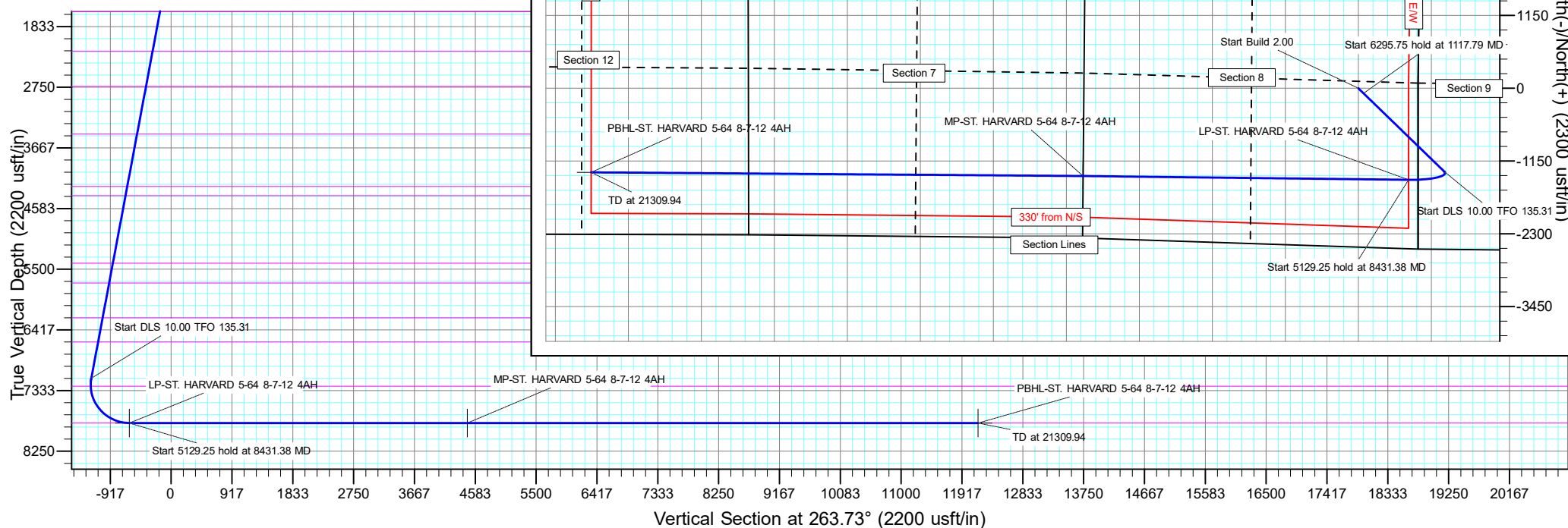
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
LP-ST. HARVARD 5-64 8-7-12 4AH	7824.00	-1446.46	792.10	1654333.17	3262786.31	39.626233°N	104.567053°W	Point
plan hits target center								
MP-ST. HARVARD 5-64 8-7-12 4AH	7824.00	-1386.37	-4336.80	1654340.75	3257657.17	39.626397°N	104.585261°W	Point
- plan hits target center								
PBHL-ST. HARVARD 5-64 8-7-12 4AH	7824.00	-1328.15	-12085.89	1654319.62	3249908.06	39.626550°N	104.612771°W	Point
- plan hits target center								

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

SHL:
 2510' FSL, 943' FEL
 SEC 8-T5S-R64W
 LP:
 1090' FSL, 150' FEL
 SEC 8-T5S-R64W
 BHL:
 980' FSL, 2481' FEL
 SEC 12-T5S-R65W



Civitas Resources

Planning Report

Database:	EDM	Local Co-ordinate Reference:	Well STATE HARVARD 5-64 8-7-12 4AH
Company:	CRESTONE PEAK RESOURCES	TVD Reference:	KB 25' @ 5952.00usft
Project:	ARAPAHOE COUNTY	MD Reference:	KB 25' @ 5952.00usft
Site:	SEC 8-T5S-R64W	North Reference:	True
Well:	STATE HARVARD 5-64 8-7-12 4AH	Survey Calculation Method:	Minimum Curvature
Wellbore:	OWB		
Design:	PROPOSAL 1		

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

Site	SEC 8-T5S-R64W				
Site Position:		Northing:	1,658,546.66 usft	Latitude:	39.637796°N
From:	Lat/Long	Easting:	3,262,923.29 usft	Longitude:	104.566413°W
Position Uncertainty:	0.00 usft	Slot Radius:	13.200 in	Grid Convergence:	0.59 °

Well	STATE HARVARD 5-64 8-7-12 4AH					
Well Position	+N/-S	-2,765.46 usft	Northing:	1,655,771.41 usft	Latitude:	39.630204°N
	+E/-W	-972.32 usft	Easting:	3,261,979.47 usft	Longitude:	104.569865°W
Position Uncertainty		0.00 usft	Wellhead Elevation:		Ground Level:	5,927.00 usft

Wellbore	OWB				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2020	3/20/2025	7.28	65.91	51,163.63582685

Design	PROPOSAL 1			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	263.73

Plan Survey Tool Program	Date	5/15/2025			
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks	
1	0.00	21,309.94	PROPOSAL 1 (OWB)	MWD OWSG	
				OWSG MWD - Standard	

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	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	0.00	
1,117.79	16.36	134.18	1,106.73	-80.80	83.14	2.00	2.00	0.00	134.18	
7,413.54	16.36	134.18	7,147.70	-1,316.39	1,354.54	0.00	0.00	0.00	0.00	
8,431.38	90.00	270.67	7,824.00	-1,446.46	792.10	10.00	7.24	13.41	135.31	LP-ST. HARVARD 5-64
13,560.63	90.00	270.67	7,824.00	-1,386.37	-4,336.80	0.00	0.00	0.00	0.00	MP-ST. HARVARD 5-64
13,572.68	90.00	270.43	7,824.00	-1,386.25	-4,348.85	2.00	0.00	-2.00	-90.00	
21,309.94	90.00	270.43	7,824.00	-1,328.15	-12,085.89	0.00	0.00	0.00	0.00	PBHL-ST. HARVARD

Civitas Resources

Planning Report

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Company:	CRESTONE PEAK RESOURCES	TVD Reference:	KB 25' @ 5952.00usft
Project:	ARAPAHOE COUNTY	MD Reference:	KB 25' @ 5952.00usft
Site:	SEC 8-T5S-R64W	North Reference:	True
Well:	STATE HARVARD 5-64 8-7-12 4AH	Survey Calculation Method:	Minimum Curvature
Wellbore:	OWB		
Design:	PROPOSAL 1		

Planned 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)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24.00	0.00	0.00	24.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Denver										
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 2.00										
400.00	2.00	134.18	399.98	-1.22	1.25	-1.11	2.00	2.00	0.00	0.00
500.00	4.00	134.18	499.84	-4.86	5.00	-4.44	2.00	2.00	0.00	0.00
600.00	6.00	134.18	599.45	-10.94	11.25	-9.99	2.00	2.00	0.00	0.00
700.00	8.00	134.18	698.70	-19.43	19.99	-17.75	2.00	2.00	0.00	0.00
800.00	10.00	134.18	797.47	-30.33	31.21	-27.71	2.00	2.00	0.00	0.00
900.00	12.00	134.18	895.62	-43.63	44.89	-39.86	2.00	2.00	0.00	0.00
1,000.00	14.00	134.18	993.06	-59.31	61.03	-54.18	2.00	2.00	0.00	0.00
1,100.00	16.00	134.18	1,089.64	-77.34	79.59	-70.66	2.00	2.00	0.00	0.00
1,117.79	16.36	134.18	1,106.73	-80.80	83.14	-73.82	2.00	2.00	0.00	0.00
Start 6295.75 hold at 1117.79 MD										
1,120.16	16.36	134.18	1,109.00	-81.26	83.62	-74.24	0.00	0.00	0.00	0.00
Arapahoe										
1,200.00	16.36	134.18	1,185.61	-96.93	99.74	-88.56	0.00	0.00	0.00	0.00
1,300.00	16.36	134.18	1,281.56	-116.56	119.94	-106.49	0.00	0.00	0.00	0.00
1,400.00	16.36	134.18	1,377.52	-136.18	140.13	-124.42	0.00	0.00	0.00	0.00
1,500.00	16.36	134.18	1,473.47	-155.81	160.33	-142.35	0.00	0.00	0.00	0.00
1,600.00	16.36	134.18	1,569.42	-175.44	180.52	-160.28	0.00	0.00	0.00	0.00
1,641.25	16.36	134.18	1,609.00	-183.53	188.85	-167.67	0.00	0.00	0.00	0.00
Laramie-Fox Hills Formation										
1,700.00	16.36	134.18	1,665.38	-195.06	200.71	-178.21	0.00	0.00	0.00	0.00
1,800.00	16.36	134.18	1,761.33	-214.69	220.91	-196.14	0.00	0.00	0.00	0.00
1,900.00	16.36	134.18	1,857.28	-234.31	241.10	-214.07	0.00	0.00	0.00	0.00
2,000.00	16.36	134.18	1,953.24	-253.94	261.30	-232.00	0.00	0.00	0.00	0.00
2,100.00	16.36	134.18	2,049.19	-273.57	281.49	-249.93	0.00	0.00	0.00	0.00
2,200.00	16.36	134.18	2,145.14	-293.19	301.69	-267.86	0.00	0.00	0.00	0.00
2,266.55	16.36	134.18	2,209.00	-306.25	315.13	-279.79	0.00	0.00	0.00	0.00
Pierre Formation										
2,300.00	16.36	134.18	2,241.10	-312.82	321.88	-285.79	0.00	0.00	0.00	0.00
2,400.00	16.36	134.18	2,337.05	-332.44	342.08	-303.72	0.00	0.00	0.00	0.00
2,500.00	16.36	134.18	2,433.00	-352.07	362.27	-321.65	0.00	0.00	0.00	0.00
2,600.00	16.36	134.18	2,528.96	-371.69	382.47	-339.58	0.00	0.00	0.00	0.00
2,700.00	16.36	134.18	2,624.91	-391.32	402.66	-357.51	0.00	0.00	0.00	0.00
2,800.00	16.36	134.18	2,720.86	-410.95	422.86	-375.44	0.00	0.00	0.00	0.00
2,818.90	16.36	134.18	2,739.00	-414.66	426.67	-378.82	0.00	0.00	0.00	0.00
Upper Pierre aquifer										
2,900.00	16.36	134.18	2,816.81	-430.57	443.05	-393.37	0.00	0.00	0.00	0.00
3,000.00	16.36	134.18	2,912.77	-450.20	463.24	-411.29	0.00	0.00	0.00	0.00
3,100.00	16.36	134.18	3,008.72	-469.82	483.44	-429.22	0.00	0.00	0.00	0.00
3,200.00	16.36	134.18	3,104.67	-489.45	503.63	-447.15	0.00	0.00	0.00	0.00
3,300.00	16.36	134.18	3,200.63	-509.08	523.83	-465.08	0.00	0.00	0.00	0.00
3,400.00	16.36	134.18	3,296.58	-528.70	544.02	-483.01	0.00	0.00	0.00	0.00
3,500.00	16.36	134.18	3,392.53	-548.33	564.22	-500.94	0.00	0.00	0.00	0.00
3,569.27	16.36	134.18	3,459.00	-561.92	578.21	-513.36	0.00	0.00	0.00	0.00
Base of Upper Pierre aquifer										
3,600.00	16.36	134.18	3,488.49	-567.95	584.41	-518.87	0.00	0.00	0.00	0.00
3,700.00	16.36	134.18	3,584.44	-587.58	604.61	-536.80	0.00	0.00	0.00	0.00

Civitas Resources

Planning Report

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Company:	CRESTONE PEAK RESOURCES	TVD Reference:	KB 25' @ 5952.00usft
Project:	ARAPAHOE COUNTY	MD Reference:	KB 25' @ 5952.00usft
Site:	SEC 8-T5S-R64W	North Reference:	True
Well:	STATE HARVARD 5-64 8-7-12 4AH	Survey Calculation Method:	Minimum Curvature
Wellbore:	OWB		
Design:	PROPOSAL 1		

Planned 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)	
3,800.00	16.36	134.18	3,680.39	-607.20	624.80	-554.73	0.00	0.00	0.00	
3,900.00	16.36	134.18	3,776.35	-626.83	645.00	-572.66	0.00	0.00	0.00	
4,000.00	16.36	134.18	3,872.30	-646.46	665.19	-590.59	0.00	0.00	0.00	
4,100.00	16.36	134.18	3,968.25	-666.08	685.38	-608.52	0.00	0.00	0.00	
4,200.00	16.36	134.18	4,064.21	-685.71	705.58	-626.45	0.00	0.00	0.00	
4,300.00	16.36	134.18	4,160.16	-705.33	725.77	-644.38	0.00	0.00	0.00	
4,392.59	16.36	134.18	4,249.00	-723.50	744.47	-660.98	0.00	0.00	0.00	
Larimer ("Parkman") sandstone										
4,400.00	16.36	134.18	4,256.11	-724.96	745.97	-662.31	0.00	0.00	0.00	
4,500.00	16.36	134.18	4,352.07	-744.59	766.16	-680.24	0.00	0.00	0.00	
4,538.49	16.36	134.18	4,389.00	-752.14	773.94	-687.15	0.00	0.00	0.00	
Pierre Formation										
4,600.00	16.36	134.18	4,448.02	-764.21	786.36	-698.17	0.00	0.00	0.00	
4,700.00	16.36	134.18	4,543.97	-783.84	806.55	-716.10	0.00	0.00	0.00	
4,800.00	16.36	134.18	4,639.92	-803.46	826.75	-734.03	0.00	0.00	0.00	
4,900.00	16.36	134.18	4,735.88	-823.09	846.94	-751.96	0.00	0.00	0.00	
5,000.00	16.36	134.18	4,831.83	-842.71	867.14	-769.89	0.00	0.00	0.00	
5,100.00	16.36	134.18	4,927.78	-862.34	887.33	-787.82	0.00	0.00	0.00	
5,200.00	16.36	134.18	5,023.74	-881.97	907.52	-805.75	0.00	0.00	0.00	
5,300.00	16.36	134.18	5,119.69	-901.59	927.72	-823.68	0.00	0.00	0.00	
5,400.00	16.36	134.18	5,215.64	-921.22	947.91	-841.61	0.00	0.00	0.00	
5,500.00	16.36	134.18	5,311.60	-940.84	968.11	-859.54	0.00	0.00	0.00	
5,600.00	16.36	134.18	5,407.55	-960.47	988.30	-877.47	0.00	0.00	0.00	
5,601.51	16.36	134.18	5,409.00	-960.77	988.61	-877.74	0.00	0.00	0.00	
Terry ("Sussex") sandstone										
5,700.00	16.36	134.18	5,503.50	-980.10	1,008.50	-895.40	0.00	0.00	0.00	
5,800.00	16.36	134.18	5,599.46	-999.72	1,028.69	-913.33	0.00	0.00	0.00	
5,900.00	16.36	134.18	5,695.41	-1,019.35	1,048.89	-931.26	0.00	0.00	0.00	
5,914.16	16.36	134.18	5,709.00	-1,022.13	1,051.75	-933.80	0.00	0.00	0.00	
Pierre Formation										
6,000.00	16.36	134.18	5,791.36	-1,038.97	1,069.08	-949.19	0.00	0.00	0.00	
6,100.00	16.36	134.18	5,887.32	-1,058.60	1,089.28	-967.12	0.00	0.00	0.00	
6,200.00	16.36	134.18	5,983.27	-1,078.22	1,109.47	-985.05	0.00	0.00	0.00	
6,300.00	16.36	134.18	6,079.22	-1,097.85	1,129.67	-1,002.98	0.00	0.00	0.00	
6,400.00	16.36	134.18	6,175.18	-1,117.48	1,149.86	-1,020.91	0.00	0.00	0.00	
6,461.31	16.36	134.18	6,234.00	-1,129.51	1,162.24	-1,031.90	0.00	0.00	0.00	
Hygiene ("Shannon") sandstone										
6,500.00	16.36	134.18	6,271.13	-1,137.10	1,170.05	-1,038.84	0.00	0.00	0.00	
6,600.00	16.36	134.18	6,367.08	-1,156.73	1,190.25	-1,056.77	0.00	0.00	0.00	
6,700.00	16.36	134.18	6,463.03	-1,176.35	1,210.44	-1,074.70	0.00	0.00	0.00	
6,800.00	16.36	134.18	6,558.99	-1,195.98	1,230.64	-1,092.63	0.00	0.00	0.00	
6,841.70	16.36	134.18	6,599.00	-1,204.16	1,239.06	-1,100.11	0.00	0.00	0.00	
Pierre Formation										
6,900.00	16.36	134.18	6,654.94	-1,215.61	1,250.83	-1,110.56	0.00	0.00	0.00	
7,000.00	16.36	134.18	6,750.89	-1,235.23	1,271.03	-1,128.49	0.00	0.00	0.00	
7,100.00	16.36	134.18	6,846.85	-1,254.86	1,291.22	-1,146.42	0.00	0.00	0.00	
7,200.00	16.36	134.18	6,942.80	-1,274.48	1,311.42	-1,164.35	0.00	0.00	0.00	
7,300.00	16.36	134.18	7,038.75	-1,294.11	1,331.61	-1,182.28	0.00	0.00	0.00	
7,400.00	16.36	134.18	7,134.71	-1,313.73	1,351.81	-1,200.21	0.00	0.00	0.00	
7,413.54	16.36	134.18	7,147.70	-1,316.39	1,354.54	-1,202.64	0.00	0.00	0.00	
Start DLS 10.00 TFO 135.31										
7,500.00	11.84	165.20	7,231.65	-1,333.48	1,365.56	-1,211.72	10.00	-5.22	35.87	
7,538.12	11.44	184.07	7,269.00	-1,341.04	1,366.29	-1,211.62	10.00	-1.04	49.51	

Civitas Resources

Planning Report

Database:	EDM	Local Co-ordinate Reference:	Well STATE HARVARD 5-64 8-7-12 4AH
Company:	CRESTONE PEAK RESOURCES	TVD Reference:	KB 25' @ 5952.00usft
Project:	ARAPAHOE COUNTY	MD Reference:	KB 25' @ 5952.00usft
Site:	SEC 8-T5S-R64W	North Reference:	True
Well:	STATE HARVARD 5-64 8-7-12 4AH	Survey Calculation Method:	Minimum Curvature
Wellbore:	OWB		
Design:	PROPOSAL 1		

Planned 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)
Sharon Springs Member									
7,600.00	13.30	211.95	7,329.49	-1,353.21	1,362.08	-1,206.11	10.00	3.00	45.06
7,700.00	20.27	237.51	7,425.30	-1,372.33	1,341.33	-1,183.39	10.00	6.97	25.55
7,800.00	29.02	249.31	7,516.15	-1,390.25	1,303.92	-1,144.26	10.00	8.75	11.80
7,900.00	38.35	255.87	7,599.29	-1,406.43	1,251.01	-1,089.89	10.00	9.33	6.56
8,000.00	47.92	260.16	7,672.20	-1,420.38	1,184.19	-1,021.95	10.00	9.57	4.28
8,100.00	57.60	263.30	7,732.66	-1,431.68	1,105.50	-942.50	10.00	9.68	3.15
8,200.00	67.35	265.83	7,778.83	-1,439.97	1,017.33	-853.95	10.00	9.75	2.53
8,300.00	77.13	268.02	7,809.30	-1,445.02	922.35	-758.99	10.00	9.78	2.19
8,400.00	86.92	270.05	7,823.16	-1,446.66	823.46	-660.51	10.00	9.80	2.02
8,431.38	90.00	270.67	7,824.00	-1,446.46	792.10	-629.35	10.00	9.80	1.98
Start 5129.25 hold at 8431.38 MD - Niobrara Formation									
8,500.00	90.00	270.67	7,824.00	-1,445.66	723.48	-561.24	0.00	0.00	0.00
8,600.00	90.00	270.67	7,824.00	-1,444.49	623.49	-461.97	0.00	0.00	0.00
8,700.00	90.00	270.67	7,824.00	-1,443.31	523.49	-362.70	0.00	0.00	0.00
8,800.00	90.00	270.67	7,824.00	-1,442.14	423.50	-263.43	0.00	0.00	0.00
8,900.00	90.00	270.67	7,824.00	-1,440.97	323.51	-164.17	0.00	0.00	0.00
9,000.00	90.00	270.67	7,824.00	-1,439.80	223.52	-64.90	0.00	0.00	0.00
9,100.00	90.00	270.67	7,824.00	-1,438.63	123.52	34.37	0.00	0.00	0.00
9,200.00	90.00	270.67	7,824.00	-1,437.46	23.53	133.63	0.00	0.00	0.00
9,300.00	90.00	270.67	7,824.00	-1,436.28	-76.46	232.90	0.00	0.00	0.00
9,400.00	90.00	270.67	7,824.00	-1,435.11	-176.46	332.17	0.00	0.00	0.00
9,500.00	90.00	270.67	7,824.00	-1,433.94	-276.45	431.43	0.00	0.00	0.00
9,600.00	90.00	270.67	7,824.00	-1,432.77	-376.44	530.70	0.00	0.00	0.00
9,700.00	90.00	270.67	7,824.00	-1,431.60	-476.44	629.97	0.00	0.00	0.00
9,800.00	90.00	270.67	7,824.00	-1,430.43	-576.43	729.23	0.00	0.00	0.00
9,900.00	90.00	270.67	7,824.00	-1,429.26	-676.42	828.50	0.00	0.00	0.00
10,000.00	90.00	270.67	7,824.00	-1,428.08	-776.42	927.77	0.00	0.00	0.00
10,100.00	90.00	270.67	7,824.00	-1,426.91	-876.41	1,027.03	0.00	0.00	0.00
10,200.00	90.00	270.67	7,824.00	-1,425.74	-976.40	1,126.30	0.00	0.00	0.00
10,300.00	90.00	270.67	7,824.00	-1,424.57	-1,076.40	1,225.57	0.00	0.00	0.00
10,400.00	90.00	270.67	7,824.00	-1,423.40	-1,176.39	1,324.83	0.00	0.00	0.00
10,500.00	90.00	270.67	7,824.00	-1,422.23	-1,276.38	1,424.10	0.00	0.00	0.00
10,600.00	90.00	270.67	7,824.00	-1,421.05	-1,376.38	1,523.37	0.00	0.00	0.00
10,700.00	90.00	270.67	7,824.00	-1,419.88	-1,476.37	1,622.63	0.00	0.00	0.00
10,800.00	90.00	270.67	7,824.00	-1,418.71	-1,576.36	1,721.90	0.00	0.00	0.00
10,900.00	90.00	270.67	7,824.00	-1,417.54	-1,676.35	1,821.17	0.00	0.00	0.00
11,000.00	90.00	270.67	7,824.00	-1,416.37	-1,776.35	1,920.43	0.00	0.00	0.00
11,100.00	90.00	270.67	7,824.00	-1,415.20	-1,876.34	2,019.70	0.00	0.00	0.00
11,200.00	90.00	270.67	7,824.00	-1,414.02	-1,976.33	2,118.97	0.00	0.00	0.00
11,300.00	90.00	270.67	7,824.00	-1,412.85	-2,076.33	2,218.24	0.00	0.00	0.00
11,400.00	90.00	270.67	7,824.00	-1,411.68	-2,176.32	2,317.50	0.00	0.00	0.00
11,500.00	90.00	270.67	7,824.00	-1,410.51	-2,276.31	2,416.77	0.00	0.00	0.00
11,600.00	90.00	270.67	7,824.00	-1,409.34	-2,376.31	2,516.04	0.00	0.00	0.00
11,700.00	90.00	270.67	7,824.00	-1,408.17	-2,476.30	2,615.30	0.00	0.00	0.00
11,800.00	90.00	270.67	7,824.00	-1,406.99	-2,576.29	2,714.57	0.00	0.00	0.00
11,900.00	90.00	270.67	7,824.00	-1,405.82	-2,676.29	2,813.84	0.00	0.00	0.00
12,000.00	90.00	270.67	7,824.00	-1,404.65	-2,776.28	2,913.10	0.00	0.00	0.00
12,100.00	90.00	270.67	7,824.00	-1,403.48	-2,876.27	3,012.37	0.00	0.00	0.00
12,200.00	90.00	270.67	7,824.00	-1,402.31	-2,976.27	3,111.64	0.00	0.00	0.00
12,300.00	90.00	270.67	7,824.00	-1,401.14	-3,076.26	3,210.90	0.00	0.00	0.00
12,400.00	90.00	270.67	7,824.00	-1,399.97	-3,176.25	3,310.17	0.00	0.00	0.00
12,500.00	90.00	270.67	7,824.00	-1,398.79	-3,276.24	3,409.44	0.00	0.00	0.00
12,600.00	90.00	270.67	7,824.00	-1,397.62	-3,376.24	3,508.70	0.00	0.00	0.00

Civitas Resources

Planning Report

Database:	EDM	Local Co-ordinate Reference:	Well STATE HARVARD 5-64 8-7-12 4AH
Company:	CRESTONE PEAK RESOURCES	TVD Reference:	KB 25' @ 5952.00usft
Project:	ARAPAHOE COUNTY	MD Reference:	KB 25' @ 5952.00usft
Site:	SEC 8-T5S-R64W	North Reference:	True
Well:	STATE HARVARD 5-64 8-7-12 4AH	Survey Calculation Method:	Minimum Curvature
Wellbore:	OWB		
Design:	PROPOSAL 1		

Planned 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)	
12,700.00	90.00	270.67	7,824.00	-1,396.45	-3,476.23	3,607.97	0.00	0.00	0.00	
12,800.00	90.00	270.67	7,824.00	-1,395.28	-3,576.22	3,707.24	0.00	0.00	0.00	
12,900.00	90.00	270.67	7,824.00	-1,394.11	-3,676.22	3,806.50	0.00	0.00	0.00	
13,000.00	90.00	270.67	7,824.00	-1,392.94	-3,776.21	3,905.77	0.00	0.00	0.00	
13,100.00	90.00	270.67	7,824.00	-1,391.76	-3,876.20	4,005.04	0.00	0.00	0.00	
13,200.00	90.00	270.67	7,824.00	-1,390.59	-3,976.20	4,104.30	0.00	0.00	0.00	
13,300.00	90.00	270.67	7,824.00	-1,389.42	-4,076.19	4,203.57	0.00	0.00	0.00	
13,400.00	90.00	270.67	7,824.00	-1,388.25	-4,176.18	4,302.84	0.00	0.00	0.00	
13,500.00	90.00	270.67	7,824.00	-1,387.08	-4,276.18	4,402.10	0.00	0.00	0.00	
13,560.63	90.00	270.67	7,824.00	-1,386.37	-4,336.80	4,462.29	0.00	0.00	0.00	
Start DLS 2.00 TFO -90.00										
13,572.68	90.00	270.43	7,824.00	-1,386.25	-4,348.85	4,474.26	2.00	0.00	-2.00	
Start 7737.26 hold at 13572.68 MD										
13,600.00	90.00	270.43	7,824.00	-1,386.05	-4,376.17	4,501.39	0.00	0.00	0.00	
13,700.00	90.00	270.43	7,824.00	-1,385.30	-4,476.17	4,600.70	0.00	0.00	0.00	
13,800.00	90.00	270.43	7,824.00	-1,384.54	-4,576.17	4,700.02	0.00	0.00	0.00	
13,900.00	90.00	270.43	7,824.00	-1,383.79	-4,676.16	4,799.34	0.00	0.00	0.00	
14,000.00	90.00	270.43	7,824.00	-1,383.04	-4,776.16	4,898.66	0.00	0.00	0.00	
14,100.00	90.00	270.43	7,824.00	-1,382.29	-4,876.16	4,997.97	0.00	0.00	0.00	
14,200.00	90.00	270.43	7,824.00	-1,381.54	-4,976.15	5,097.29	0.00	0.00	0.00	
14,300.00	90.00	270.43	7,824.00	-1,380.79	-5,076.15	5,196.61	0.00	0.00	0.00	
14,400.00	90.00	270.43	7,824.00	-1,380.04	-5,176.15	5,295.92	0.00	0.00	0.00	
14,500.00	90.00	270.43	7,824.00	-1,379.29	-5,276.15	5,395.24	0.00	0.00	0.00	
14,600.00	90.00	270.43	7,824.00	-1,378.54	-5,376.14	5,494.56	0.00	0.00	0.00	
14,700.00	90.00	270.43	7,824.00	-1,377.79	-5,476.14	5,593.87	0.00	0.00	0.00	
14,800.00	90.00	270.43	7,824.00	-1,377.03	-5,576.14	5,693.19	0.00	0.00	0.00	
14,900.00	90.00	270.43	7,824.00	-1,376.28	-5,676.13	5,792.51	0.00	0.00	0.00	
15,000.00	90.00	270.43	7,824.00	-1,375.53	-5,776.13	5,891.82	0.00	0.00	0.00	
15,100.00	90.00	270.43	7,824.00	-1,374.78	-5,876.13	5,991.14	0.00	0.00	0.00	
15,200.00	90.00	270.43	7,824.00	-1,374.03	-5,976.13	6,090.46	0.00	0.00	0.00	
15,300.00	90.00	270.43	7,824.00	-1,373.28	-6,076.12	6,189.77	0.00	0.00	0.00	
15,400.00	90.00	270.43	7,824.00	-1,372.53	-6,176.12	6,289.09	0.00	0.00	0.00	
15,500.00	90.00	270.43	7,824.00	-1,371.78	-6,276.12	6,388.41	0.00	0.00	0.00	
15,600.00	90.00	270.43	7,824.00	-1,371.03	-6,376.11	6,487.72	0.00	0.00	0.00	
15,700.00	90.00	270.43	7,824.00	-1,370.28	-6,476.11	6,587.04	0.00	0.00	0.00	
15,800.00	90.00	270.43	7,824.00	-1,369.53	-6,576.11	6,686.36	0.00	0.00	0.00	
15,900.00	90.00	270.43	7,824.00	-1,368.77	-6,676.11	6,785.67	0.00	0.00	0.00	
16,000.00	90.00	270.43	7,824.00	-1,368.02	-6,776.10	6,884.99	0.00	0.00	0.00	
16,100.00	90.00	270.43	7,824.00	-1,367.27	-6,876.10	6,984.31	0.00	0.00	0.00	
16,200.00	90.00	270.43	7,824.00	-1,366.52	-6,976.10	7,083.62	0.00	0.00	0.00	
16,300.00	90.00	270.43	7,824.00	-1,365.77	-7,076.09	7,182.94	0.00	0.00	0.00	
16,400.00	90.00	270.43	7,824.00	-1,365.02	-7,176.09	7,282.26	0.00	0.00	0.00	
16,500.00	90.00	270.43	7,824.00	-1,364.27	-7,276.09	7,381.57	0.00	0.00	0.00	
16,600.00	90.00	270.43	7,824.00	-1,363.52	-7,376.09	7,480.89	0.00	0.00	0.00	
16,700.00	90.00	270.43	7,824.00	-1,362.77	-7,476.08	7,580.21	0.00	0.00	0.00	
16,800.00	90.00	270.43	7,824.00	-1,362.02	-7,576.08	7,679.52	0.00	0.00	0.00	
16,900.00	90.00	270.43	7,824.00	-1,361.26	-7,676.08	7,778.84	0.00	0.00	0.00	
17,000.00	90.00	270.43	7,824.00	-1,360.51	-7,776.07	7,878.16	0.00	0.00	0.00	
17,100.00	90.00	270.43	7,824.00	-1,359.76	-7,876.07	7,977.47	0.00	0.00	0.00	
17,200.00	90.00	270.43	7,824.00	-1,359.01	-7,976.07	8,076.79	0.00	0.00	0.00	
17,300.00	90.00	270.43	7,824.00	-1,358.26	-8,076.07	8,176.11	0.00	0.00	0.00	
17,400.00	90.00	270.43	7,824.00	-1,357.51	-8,176.06	8,275.43	0.00	0.00	0.00	
17,500.00	90.00	270.43	7,824.00	-1,356.76	-8,276.06	8,374.74	0.00	0.00	0.00	
17,600.00	90.00	270.43	7,824.00	-1,356.01	-8,376.06	8,474.06	0.00	0.00	0.00	

Civitas Resources

Planning Report

Database:	EDM	Local Co-ordinate Reference:	Well STATE HARVARD 5-64 8-7-12 4AH
Company:	CRESTONE PEAK RESOURCES	TVD Reference:	KB 25' @ 5952.00usft
Project:	ARAPAHOE COUNTY	MD Reference:	KB 25' @ 5952.00usft
Site:	SEC 8-T5S-R64W	North Reference:	True
Well:	STATE HARVARD 5-64 8-7-12 4AH	Survey Calculation Method:	Minimum Curvature
Wellbore:	OWB		
Design:	PROPOSAL 1		

Planned 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)
17,700.00	90.00	270.43	7,824.00	-1,355.26	-8,476.06	8,573.38	0.00	0.00	0.00
17,800.00	90.00	270.43	7,824.00	-1,354.51	-8,576.05	8,672.69	0.00	0.00	0.00
17,900.00	90.00	270.43	7,824.00	-1,353.76	-8,676.05	8,772.01	0.00	0.00	0.00
18,000.00	90.00	270.43	7,824.00	-1,353.00	-8,776.05	8,871.33	0.00	0.00	0.00
18,100.00	90.00	270.43	7,824.00	-1,352.25	-8,876.04	8,970.64	0.00	0.00	0.00
18,200.00	90.00	270.43	7,824.00	-1,351.50	-8,976.04	9,069.96	0.00	0.00	0.00
18,300.00	90.00	270.43	7,824.00	-1,350.75	-9,076.04	9,169.28	0.00	0.00	0.00
18,400.00	90.00	270.43	7,824.00	-1,350.00	-9,176.04	9,268.59	0.00	0.00	0.00
18,500.00	90.00	270.43	7,824.00	-1,349.25	-9,276.03	9,367.91	0.00	0.00	0.00
18,600.00	90.00	270.43	7,824.00	-1,348.50	-9,376.03	9,467.23	0.00	0.00	0.00
18,700.00	90.00	270.43	7,824.00	-1,347.75	-9,476.03	9,566.54	0.00	0.00	0.00
18,800.00	90.00	270.43	7,824.00	-1,347.00	-9,576.02	9,665.86	0.00	0.00	0.00
18,900.00	90.00	270.43	7,824.00	-1,346.25	-9,676.02	9,765.18	0.00	0.00	0.00
19,000.00	90.00	270.43	7,824.00	-1,345.50	-9,776.02	9,864.49	0.00	0.00	0.00
19,100.00	90.00	270.43	7,824.00	-1,344.74	-9,876.02	9,963.81	0.00	0.00	0.00
19,200.00	90.00	270.43	7,824.00	-1,343.99	-9,976.01	10,063.13	0.00	0.00	0.00
19,300.00	90.00	270.43	7,824.00	-1,343.24	-10,076.01	10,162.44	0.00	0.00	0.00
19,400.00	90.00	270.43	7,824.00	-1,342.49	-10,176.01	10,261.76	0.00	0.00	0.00
19,500.00	90.00	270.43	7,824.00	-1,341.74	-10,276.00	10,361.08	0.00	0.00	0.00
19,600.00	90.00	270.43	7,824.00	-1,340.99	-10,376.00	10,460.39	0.00	0.00	0.00
19,700.00	90.00	270.43	7,824.00	-1,340.24	-10,476.00	10,559.71	0.00	0.00	0.00
19,800.00	90.00	270.43	7,824.00	-1,339.49	-10,576.00	10,659.03	0.00	0.00	0.00
19,900.00	90.00	270.43	7,824.00	-1,338.74	-10,675.99	10,758.34	0.00	0.00	0.00
20,000.00	90.00	270.43	7,824.00	-1,337.99	-10,775.99	10,857.66	0.00	0.00	0.00
20,100.00	90.00	270.43	7,824.00	-1,337.23	-10,875.99	10,956.98	0.00	0.00	0.00
20,200.00	90.00	270.43	7,824.00	-1,336.48	-10,975.98	11,056.29	0.00	0.00	0.00
20,300.00	90.00	270.43	7,824.00	-1,335.73	-11,075.98	11,155.61	0.00	0.00	0.00
20,400.00	90.00	270.43	7,824.00	-1,334.98	-11,175.98	11,254.93	0.00	0.00	0.00
20,500.00	90.00	270.43	7,824.00	-1,334.23	-11,275.98	11,354.25	0.00	0.00	0.00
20,600.00	90.00	270.43	7,824.00	-1,333.48	-11,375.97	11,453.56	0.00	0.00	0.00
20,700.00	90.00	270.43	7,824.00	-1,332.73	-11,475.97	11,552.88	0.00	0.00	0.00
20,800.00	90.00	270.43	7,824.00	-1,331.98	-11,575.97	11,652.20	0.00	0.00	0.00
20,900.00	90.00	270.43	7,824.00	-1,331.23	-11,675.97	11,751.51	0.00	0.00	0.00
21,000.00	90.00	270.43	7,824.00	-1,330.48	-11,775.96	11,850.83	0.00	0.00	0.00
21,100.00	90.00	270.43	7,824.00	-1,329.73	-11,875.96	11,950.15	0.00	0.00	0.00
21,200.00	90.00	270.43	7,824.00	-1,328.97	-11,975.96	12,049.46	0.00	0.00	0.00
21,300.00	90.00	270.43	7,824.00	-1,328.22	-12,075.95	12,148.78	0.00	0.00	0.00
21,309.94	90.00	270.43	7,824.00	-1,328.15	-12,085.89	12,158.65	0.00	0.00	0.00
TD at 21309.94									

Civitas Resources

Planning Report

Database:	EDM	Local Co-ordinate Reference:	Well STATE HARVARD 5-64 8-7-12 4AH
Company:	CRESTONE PEAK RESOURCES	TVD Reference:	KB 25' @ 5952.00usft
Project:	ARAPAHOE COUNTY	MD Reference:	KB 25' @ 5952.00usft
Site:	SEC 8-T5S-R64W	North Reference:	True
Well:	STATE HARVARD 5-64 8-7-12 4AH	Survey Calculation Method:	Minimum Curvature
Wellbore:	OWB		
Design:	PROPOSAL 1		

Design Targets									
Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target - Shape	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
PBHL-ST. HARVARD 5- - plan hits target center - Point	0.00	0.00	7,824.00	-1,328.15	-12,085.89	1,654,319.62	3,249,908.06	39.626550°N	104.612771°W
MP-ST. HARVARD 5-64 - plan hits target center - Point	0.00	0.00	7,824.00	-1,386.37	-4,336.80	1,654,340.74	3,257,657.18	39.626397°N	104.585261°W
LP-ST. HARVARD 5-64 - plan hits target center - Point	0.00	0.00	7,824.00	-1,446.46	792.10	1,654,333.16	3,262,786.31	39.626233°N	104.567053°W

Formations					
Measured Depth	Vertical Depth	Name	Lithology	Dip	Dip Direction
(usft)	(usft)			(°)	(°)
24.00	24.00	Denver			
1,120.16	1,109.00	Arapahoe			
1,641.25	1,609.00	Laramie-Fox Hills Formation			
2,266.55	2,209.00	Pierre Formation			
2,818.90	2,739.00	Upper Pierre aquifer			
3,569.27	3,459.00	Base of Upper Pierre aquifer			
4,392.59	4,249.00	Larimer ("Parkman") sandstone			
4,538.49	4,389.00	Pierre Formation			
5,601.51	5,409.00	Terry ("Sussex") sandstone			
5,914.16	5,709.00	Pierre Formation			
6,461.31	6,234.00	Hygiene ("Shannon") sandstone			
6,841.70	6,599.00	Pierre Formation			
7,538.12	7,269.00	Sharon Springs Member			
8,431.38	7,824.00	Niobrara Formation			

Plan Annotations				
Measured Depth	Vertical Depth	Local Coordinates		Comment
(usft)	(usft)	+N/-S (usft)	+E/-W (usft)	
300.00	300.00	0.00	0.00	Start Build 2.00
1,117.79	1,106.73	-80.80	83.14	Start 6295.75 hold at 1117.79 MD
7,413.54	7,147.70	-1,316.39	1,354.54	Start DLS 10.00 TFO 135.31
8,431.38	7,824.00	-1,446.46	792.10	Start 5129.25 hold at 8431.38 MD
13,560.63	7,824.00	-1,386.37	-4,336.80	Start DLS 2.00 TFO -90.00
13,572.68	7,824.00	-1,386.25	-4,348.85	Start 7737.26 hold at 13572.68 MD
21,309.94	7,824.00	-1,328.15	-12,085.89	TD at 21309.94