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1. GEOLOGICAL MARKERS & FORMATION TOP

The SMU 4-23-L will be a new drill from Pad Site #2 near Sheep Mountain in Huerfano County, CO. The objective of the 4-23-L is to target the Dakota and Entrada repeat sections of each block by drilling through faulted zones. A 13 3/8" surface casing string will be set above the Pierre formation at 950 ft, with 9 5/8" intermediate casing through the Pierre and above the first repeat section of the Dakota. Then an 8 1/2" hole will be drilled to a TD point of 10,266 ft MD (8042 ft TVD) with 7" casing run to bottom.


The names and depths of estimated formation tops are given below in the chart. The chart provides the formation tops for reservoir zones, including the repeat sections.

Formation Top	TVD
Pierre	2293
Niobrara	2793
Fort Hays	3651
Codell	3701
Greenhorn	4048
Dakota	4219
Entrada	4532
Fault 1	4536
Repeat Section 1 Dakota	4818
Repeat Section 1 Entrada	5167
Fault 2	5421
Repeat Section 2 Dakota	5833
Repeat Section 2 Entrada	6252
Fault 3	6353
Repeat Section 3 Dakota	6409
Repeat Section 3 Entrada	6766
Fault 4	7367
TD	8042

Table 1: Formation Tops for SMU 4-23-L

2. ESTIMATED TOPS OF ANTICIPATED WATER, OIL, GAS OR MINERALS

The cells highlighted in green in **Table 1** represent the formation tops of the zones containing CO₂. No other hydrocarbons or usable quality water zones are present in these formations. Casing and cementing will be designed to protect the CO₂ zones, lost circulation, and usable quality water zones.

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3. THE OPERATORS MINIMUM SPECIFICATIONS FOR PRESSURE CONTROL

A schematic of the BOP is provided in Appendix A. The BOP setup complies with the regulations presented in the BLM Onshore Order #2 for a 10M system. The rated working pressure of the BOP stack is 10,000 psi. Rams are rated to 10,000 psi while the annular is rated to 5,000 psi. The BOP stack will be nipped up after surface casing has been cemented and the "A&B" sections of the wellhead installed. As indicated in Onshore Order #2, the ram type preventers will be tested to its stack working pressure of 10,000 psi for 10 minutes along with its associated equipment. The annular preventer will be tested to 3400 psi, which meets the requirements of Onshore Order #2 as it exceeds the 50% rated working pressure for the annular. This test will also be conducted for 10 minutes. A low pressure test of 250 psi for 10 minutes will occur for all BOP equipment. All BOP tests are going to occur every 21 days as per Oxy's standard, and use clear water for the test.

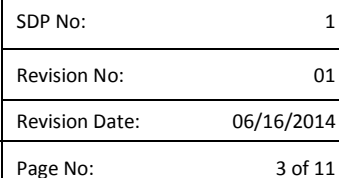
A diagram of the choke manifold is presented in Appendix A.

4. PROPOSED CASING SETTING DEPTHS AND CEMENTING PROGRAM


The casing program for the SMU 4-23-L is outlined in the table below. The table contains specific details including weight, grades, and design ratings.

SMU 4-23-L Casing Program

String	Depth (ft) MD	OD (in)	ID (in)	Coupling OD (in)	Drift (in)	Weight (#/ft)	Grade	CXN	Burst (psi)	Collapse (psi)	Tension (k-lbs)
Surface	0 – 950'	13.375	12.615	14.375	12.459	54.5	J-55	BTC	2,740	1,130	909
Intermediate	0 – 6500'	9.625	8.835	10.625	8.679	40	L-80	BTC	5,750	3,090	947
Production	0' – 10,266'	7	6.276	7.656	6.151	26	L-80	BTC	7,250	5,410	641



Cement Design 9 5/8" Intermediate Casing								
Stage	Weight (ppg)	TOC (ft)	BOC (ft)	Hole Size (in)	% Open Hole Excess	Cement Volume (sacks)	Slurry Volume (bbls)	Remarks
Lead	10	5000	6300	12.25	50%	270	109	Adjust if hole conditions change.
Tail	13.5	6300	6500	12.25	50%	75	23	Adjust if hole conditions change.
<u>LEAD SLURRY</u>								
Cement Type:		TUNED LIGHT SYSTEM						
Mix Water		8.49 gal/sack						
Slurry Density:		10 ppg						
Yield:		2.28 ft ³ /sack						


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<u>TAIL SLURRY</u> Cement Type: FRACCEM SYSTEM Mix Water 8.52 Gal/sk Slurry Density: 13.5 ppg Yield: 1.805 ft ³ /sack	
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Detailed Pumping Schedule – 9 5/8” Intermediate Casing				
Fluid #	Fluid Type	Fluid Name	Surface Density lbm/gal	Volume bbl
1	Spacer	Enhanced Spacer	9	50
2	Cement	Lead Cement	10	109
3	Cement	Tail Cement	13.5	23
DROP PLUG				
4	Spacer	Displacement Fluid	8.0	486

Cement Design 7” Production Casing								
Stage	Weight (ppg)	TOC (ft)	BOC (ft)	Hole Size (in)	% Open Hole Excess	Cement Volume (sacks)	Slurry Volume (bbls)	Remarks
Tail	10	6,000	10,266	8.50	50%	360	146	Adjust if hole conditions change.
<u>TAIL SLURRY</u> Cement Type: TUNED LIGHT SYSTEM Mix Water 8.49 gal/sack Slurry Density: 10 ppg Yield: 2.28 ft ³ /sack								

Detailed Pumping Schedule – 7” Production Casing				
Fluid #	Fluid Type	Fluid Name	Surface Density lbm/gal	Volume bbl
1	Spacer	Enhanced Spacer	9	30

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Detailed Pumping Schedule – 7” Production Casing				
Fluid #	Fluid Type	Fluid Name	Surface Density lbm/gal	Volume bbl
2	Cement	Tail Cement	10	146
DROP PLUG				
3	Spacer	Displacement Fluid	8.3	389

5. MUD PROGRAM

Mud specifications are provided in the table below. The properties will be followed, but may change depending on hole conditions. Materials to control a lost circulation event or well control will be on site, too. These products are contained in sacks and delivered to the rigs on a pallet wrapped in plastic. The drilling operation will have a closed looped system with all returns going through a shale shaker and back into the rig’s mud pit system. All cuttings will be removed via the cuttings disposal procedure and hauled off to a designated disposal site.

Hole Size (in)	Depth Interval (ft)	Fluid Type	Mud Weight (ppg)	Funnel Visc (s/qt)	PV	YP	Drill Solids (%)
17 ½”	0 - 950	FW spud mud	8.4 – 9.2	28-34	10-15	12-15	<8
12 ¼”	950 – 6500	OBM*	7.9 – 8.5	35 – 40	8 – 12	6 – 10	< 5
8 ½”	6500 – 10,266	OBM*	7.9 – 8.5	35 – 40	8 – 12	6 – 10	< 5

**The OBM will contain an oil/water ratio of 80/20 – to 85/15.*

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6. LOGGING PROGRAM

When drilling the 12 ¼" intermediate hole section, a gamma tool will be run in conjunction with the drilling assembly. Once the 9 5/8" casing is set and cemented, a CBL will be run to identify the top of cement. The current cement design plans for the top of cement to be 1,000 ft above the Dakota, which is the topmost zone containing potential hydrocarbons, or in this case, CO₂.

For the 8 ½" interval, the logging program will consist of a quad combo log, which includes Gamma Ray, Formation Density, Neutron, and Sonic. A CBL is planned to be run in the 7" casing once the drilling rig has moved off the site.


A mud logger will be onsite through the duration of the well collecting mud samples and keeping track of all formation intervals.

7. ANTICIPATED PRESSURES AND TEMPERATURES

The Dakota and Entrada formations are prone to lost circulation. The repeat sections of both the Dakota and Entrada are predicted to have higher reservoir pressures than the first Dakota/Entrada zones, but still may be prone to lost circulation. The Dakota pressure gradient has been estimated at 0.38 psi/ft and the Entrada at 0.35 psi/ft.


The Morrison shale can lead to wellbore instability and may be seen while drilling through the faulted zones.

Maximum bottom hole temperature will be less than 150°F. The maximum bottom hole pressure is anticipated to be 3,000 psi.

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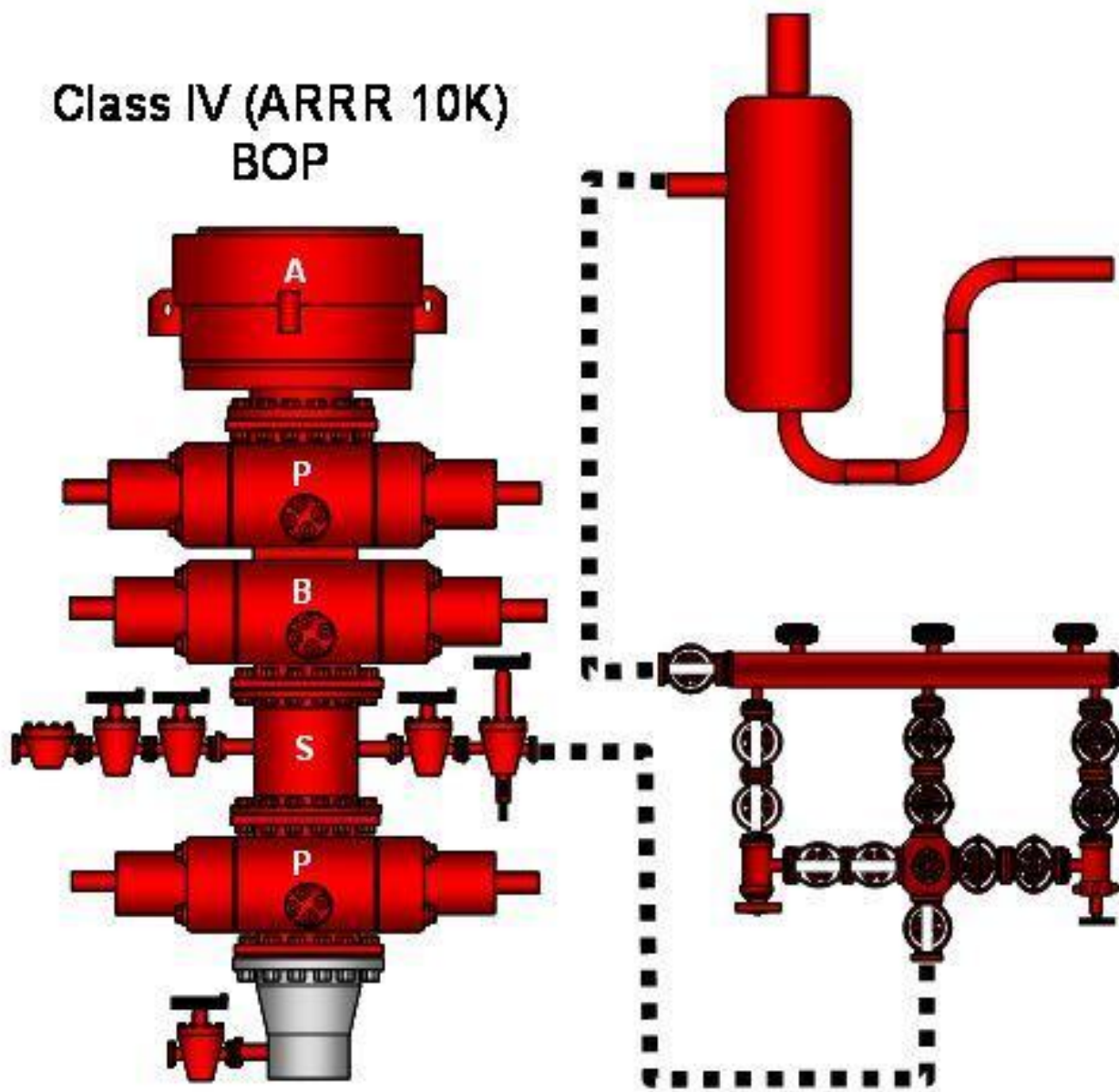
9. WELLHEAD SCHEMATIC


The wellhead will be a multi-bowl system consisting of a 13-3/8" x 9-5/8" x 7" 5M design. A drawing of the wellhead can be found in Appendix A.

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10. APPENDIX A

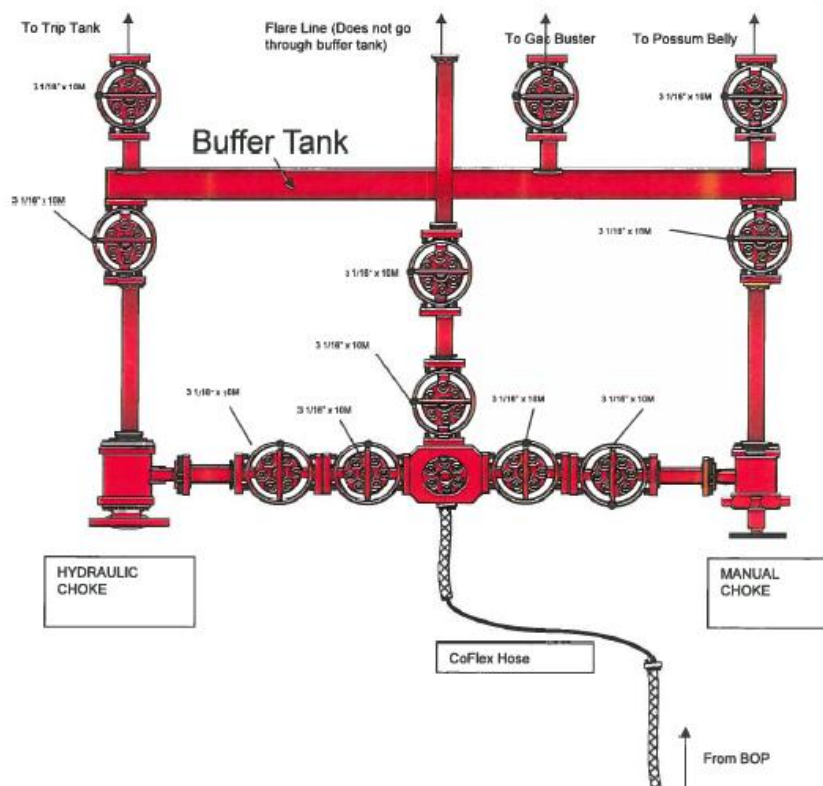
a) BOP Diagram



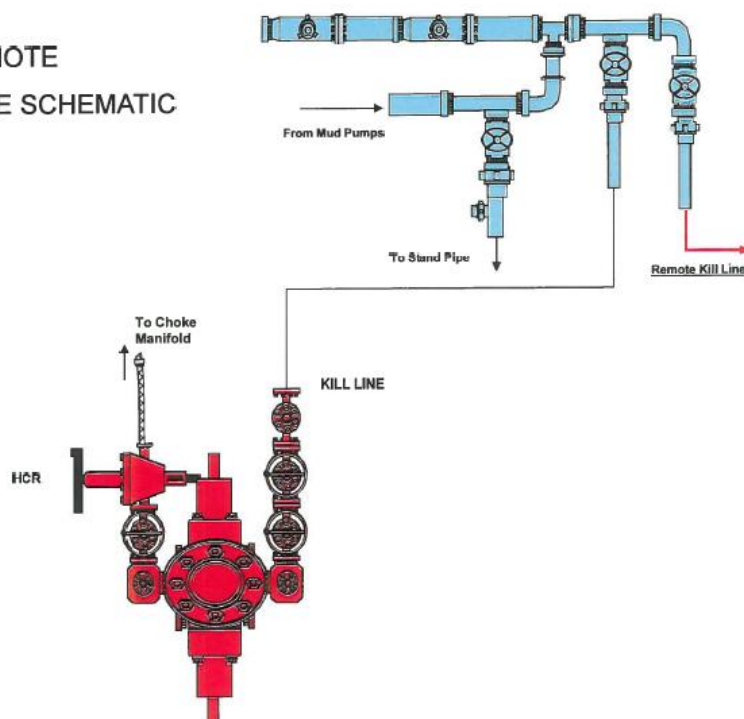
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b) Choke Manifold

FLEX3 STD CHOKE MANIFOLD (COMPREHENSIVE)



10M REMOTE KILL LINE SCHEMATIC



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c) Wellhead

