

**Well Name:** Cow Canyon B #4  
**Well Configuration Type:** Vertical  
**Account Category/Property ID:**  
**Surface Location:** 949' FSL & 906' FEL, SEC 10, T 38 N, R 19 W, NMPM  
**Latitude (°):** 37.56141 **Longitude (°):** -108.92479  
**County:** Montezuma **State:** Colorado

**Field Name:** McELMO DOME  
**API/UWI:**  
**Objective:** Leadville  
**Bottom Hole Location:** 949' FSL & 906' FEL, SEC 10, T 38 N, R 19 W, NMPM  
**Datum:** NAD 27 **Estimated KB Elevation (ft):** 6,633.40 **Ground Elevation (ft):** 6,633.4

**A FOCUSED EFFORT WILL BE EXPECTED BY ALL PARTIES TO ELIMINATE ANY/ALL ACCIDENTS DURING THE EXECUTION OF THIS DRILLING PROJECT. H2S IS ANTICIPATED WHILE DRILLING THE PARADOX SALTS**

Vertical - Proposed Original Hole, 11/28/2017 12:27:48 PM		DRILLING PROCEDURE: (add KB to measurements below)	
Formations	MD (ftKB)	Vertical schematic (proposed)	Objective
	-214.0		16" conductor pipe will be set at ~80' prior to moving in the drilling rig.
	0.0		A 12-1/4" hole drilled from surface to 2786' TVD/MD, ~100' below the top of the Cutler, set 9-5/8" casing run to 2786' with cement to surface.
Dakota	40.0		An 8-3/4" hole drilled out from surface casing point to 7" casing point at 8192' TVD/MD. Run 7" 13-Chrome casing set ~25' into the Leadville.
	80.1		A 6" production hole will be drilled out from the 7" casing point to ~400' below the Leadville Top. Production will be logged from TD to ~500 inside the 7" shoe. After logging, a 4 1/2" 13-Chrome liner will be run and cemented.
Morrison	1,433.1		<b>CASING/CEMENTING DETAILS:</b>
Entrada			Comment
Chinle			9-5/8" 36# J-55 STC => 0'-2786' TVD/MD
	2,786.1		Cement: Conventional => Lead 800sx Light + Tail 300sx Class G + Displacement ~200bbbls Fresh Water
Cutler			Comment
	4,388.1		7" 29# 13CR BEAR => 0'-5990' TVD/MD (100' above top of Paradox Salt)
Honaker Trail (Upp...)			Cement: Lead 900sx + Tail 590 sx
Desert Creek			Comment
Paradox Salt			7" 32# 13CR BEAR => 5990'-7921' TVD/MD (run to 100' below Base Salt)
Base of Paradox Salt			Comment
Lower Hermosa			7" 29# 13CR BEAR => 7921'-8192' TVD/MD (run to TD)
Leadville			Comment
Leadville (Base of Karst)			4-1/2" 12.6# CR13 VAMTOP => 8042'-8488' TVD/MD
Ouray			<b>DRILLING FLUIDS:</b>
	8,042.0		Description
	8,042.5		12-1/4" Surface (9 5/8" Casing Point)
	8,043.0		Comment
	8,117.5		Spud 12-1/4" surface hole with spud mud and circulate. Use paper for seepage and LCM sweeps for lost circulation problems. Pump viscous sweeps if tight connections are encountered and prior to running the 9-5/8" casing.
	8,191.9		Description
	8,339.9		8-3/4" (100' above Desert Creek)
	8,487.9		Comment
	8,738.5		Drill out of the 9-5/8" casing with clean spud mud and circulate. Sweep for hole cleaning or lost circulation problems and use paper for seepage.
			Description
			8-3/4" (25' into Leadville top/7" Casing Point)
			Comment
			Displace the spud mud system with salt saturated brine 100' above the Desert Creek formation. Pre-treat mud for H2S prior to drilling the P4 Shale.
			Description
			6" Production Hole
			Comment
			During the pilot hole drill, fresh water will be treated so that the Cl2 content is ~20,000ppm. Do not use LCM.
			<b>SURVEY INFORMATION:</b>
			Comment
			500' intervals from spud to the 9-5/8" casing point
			~1000' intervals from below the 9-5/8" casing point to the top of the Paradox Salt
			No surveys within the Paradox Salt formation
			500' intervals from below the Paradox Salt to 7" casing point
			<b>EVALUATION PROGRAM:</b>
			Evaluation Program
			6" Production Hole:
			1st run dual laterolog
			2nd run triple combo, monopole sonic
			Cased Hole:
			1st run GR, pulse neutron log from 7" casing shoe to 9-5/8" casing shoe
			2nd run GR, CBL over 7" casing
			3rd run GR, CBL over 4-1/2" liner

- Objectives:**
1. Maintain a focused effort by everyone on location to eliminate all accidents.
  2. Drill, evaluate, case and complete the well at or under AFE cost estimate.
  3. Run the 7" 13-Chrome production casing to ~25' TVD into the Leadville formation.
  4. Isolate the 7" 13-Chrome to surface with high quality cement.
  5. Run the 4 1/2" 13-Chrome liner through the Leadville formation.
  6. Isolate the 4-1/2" 13-Chrome liner with high quality cement.