

1. Geological Formations

TVD of target 12,750
MD at TD 22,461

Pilot Hole TD N/A
Deepest expected fresh water

Formation	Depth (TVD) from KB	Water/Mineral Bearing/Target Zone	Hazards
Rustler	984	N/A	
Salado	1128	N/A	
Castille	4687	N/A	
Bell Canyon	4956	N/A	
Cherry Canyon	5974	Hydrocarbons	
Brushy Canyon	7484	Hydrocarbons	
Bone spring	9040	Hydrocarbons	
2nd Bone Spring Sand	10573	Hydrocarbons	
3rd Bone Spring Sand	11726	Hydrocarbons	
Wolfcamp	12196	Hydrocarbons	
Wolfcamp A1 Shale	12361	Hydrocarbons	

2. Casing Program

Hole Size	Casing Depth From	Casing Depth To	Casing Size	Weight (lb/ft)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
17 1/2	0	1034	13-3/8"	48.00	H-40/J-55 Hybrid	ST&C	1.56	3.66	6.49
12 1/4	0	4936	9-5/8"	40.00	J-55	LT&C	1.14	1.51	2.63
8 3/4	0	12132	7"	32.00	L-80	LT&C	1.44	1.51	1.65
8 3/4	12132	13048	7"	32.00	L-80	BT&C	1.37	1.34	37.67
6	12133	22461	4-1/2"	13.50	P-110	BT&C	1.29	1.50	50.66
BLM Minimum Safety Factor							1.125	1	1.6 Dry 1.8 Wet

TVD was used on all calculations.

All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h

APD ID: 10400013525

Submission Date: 05/02/2017

Highlighted data reflects the most recent changes

Operator Name: CIMAREX ENERGY COMPANY

Well Name: VACA DRAW 20-17 FEDERAL

Well Number: 2H

[Show Final Text](#)

Well Type: CONVENTIONAL GAS WELL

Well Work Type: Drill

Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
1	RUSTLER	3418	984	984		USEABLE WATER	No
2	SALADO	2290	1128	1128		NONE	No
3	CASTILE	-1269	4687	4687		NONE	No
4	BELL CANYON	-1538	4956	4956		NONE	No
5	CHERRY CANYON	-2556	5974	5974		NATURAL GAS,OIL	No
6	BRUSHY CANYON	-4066	7484	7484		NATURAL GAS,OIL	No
7	BONE SPRING	-5622	9040	9040		NATURAL GAS,OIL	No
8	BONE SPRING 2ND	-7155	10573	10573		NATURAL GAS,OIL	No
9	BONE SPRING 3RD	-8308	11726	11726		NATURAL GAS,OIL	No
10	WOLFCAMP	-8778	12196	12196		NATURAL GAS,OIL	Yes

Section 2 - Blowout Prevention

Pressure Rating (PSI): 10M

Rating Depth: 13048

Equipment: Exhibit "E-1". A BOP consisting of three rams, including one blind ram and two pipe rams and one annular preventer. An accumulator that meets the requirements in Onshore Order #2 for the pressure rating of the BOP stack. A rotating head may be installed as needed. A Kelly clock will be installed and maintained in operable condition and a drill string safety valve in the open position will be available on the rig floor.

Requesting Variance? YES

Variance request: Co-flex line between the BOP and choke manifold. Certification for proposed co-flex hose is attached (Please see Exhibit F, F-1, F-2, F-3). The hose is not required by the manufacturer to be anchored. In the event the specific hose is not available, one of equal or higher rating will be used. Variance to include Hammer Union connections on lines downstream of the buffer tank only.

Testing Procedure: BOP's will be tested by an independent service company. The ram preventers, choke manifold, and safety valves will be tested as follows: Prior to drilling out the surface casing, BOPE pressure tests will be 250 psi low and 2000 psi high. Prior to drilling out the intermediate casing, BOPE pressure tests will be 250 psi low and 5000 psi high. Prior to

Operator Name: CIMAREX ENERGY COMPANY

Well Name: VACA DRAW 20-17 FEDERAL

Well Number: 2H

drilling out the production casing, BOPE pressure tests will be 250 psi low and 10,000 psi high. The Annular Preventer will be tested to 250 psi low and 1500 psi high prior to drilling out the surface casing, 250 psi low and 2500 psi high prior to drilling out the intermediate casing, 250 psi low and 5000 psi high prior to drilling out the production casing. The System may be upgraded to a higher pressure but still tested to the working pressures listed. If the system is upgraded all the components installed will be functional and tested.

Choke Diagram Attachment:

Vaca_Draw_20_17_Fed_2H_Choke_10M_20171002110157.pdf

BOP Diagram Attachment:

Vaca_Draw_20_17_Fed_2H_BOP_10M_20171002110214.pdf

Pressure Rating (PSI): 2M

Rating Depth: 1034

Equipment: Exhibit "E-1". A BOP consisting of three rams, including one blind ram and two pipe rams and one annular preventer. An accumulator that meets the requirements in Onshore Order #2 for the pressure rating of the BOP stack. A rotating head may be installed as needed. A Kelly clock will be installed and maintained in operable condition and a drill string safety valve in the open position will be available on the rig floor.

Requesting Variance? YES

Variance request: Co-flex line between the BOP and choke manifold. Certification for proposed co-flex hose is attached (Please see Exhibit F, F-1, F-2, F-3). The hose is not required by the manufacturer to be anchored. In the event the specific hose is not available, one of equal or higher rating will be used. Variance to include Hammer Union connections on lines downstream of the buffer tank only.

Testing Procedure: BOP's will be tested by an independent service company. The ram preventers, choke manifold, and safety valves will be tested as follows: Prior to drilling out the surface casing, BOPE pressure tests will be 250 psi low and 2000 psi high. Prior to drilling out the intermediate casing, BOPE pressure tests will be 250 psi low and 5000 psi high. Prior to drilling out the production casing, BOPE pressure tests will be 250 psi low and 10,000 psi high. The Annular Preventer will be tested to 250 psi low and 1500 psi high prior to drilling out the surface casing, 250 psi low and 2500 psi high prior to drilling out the intermediate casing, 250 psi low and 5000 psi high prior to drilling out the production casing. The System may be upgraded to a higher pressure but still tested to the working pressures listed. If the system is upgraded all the components installed will be functional and tested.

Choke Diagram Attachment:

Vaca_Draw_20_17_Fed_2H_Choke_2M3M_04-21-2017.pdf

BOP Diagram Attachment:

Vaca_Draw_20_17_Fed_2H_BOP_2M_04-21-2017.pdf

Pressure Rating (PSI): 5M

Rating Depth: 4936

Equipment: Exhibit "E-1". A BOP consisting of three rams, including one blind ram and two pipe rams and one annular preventer. An accumulator that meets the requirements in Onshore Order #2 for the pressure rating of the BOP stack. A rotating head may be installed as needed. A Kelly clock will be installed and maintained in operable condition and a drill string safety valve in the open position will be available on the rig floor.

Requesting Variance? YES

Variance request: Co-flex line between the BOP and choke manifold. Certification for proposed co-flex hose is attached (Please see Exhibit F, F-1, F-2, F-3). The hose is not required by the manufacturer to be anchored. In the event the specific hose is not available, one of equal or higher rating will be used. Variance to include Hammer Union connections on lines downstream of the buffer tank only.

Testing Procedure: BOP's will be tested by an independent service company. The ram preventers, choke manifold, and safety valves will be tested as follows: Prior to drilling out the surface casing, BOPE pressure tests will be 250 psi low and 2000 psi high. Prior to drilling out the intermediate casing, BOPE pressure tests will be 250 psi low and 5000 psi high. Prior to

Operator Name: CIMAREX ENERGY COMPANY

Well Name: VACA DRAW 20-17 FEDERAL

Well Number: 2H

drilling out the production casing, BOPE pressure tests will be 250 psi low and 10,000 psi high. The Annular Preventer will be tested to 250 psi low and 1500 psi high prior to drilling out the surface casing, 250 psi low and 2500 psi high prior to drilling out the intermediate casing, 250 psi low and 5000 psi high prior to drilling out the production casing. The System may be upgraded to a higher pressure but still tested to the working pressures listed. If the system is upgraded all the components installed will be functional and tested.

Choke Diagram Attachment:

Vaca_Draw_20_17_Fed_2H_Choke_5M_20171002105853.pdf

BOP Diagram Attachment:

Vaca_Draw_20_17_Fed_2H_BOP_5M_20171002105902.pdf

Section 3 - Casing

Casing ID	String Type	Hole Size	Csg Size	Condition	Standard	Tapered String	Top Set MD	Bottom Set MD	Top Set TVD	Bottom Set TVD	Top Set MSL	Bottom Set MSL	Calculated casing length MD	Grade	Weight	Joint Type	Collapse SF	Burst SF	Joint SF Type	Joint SF	Body SF Type	Body SF
1	SURFACE	17.5	13.375	NEW	API	N	0	1034	0	1034	-8953	-9987	1034	OTHER	48	STC	1.56	3.66	BUOY	6.49	BUOY	6.49
2	INTERMEDIATE	12.25	9.625	NEW	API	N	0	4936	0	4936	-8953	-13889	4936	J-55	40	LTC	1.14	1.51	BUOY	2.63	BUOY	2.63
3	PRODUCTION	8.75	7.0	NEW	API	N	0	12132	0	12132	-8953	12132	12132	L-80	32	LTC	1.44	1.51	BUOY	1.65	BUOY	1.65
4	PRODUCTION	8.75	7.0	NEW	API	N	12132	13048	12132	13048	12132	13048	916	L-80	32	BUTT	1.37	1.34	BUOY	37.67	BUOY	37.67
5	COMPLETION SYSTEM	6	4.5	NEW	API	N	12133	22461	12133	22461	12133	22461	10328	P-110	13.5	BUTT	1.29	1.5	BUOY	50.66	BUOY	50.66

Casing Attachments

Operator Name: CIMAREX ENERGY COMPANY

Well Name: VACA DRAW 20-17 FEDERAL

Well Number: 2H

Casing Attachments

Casing ID: 1 **String Type:** SURFACE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Vaca_Draw_20_17_Fed_2H_Casing_Assumptions_20171002111546.pdf

Casing ID: 2 **String Type:** INTERMEDIATE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Vaca_Draw_20_17_Fed_2H_Casing_Assumptions_20171002111537.pdf

Casing ID: 3 **String Type:** PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Vaca_Draw_20_17_Fed_2H_Casing_Assumptions_20171002111527.pdf

Operator Name: CIMAREX ENERGY COMPANY

Well Name: VACA DRAW 20-17 FEDERAL

Well Number: 2H

Casing Attachments

Casing ID: 4 String Type: PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Vaca_Draw_20_17_Fed_2H_Casing_Assumptions_20171002111518.pdf

Casing ID: 5 String Type: COMPLETION SYSTEM

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Vaca_Draw_20_17_Fed_2H_Casing_Assumptions_20171002111510.pdf

Section 4 - Cement

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
SURFACE	Lead		0	1034	501	1.72	13.5	861	50	Class C	Bentonite
SURFACE	Tail		0	1034	134	1.34	14.8	179	25	Class C	LCM
INTERMEDIATE	Lead		0	4936	936	1.88	12.9	1759	50	35:65 (Poz:C)	Salt, Bentonite
INTERMEDIATE	Tail		0	4936	289	1.34	14.8	386	25	Class C	LCM
PRODUCTION	Lead		0	1213 2	224	6.18	9.2	1384	25	Class C	Extender, Salt, Strength Enhancement, LCM,

Operator Name: CIMAREX ENERGY COMPANY

Well Name: VACA DRAW 20-17 FEDERAL

Well Number: 2H

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
											Fluid Loss, Retarder
PRODUCTION	Tail		0	1213 2	117	1.3	14.2	152	10	50:50 (Poz:H)	Salt, Bentonite, Fluid Loss, Dispersant, SMS
PRODUCTION	Lead		1213 2	1304 8	224	6.18	9.2	1384	25	Class C	Extender, Salt, Strength Enhancement, LCM, Fluid Loss, Retarder
PRODUCTION	Tail		1213 2	1304 8	117	1.3	14.2	152	10	50:50 (Poz:H)	Salt, Bentonite, Fluid Loss, Dispersant, SMS
COMPLETION SYSTEM	Lead		1213 3	2246 1	684	1.3	14.2	889	10	50:50 (Poz:H)	Salt, Bentonite, Fluid Loss, Dispersant, Expanding Agent, Retarder, Antifoam

Section 5 - Circulating Medium

Mud System Type: Closed

Will an air or gas system be Used? NO

Description of the equipment for the circulating system in accordance with Onshore Order #2:

Diagram of the equipment for the circulating system in accordance with Onshore Order #2:

Describe what will be on location to control well or mitigate other conditions: Sufficient mud materials will be kept on location at all times in order to combat lost circulation or unexpected kicks. In order to run DSTs, open hole logs, and casing, the viscosity and water loss may have to be adjusted in order to meet these needs.

Describe the mud monitoring system utilized: PVT/Pason/Visual Monitoring

Circulating Medium Table

Top Depth	Bottom Depth	Mud Type	Min Weight (lbs/gal)	Max Weight (lbs/gal)	Density (lbs/cu ft)	Gel Strength (lbs/100 sqft)	PH	Viscosity (CP)	Salinity (ppm)	Filtration (cc)	Additional Characteristics
0	1034	SPUD MUD	8.3	8.8							

Operator Name: CIMAREX ENERGY COMPANY

Well Name: VACA DRAW 20-17 FEDERAL

Well Number: 2H

Top Depth	Bottom Depth	Mud Type	Min Weight (lbs/gal)	Max Weight (lbs/gal)	Density (lbs/cu ft)	Gel Strength (lbs/100 sqft)	PH	Viscosity (CP)	Salinity (ppm)	Filtration (cc)	Additional Characteristics
1034	4936	SALT SATURATED	9.7	10.2							
4936	1304 8	OTHER : FW/Cut Brine	9	9.5							
1304 8	2246 1	OIL-BASED MUD	12	12.5							

Section 6 - Test, Logging, Coring

List of production tests including testing procedures, equipment and safety measures:

No DST Planned

List of open and cased hole logs run in the well:

CNL,DS,GR

Coring operation description for the well:

N/A

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 8287

Anticipated Surface Pressure: 5565.38

Anticipated Bottom Hole Temperature(F): 195

Anticipated abnormal pressures, temperatures, or potential geologic hazards? YES

Describe:

) Lost circulation may be encountered in the Delaware mountain group. Abnormal pressure as well as hole stability issues may be encountered in the Wolfcamp.

Contingency Plans geohazards description:

Lost circulation material will be available, as well as additional drilling fluid along with the fluid volume in the drilling rig pit system. Drilling fluid can be mixed on location or mixed in vendor mud plant and trucked to location if needed. Sufficient barite will be available to maintain appropriate mud weight for the Wolfcamp interval.

Contingency Plans geohazards attachment:

Hydrogen Sulfide drilling operations plan required? YES

Hydrogen sulfide drilling operations plan:

Vaca_Draw_20_17_Fed_2H_H2S_Plan_04-21-2017.pdf

Operator Name: CIMAREX ENERGY COMPANY

Well Name: VACA DRAW 20-17 FEDERAL

Well Number: 2H

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

Vaca_Draw_20_17_Fed_2H_Directional_Plan_04-24-2017.pdf

Other proposed operations facets description:

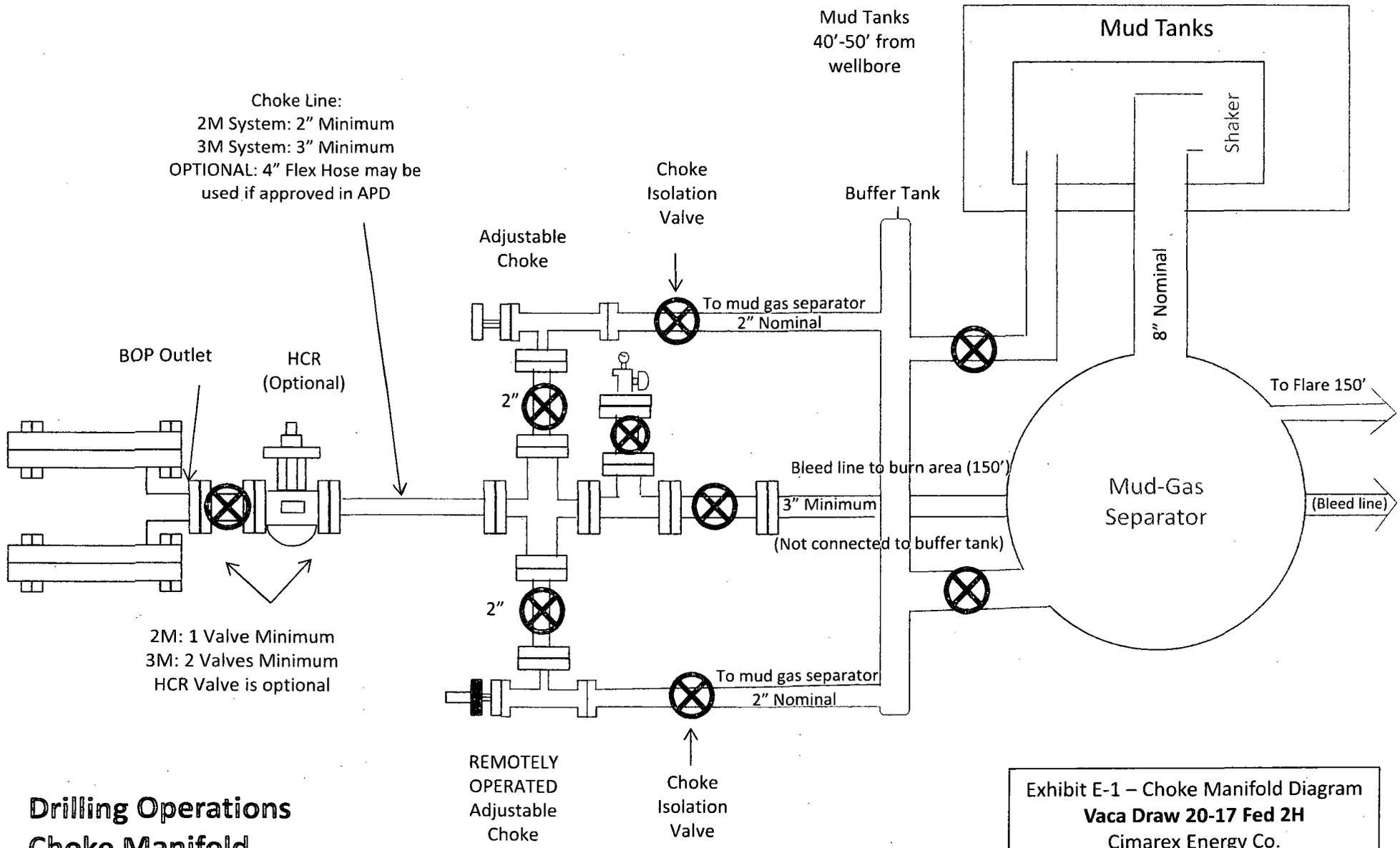
Other proposed operations facets attachment:

Vaca_Draw_20_17_Fed_2H_Anticollision_05-02-2017.pdf

Vaca_Draw_20_17_Fed_2H_Drilling_Plan_20171002112344.pdf

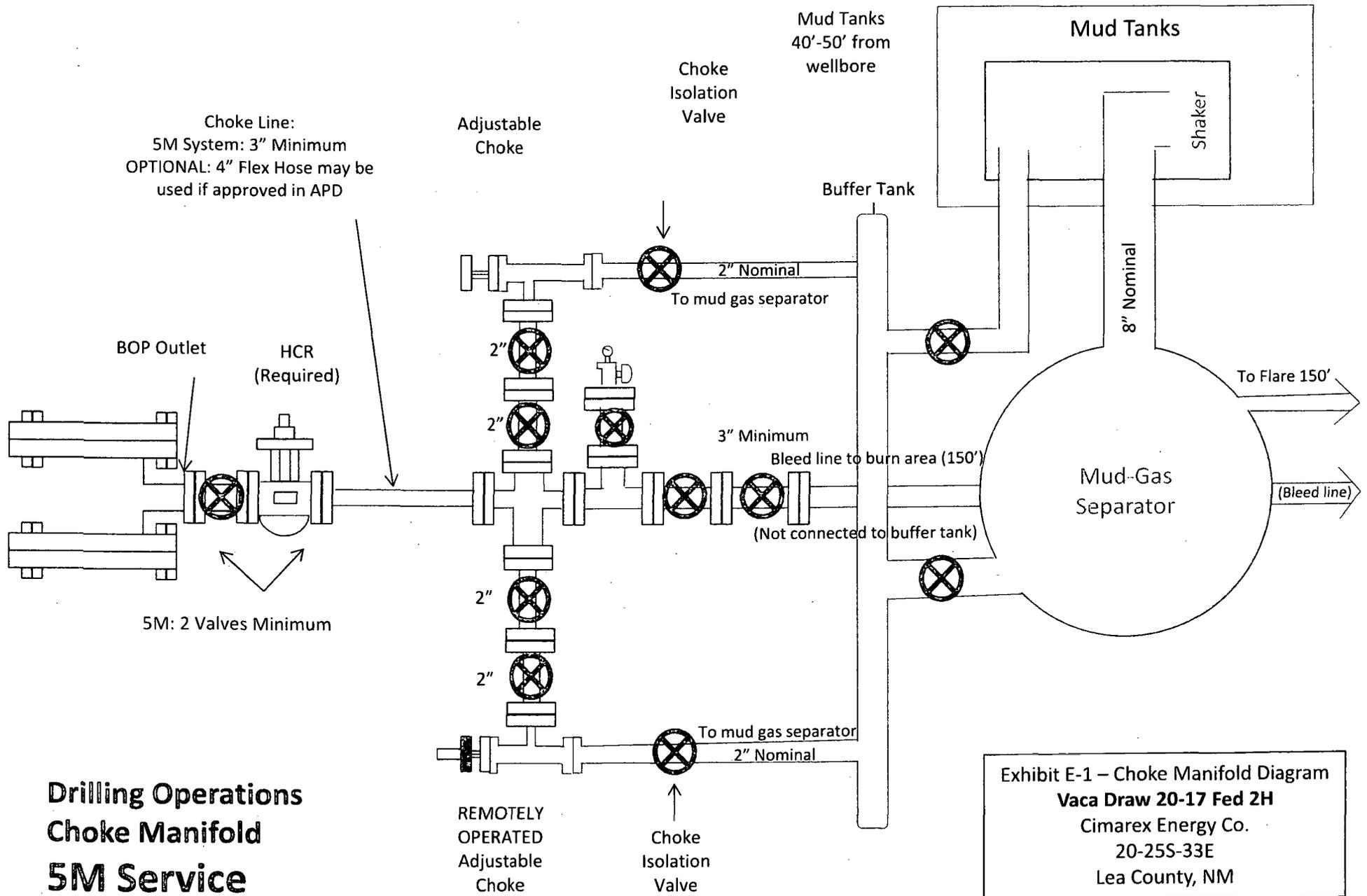
Other Variance attachment:

Vaca_Draw_20_17_Fed_2H_Flex_Hose_04-21-2017.pdf



**Drilling Operations
 Choke Manifold
 2M/3M Service**

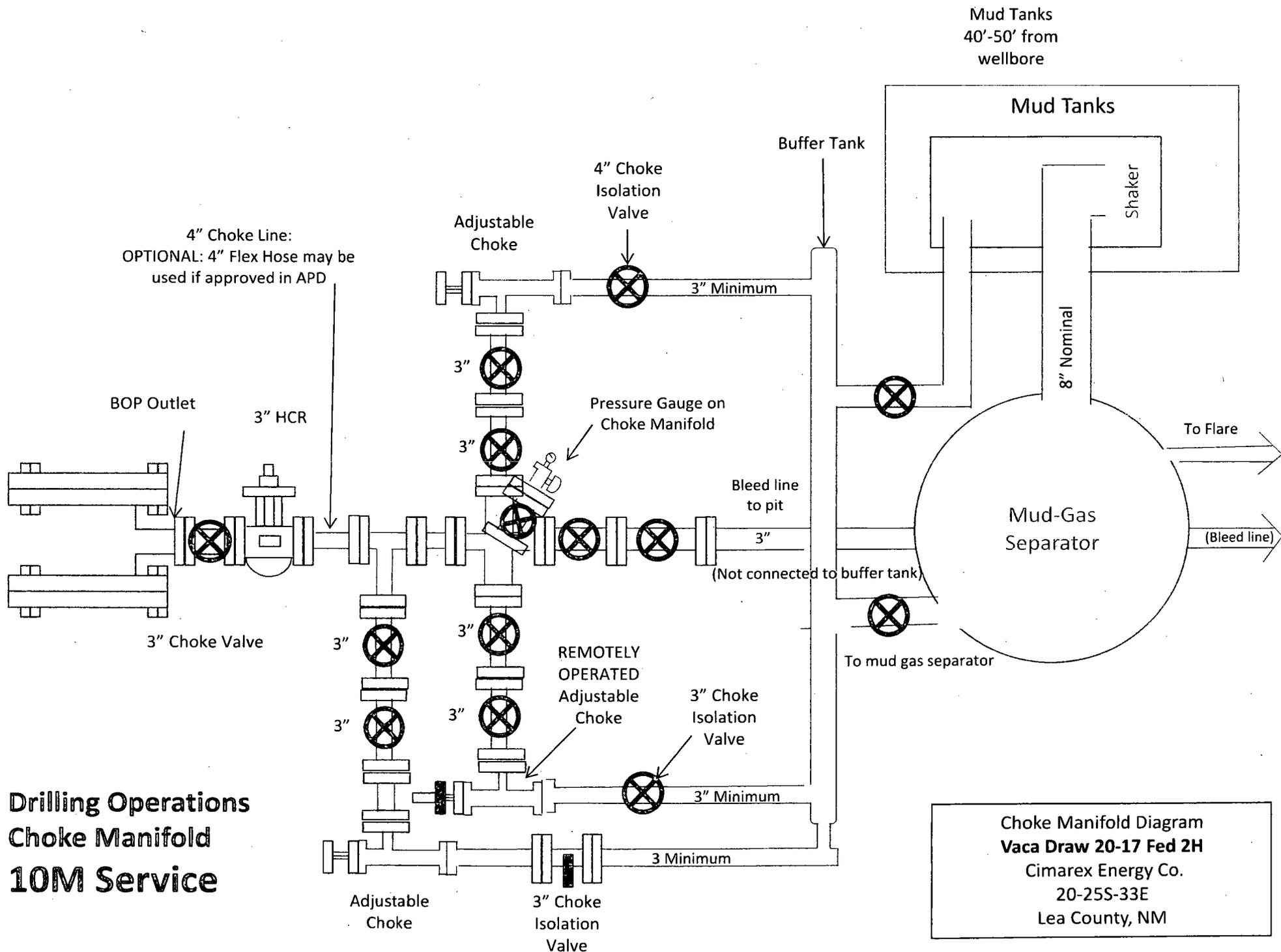
**Exhibit E-1 – Choke Manifold Diagram
 Vaca Draw 20-17 Fed 2H
 Cimarex Energy Co.
 20-25S-33E
 Lea County, NM**



**Drilling Operations
Choke Manifold
5M Service**

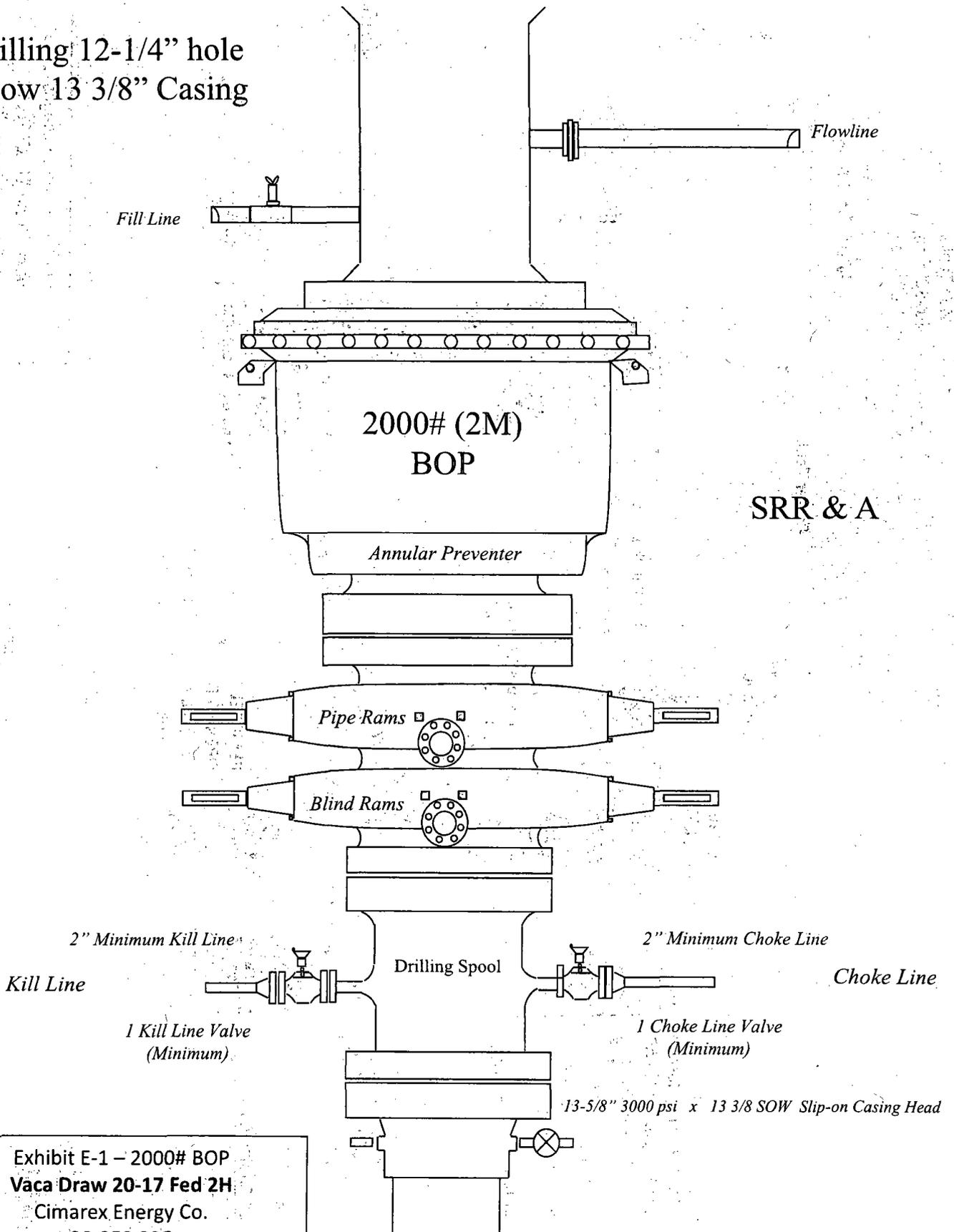
Exhibit E-1 – Choke Manifold Diagram
Vaca Draw 20-17 Fed 2H
Cimarex Energy Co.
20-25S-33E
Lea County, NM

**Drilling Operations
Choke Manifold
10M Service**



**Choke Manifold Diagram
Vaca Draw 20-17 Fed 2H
Cimarex Energy Co.
20-25S-33E
Lea County, NM**

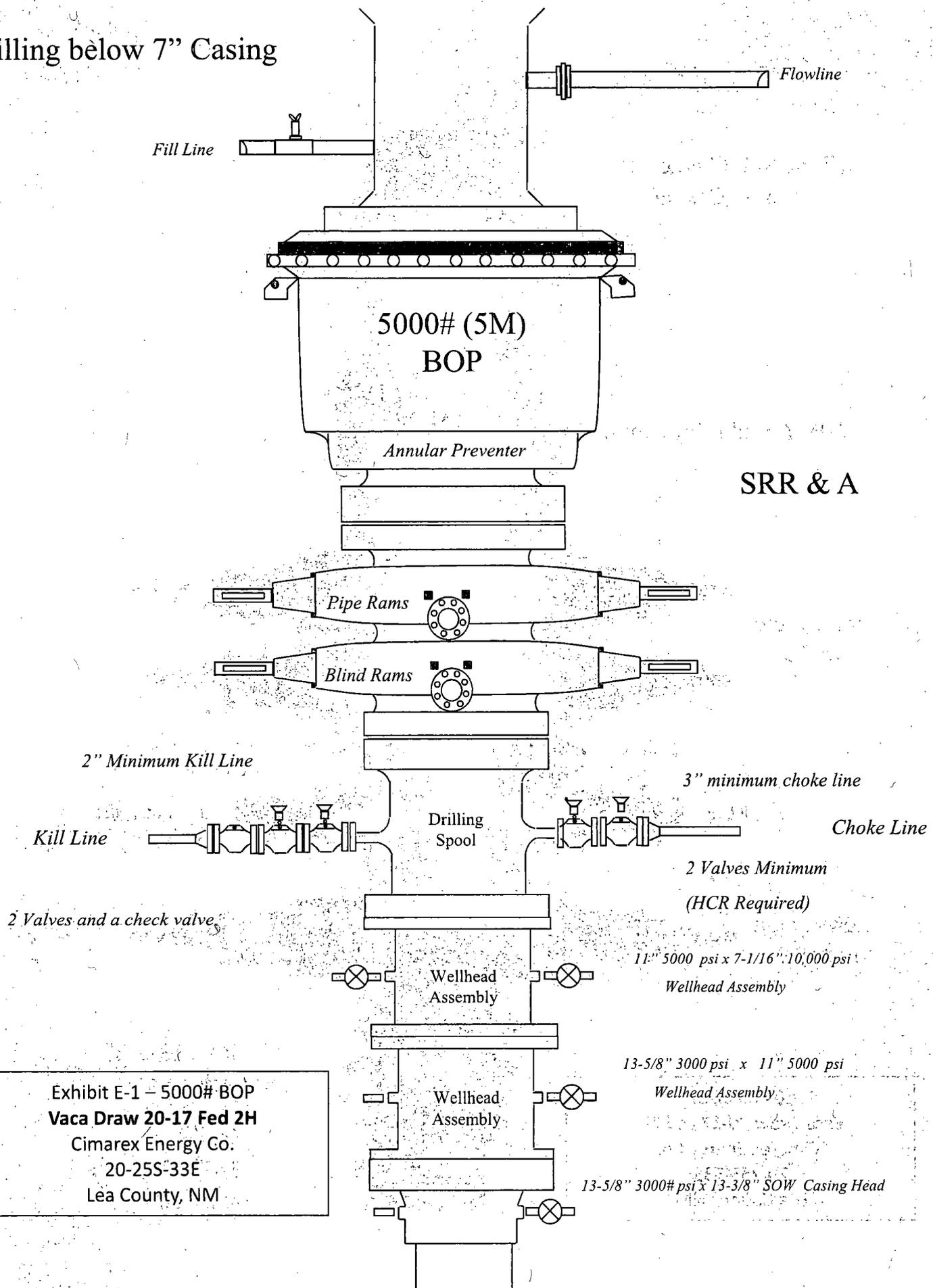
Drilling 12-1/4" hole
below 13 3/8" Casing



SRR & A

Exhibit E-1 – 2000# BOP
Vaca Draw 20-17 Fed 2H
Cimarex Energy Co.
20-25S-33E
Lea County, NM

Drilling below 7" Casing



SRR & A

Exhibit E-1 - 5000# BOP
Vaca Draw 20-17 Fed 2H
Cimarex Energy Co.
20-25S-33E
Lea County, NM

Drilling 8-3/4" hole below
9-5/8" Casing

10M Annular Preventer

10M Double
Ram BOP

Pipe Rams

Blind Rams

2" Kill Line Valves (2)
with Check Valve

3" Manual Choke Valve
and 3" HCR Valve

2" Kill Line

3" Choke Line

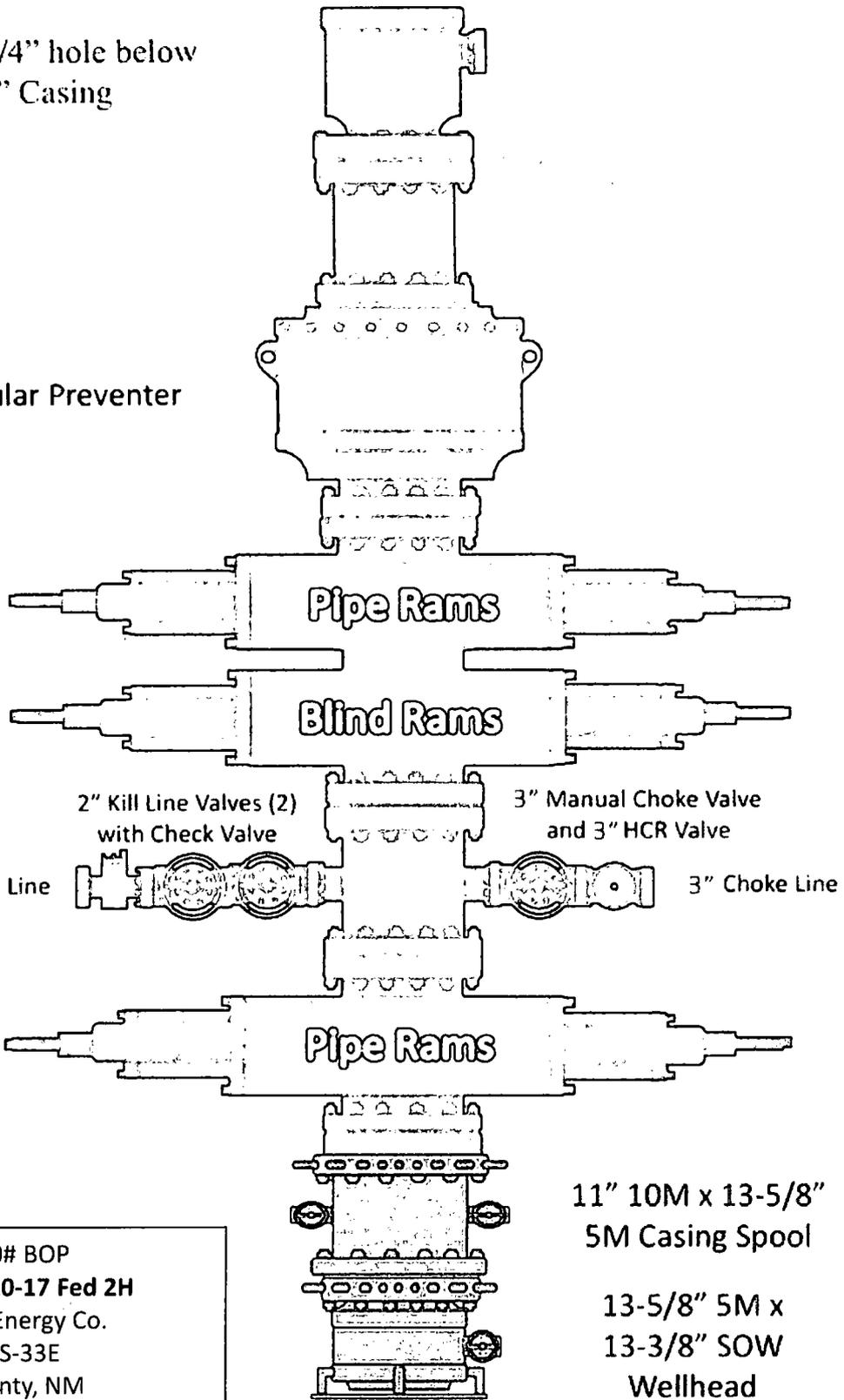
10M Single
Ram BOP

Pipe Rams

11" 10M x 13-5/8"
5M Casing Spool

13-5/8" 5M x
13-3/8" SOW
Wellhead

10,000# BOP
Vaca Draw 20-17 Fed 2H
Cimarex Energy Co.
20-25S-33E
Lea County, NM



Vaca Draw 20-17 Fed 2H

Casing Assumptions

Cimarex Energy Co.

20-25S-33E

Lea Cty, NM

Casing Program

Hole Size	Casing Depth From	Casing Depth To	Casing Size	Weight (lb/ft)	Grade	Conn	SF Collapse	SF Burst	SF Tension
17 1/2	0	1034	13-3/8"	48.00	H-40/J-55 Hybrid	ST&C	1.56	3.66	6.49
12 1/4	0	4936	9-5/8"	40.00	J-55	LT&C	1.14	1.51	2.63
8 3/4	0	12132	7"	32.00	L-80	LT&C	1.44	1.51	1.65
8 3/4	12132	13048	7"	32.00	L-80	BT&C	1.37	1.34	37.67
6	12133	22461	4-1/2"	13.50	P-110	BT&C	1.29	1.50	50.66
BLM Minimum Safety Factor							1.125	1	1.6 Dry 1.8 Wet

TVD was used on all calculations.

All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h

3. Cementing Program

Casing	# Sk	Wt. lb/gal	Yld ft ³ /sack	H ₂ O gal/sk	500# Comp. Strength (hours)	Slurry Description
Surface	501	13.50	1.72	9.15	15.5	Lead: Class C + Bentonite
	134	14.80	1.34	6.32	9.5	Tail: Class C + LCM
Intermediate	936	12.90	1.88	9.65	12	Lead: 35:65 (Poz:C) + Salt + Bentonite
	289	14.80	1.34	6.32	9.5	Tail: Class C + LCM
Production	224	9.20	6.18	28.80		Lead: Class C + Extender + Salt + Strength Enhancement + LCM + Fluid Loss + Retarder
	117	14.20	1.30	5.86	14:30	Tail: 50:50 (Poz:H) + Salt + Bentonite + Fluid Loss + Dispersant + SMS
Completion System	684	14.20	1.30	5.86	14:30	Tail: 50:50 (Poz:H) + Salt + Bentonite + Fluid Loss + Dispersant + SMS

Casing String	TOC	% Excess
Surface		45
Intermediate		44
Production	4736	23
Completion System	13047	10

	Y or N
Is casing new? If used, attach certification as required in Onshore Order #1	Y
Does casing meet API specifications? If no, attach casing specification sheet.	Y
Is premium or uncommon casing planned? If yes attach casing specification sheet.	N
Does the above casing design meet or exceed BLM's minimum standards? If not provide justification (loading assumptions, casing design criteria)	Y
Will the intermediate pipe be kept at a minimum 1/3 fluid filled to avoid approaching the collapse pressure rating of the casing?	Y
Is well located within Capitan Reef?	N
If yes, does production casing cement tie back a minimum of 50' above the Reef?	N
Is well within the designated 4 string boundary.	N
Is well located in SOPA but not in R-111-P?	N
If yes, are the first 2 strings cemented to surface and 3rd string cement tied back 500' into previous casing?	N
Is well located in R-111-P and SOPA?	N
If yes, are the first three strings cemented to surface?	N
Is 2nd string set 100' to 600' below the base of salt?	N
Is well located in high Cave/Karst?	N
If yes, are there two strings cemented to surface?	N
(For 2 string wells) If yes, is there a contingency casing if lost circulation occurs?	N
Is well located in critical Cave/Karst?	N
If yes, are there three strings cemented to surface?	N

4. Pressure Control Equipment

A variance is requested for the use of a diverter on the surface casing. See attached for schematic.					
BOP installed and tested before drilling which hole?	Size	Min Required WP	Type		Tested To
12 1/4	13 5/8	2M	Annular	X	50% of working pressure
			Blind Ram		
			Pipe Ram	X	
			Double Ram	X	
			Other		
8 3/4	13 5/8	5M	Annular	X	50% of working pressure
			Blind Ram		
			Pipe Ram	X	
			Double Ram	X	
			Other		
6	13 5/8	10M	Annular	X	50% of working pressure
			Blind Ram		
			Pipe Ram	X	
			Double Ram	X	
			Other		

BOP/BOPE will be tested by an independent service company to 250 psi low and the high pressure indicated above per Onshore Order 2 requirements. The System may be upgraded to a higher pressure but still tested to the working pressure listed in the table above. If the system is upgraded all the components installed will be functional and tested.

Pipe rams will be operationally checked each 24 hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets. Other accessories to the BOP equipment will include a Kelly cock and floor safety valve (inside BOP) and choke lines and choke manifold. See attached schematics.

X	Formation integrity test will be performed per Onshore Order #2. On Exploratory wells or on that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.i.
X	A variance is requested for the use of a flexible choke line from the BOP to Choke Manifold. See attached for specs and hydrostatic test chart.
N	Are anchors required by manufacturer?

5. Mud Program

Depth	Type	Weight (ppg)	Viscosity	Water Loss
0' to 1034'	FW Spud Mud	8.30 - 8.80	30-32	N/C
1034' to 4936'	Brine Water	9.70 - 10.20	30-32	N/C
4936' to 13048'	FW/Cut Brine	9.00 - 9.50	30-32	N/C
13048' to 22461'	OBM	12.00 - 12.50	50-70	N/C

Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept on location at all times.

What will be used to monitor the loss or gain of fluid?	PVT/Pason/Visual Monitoring
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6. Logging and Testing Procedures

Logging, Coring and Testing	
X	Will run GR/CNL from TD to surface (horizontal well – vertical portion of hole). Stated logs run will be in the Completion Report and submitted to the BLM.
	No logs are planned based on well control or offset log information.
	Drill stem test?
	Coring?

Additional Logs Planned	Interval

7. Drilling Conditions

Condition	
BH Pressure at deepest TVD	8287 psi
Abnormal Temperature	No

Hydrogen Sulfide (H2S) monitors will be installed prior to drilling out the surface shoe. If H2S is detected in concentrations greater than 100 ppm, the operator will comply with the provisions of Onshore Oil and Gas Order #6. If Hydrogen Sulfide is encountered, measured values and formations will be provided to the BLM.

X	H2S is present
X	H2S plan is attached

8. Other Facets of Operation

9. Wellhead

A multi-bowl wellhead system will be utilized.

After running the 13-3/8" surface casing, a 13 5/8" BOP/BOPE system with a minimum working pressure of 10000 psi will be installed on the wellhead system and will be pressure tested to 250 psi low followed by a 10000 psi test. Annular will be tested to 50% of working pressure. The pressure test will be repeated at least every 30 days, as per Onshore Order No. 2.

The multi-bowl wellhead will be installed by vendor's representative. A copy of the installation instructions has been sent to the BLM field office.

The wellhead will be installed by a third-party welder while being monitored by the wellhead vendor representative.

All BOP equipment will be tested utilizing a conventional test plug. Not a cup or J-packer type.

A solid steel body pack-off will be utilized after running and cementing the intermediate casing. After installation the pack-off and lower flange will be pressure tested to 10000 psi.

A solid steel body pack-off will be utilized after running and cementing the production casing. After installation the pack-off and lower flange will be pressure tested to 10000 psi.

The surface casing string will be tested as per Onshore Order No. 2 to at least 0.22 psi/ft or 1500 psi, whichever is greater.

The casing string utilizing steel body pack-off will be tested to 70% of casing burst.

If well conditions dictate conventional slips will be set and BOPE will be tested to appropriate pressures based on permitted pressure requirements.