1. Geological Formations

TVD of target 12,371 Pilot Hole TD N/A
MD at TD 22,179 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 Spirng 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
14 3/4	0	1034	10-3/4"	40.50	J-55	BT&C	3.34	6.62	15.02
9 7/8	0	12467	7-5/8"	29.70	L-80	BT&C	2.48	1.20	1.82
6 3/4	0	11843	5-1/2"	20.00	L-80	LT&C	1.15	1.19	1.87
6 3/4	11843	22179	5"	18.00	P-110	BT&C	1.67	1.69	61.03
				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

Drilling Plan Data Report
10/31/2017

APD ID: 10400013634
Submission Date: 05/03/2017
Operator Name: CIMAREX ENERGY COMPANY
Well Name: VACA DRAW 20-17 FEDERAL
Well Number: 7H
Well Type: CONVENTIONAL GAS WELL
Well Work Type: Drill

Highlighted data reflects the most recent changes

Show Final Text

Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
1	RUSTLER	3423	984	984		USEABLE WATER	No
2	SALADO	2295	1128	1128		NONE	No
3	CASTILE	-1264	4687	4687		NONE	No
4	BELL CANYON	-1533	4956	4956		NONE	No
5	CHERRY CANYON	-2551	5974	5974		NATURAL GAS,OIL	No
6	BRUSHY CANYON	-4061	7484	7484		NATURAL GAS,OIL	No
7	BONE SPRING	-5617	9040	9040		NATURAL GAS,OIL	No
8	BONE SPRING 2ND	-7150	10573	10573		NATURAL GAS,OIL	No
9	BONE SPRING 3RD	-8303	11726	11726		OIL	No
10	WOLFCAMP	-8773	12196	12196		NATURAL GAS,OIL	Yes

Section 2 - Blowout Prevention

Pressure Rating (PSI): 10M **Rating Depth:** 11843

Equipment: 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. 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: A multi-bowl wellhead system will be utilized. After running the 10-3/4" 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

30-025-44166

Operator Name: CIMAREX ENERGY COMPANY

Well Name: VACA DRAW 20-17 FEDERAL **Well Number:** 7H

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. 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.

Choke Diagram Attachment:

Vaca_Draw_20_17_Fed_7H_Choke_10M_20171012100549.pdf

BOP Diagram Attachment:

Vaca_Draw_20_17_Fed_7H_BOP_10M_20171012100601.pdf

Pressure Rating (PSI): 5M **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: A multi-bowl wellhead system will be utilized. After running the 10-3/4" 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. 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.

Choke Diagram Attachment:

Vaca_Draw_20_17_Fed_7H_Choke_5M_20171012100421.pdf

BOP Diagram Attachment:

Vaca_Draw_20_17_Fed_7H_BOP_5M_20171012100433.pdf

Operator Name: CIMAREX ENERGY COMPANY

Well Name: VACA DRAW 20-17 FEDERAL **Well Number:** 7H

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	14.75	10.75	NEW	API	N	0	1034	0	1034	0	1034	1034	J-55	40.5	BUTT	3.34	6.62	BUOY	15.05	BUOY	15.02
2	PRODUCTION	6.75	5.5	NEW	API	N	0	11843	0	11843	0	11843	11843	L-80	20	LTC	1.15	1.19	BUOY	1.87	BUOY	1.87
3	INTERMEDIATE	9.875	7.625	NEW	API	N	0	12467	0	12467	0	12467	12467	L-80	29.7	BUTT	2.48	1.2	BUOY	1.82	BUOY	1.82
4	PRODUCTION	6.75	5.0	NEW	API	N	11843	22179	11843	22179	11843	22179	10336	P-110	18	BUTT	1.67	1.69	BUOY	61.03	BUOY	61.03

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_7H_Casing_Assumptions_20171012100734.pdf

Operator Name: CIMAREX ENERGY COMPANY

Well Name: VACA DRAW 20-17 FEDERAL **Well Number:** 7H

Casing Attachments

Casing ID: 2 **String Type:** PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Vaca_Draw_20_17_Fed_7H_Casing_Assumptions_20171012100929.pdf

Casing ID: 3 **String Type:** INTERMEDIATE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Vaca_Draw_20_17_Fed_7H_Casing_Assumptions_20171012100836.pdf

Casing ID: 4 **String Type:** PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Vaca_Draw_20_17_Fed_7H_Casing_Assumptions_20171012101031.pdf

Section 4 - Cement

Operator Name: CIMAREX ENERGY COMPANY

Well Name: VACA DRAW 20-17 FEDERAL **Well Number:** 7H

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	402	1.72	13.5	690	50	Class C	Bentonite
SURFACE	Tail		0	1034	107	1.34	14.8	143	25	Class C	LCM
PRODUCTION	Lead		0	11843	731	1.3	14.2	950	10	50:50 (Poz:H)	Salt, Bentonite, Fluid Loss, Dispersant, SMS
INTERMEDIATE	Lead		0	12467	584	6.18	9.2	3604	50	Class C	Extender, Salt, Strength Enhancement, LCM, Fluid Loss, Retarder
INTERMEDIATE	Tail		0	12467	207	1.3	14.2	268	25	50:50 (Poz:H)	Salt, Bentonite, Fluid Loss, Dispersant, SMS
PRODUCTION	Lead		11843	22179	731	1.3	14.2	950	10	50:50 (Poz:H)	Salt, Bentonite, Fluid Loss, Dispersant, SMS

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

Operator Name: CIMAREX ENERGY COMPANY

Well Name: VACA DRAW 20-17 FEDERAL **Well Number:** 7H

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							
1034	12467	OTHER : Brine Diesel Emulsion	8.5	9							
12467	22179	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: 8047 **Anticipated Surface Pressure:** 5325.38

Anticipated Bottom Hole Temperature(F): 191

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 geoharzards 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_7H_H2S_Plan_04-21-2017.pdf

Operator Name: CIMAREX ENERGY COMPANY

Well Name: VACA DRAW 20-17 FEDERAL **Well Number:** 7H

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

Vaca_Draw_20_17_Fed_7H_Directional_Plan_04-21-2017.pdf

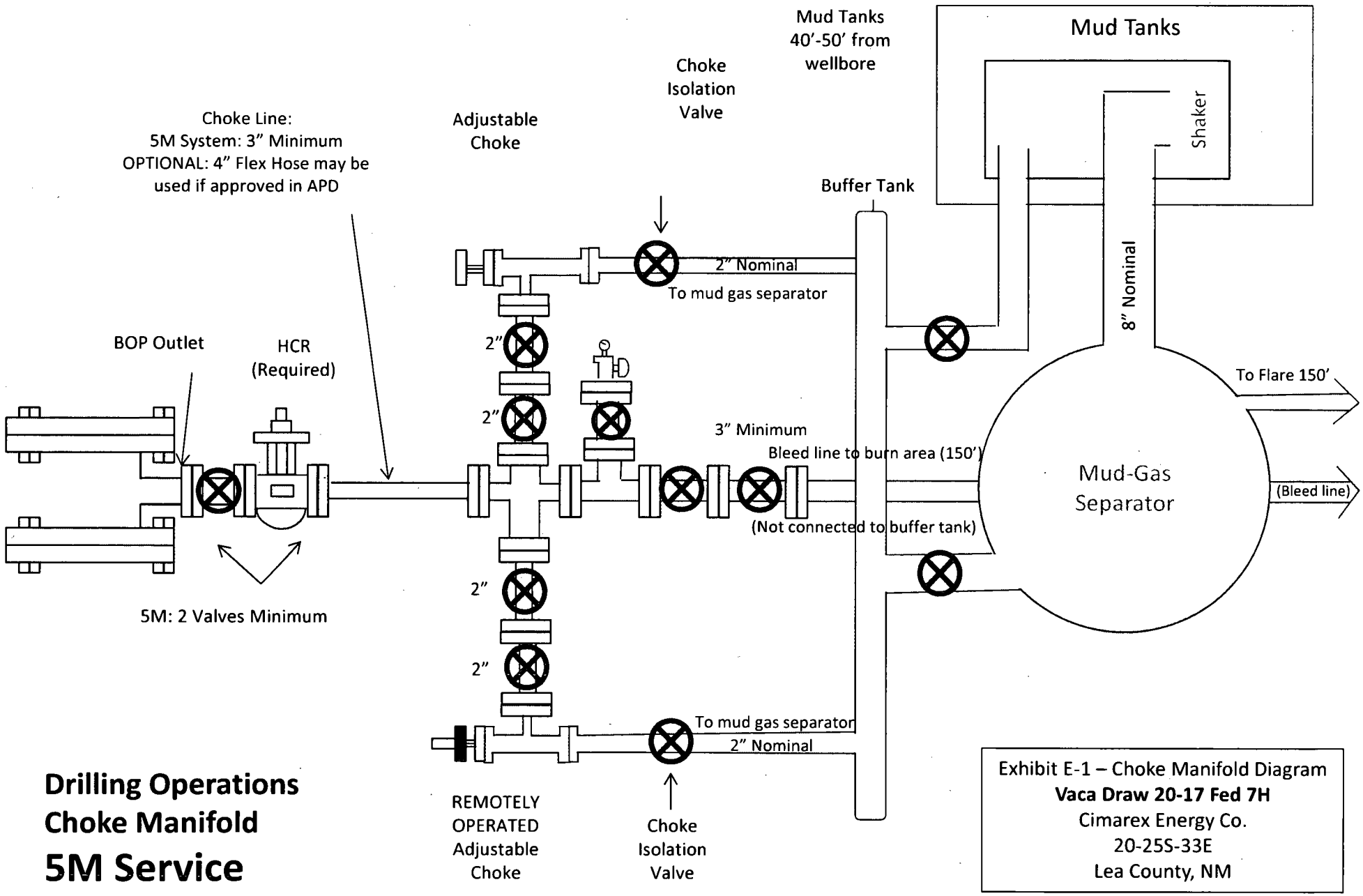
Other proposed operations facets description:

Other proposed operations facets attachment:

Vaca_Draw_20_17_Fed_7H_Drilling_Plan_20171012101936.pdf

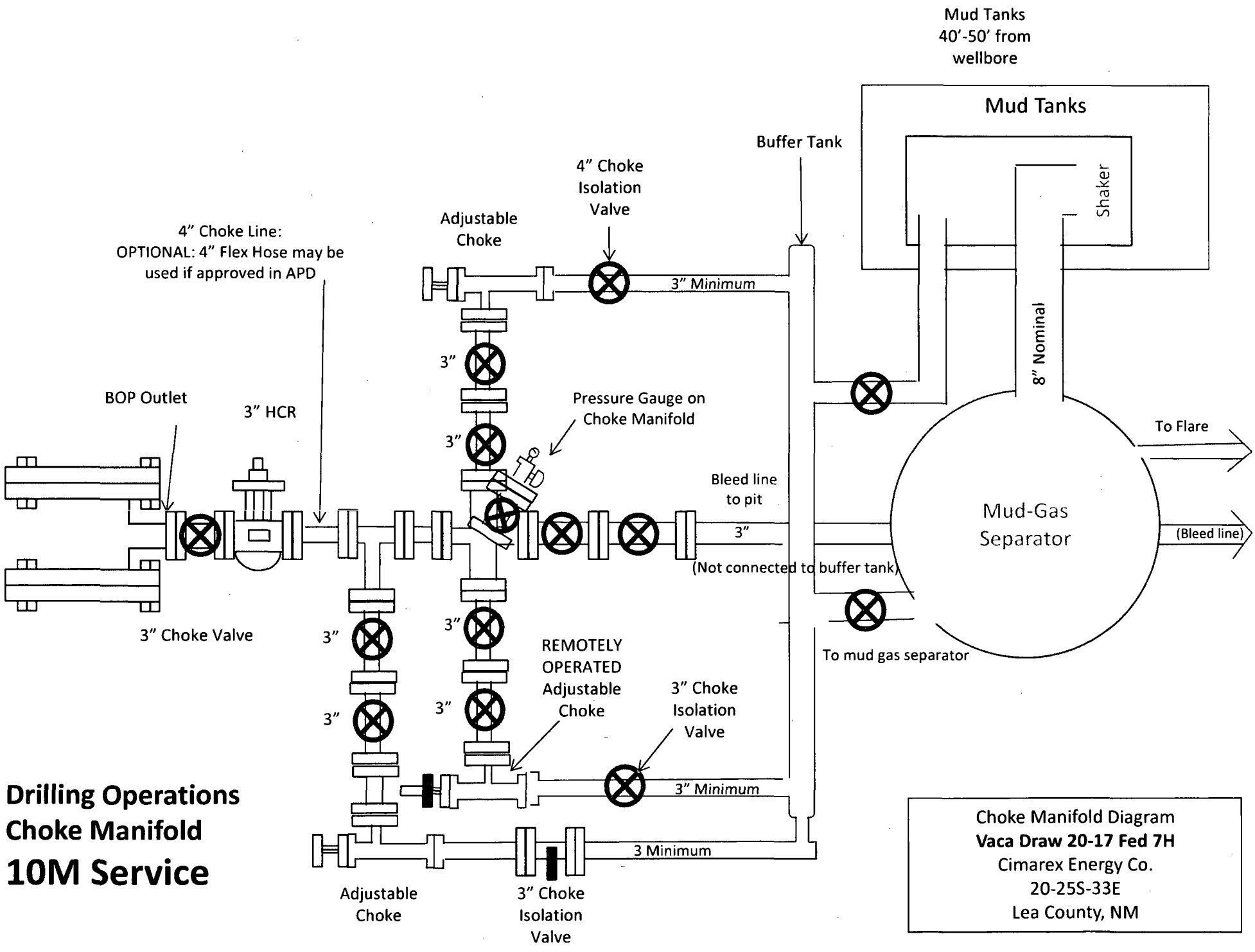
Vaca_Draw_20_17_Fed_7H_Flex_Hose_20171012101940.pdf

Other Variance attachment:



Drilling Operations
Choke Manifold
5M Service

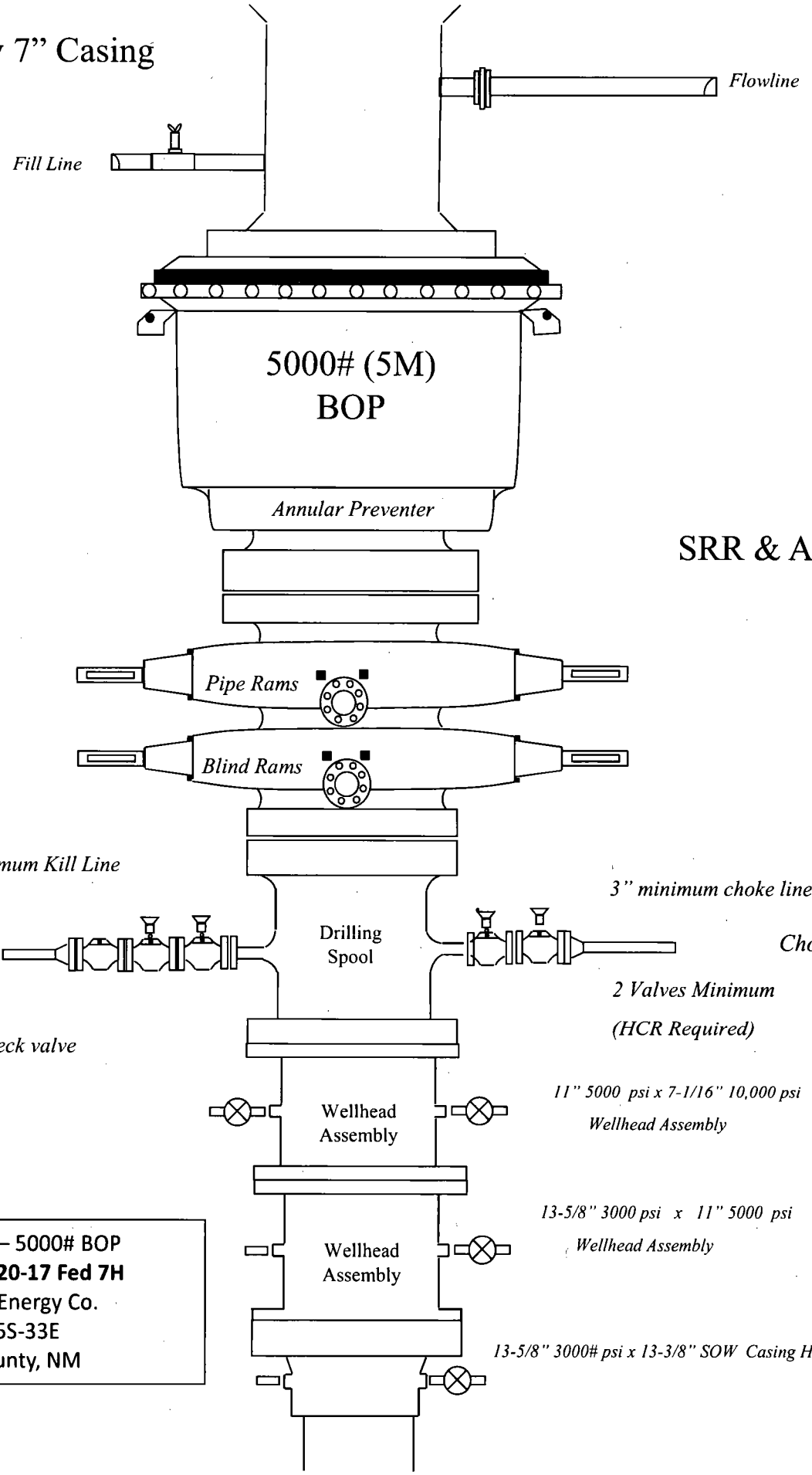
Exhibit E-1 – Choke Manifold Diagram
Vaca Draw 20-17 Fed 7H
Cimarex Energy Co.
20-25S-33E
Lea County, NM



Drilling Operations
Choke Manifold
10M Service

Choke Manifold Diagram
Vaca Draw 20-17 Fed 7H
Cimarex Energy Co.
20-25S-33E
Lea County, NM

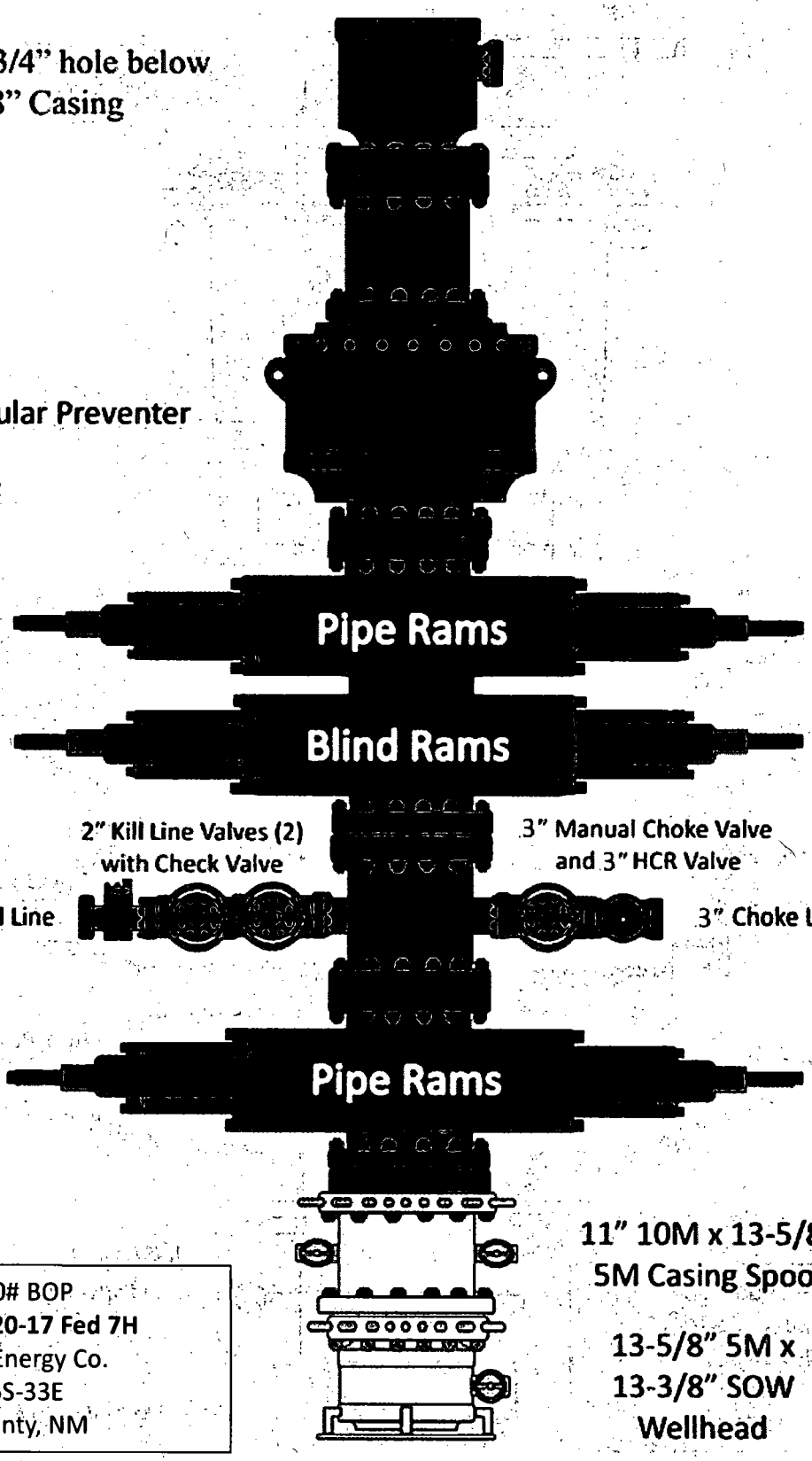
Drilling below 7" Casing



SRR & A

Exhibit E-1 – 5000# BOP
Vaca Draw 20-17 Fed 7H
Cimarex Energy Co.
20-25S-33E
Lea County, NM

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



10,000# BOP
Vaca Draw 20-17 Fed 7H
Cimarex Energy Co.
20-25S-33E
Lea County, NM

Vaca Draw 20-17 Fed 7H

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
14 3/4	0	1034	10-3/4"	40.50	J-55	BT&C	3.34	6.62	15.02
9 7/8	0	12467	7-5/8"	29.70	L-80	BT&C	2.48	1.20	1.82
6 3/4	0	11843	5-1/2"	20.00	L-80	LT&C	1.15	1.19	1.87
6 3/4	11843	22179	5"	18.00	P-110	BT&C	1.67	1.69	61.03
				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

Vaca Draw 20-17 Fed 7H

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
14 3/4	0	1034	10-3/4"	40.50	J-55	BT&C	3.34	6.62	15.02
9 7/8	0	12467	7-5/8"	29.70	L-80	BT&C	2.48	1.20	1.82
6 3/4	0	11843	5-1/2"	20.00	L-80	LT&C	1.15	1.19	1.87
6 3/4	11843	22179	5"	18.00	P-110	BT&C	1.67	1.69	61.03
				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

Vaca Draw 20-17 Fed 7H

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
14 3/4	0	1034	10-3/4"	40.50	J-55	BT&C	3.34	6.62	15.02
9 7/8	0	12467	7-5/8"	29.70	L-80	BT&C	2.48	1.20	1.82
6 3/4	0	11843	5-1/2"	20.00	L-80	LT&C	1.15	1.19	1.87
6 3/4	11843	22179	5"	18.00	P-110	BT&C	1.67	1.69	61.03
				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

Vaca Draw 20-17 Fed 7H

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
14 3/4	0	1034	10-3/4"	40.50	J-55	BT&C	3.34	6.62	15.02
9 7/8	0	12467	7-5/8"	29.70	L-80	BT&C	2.48	1.20	1.82
6 3/4	0	11843	5-1/2"	20.00	L-80	LT&C	1.15	1.19	1.87
6 3/4	11843	22179	5"	18.00	P-110	BT&C	1.67	1.69	61.03
				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

	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

3. Cementing Program

Casing	# Sks	Wt. lb/gal	Yld ft3/sack	H2O gal/sk	500# Comp. Strength (hours)	Slurry Description
Surface	402	13.50	1.72	9.15	15.5	Lead: Class C + Bentonite
	107	14.80	1.34	6.32	9.5	Tail: Class C + LCM
Intermediate	584	9.20	6.18	28.80		Lead: Class C + Extender + Salt + Strength Enhancement + LCM + Fluid Loss + Retarder
	207	14.20	1.30	5.86	14:30	Tail: 50:50 (Poz:H) + Salt + Bentonite + Fluid Loss + Dispersant + SMS
Production	731	14.20	1.30	5.86	14:30	Tail: 50:50 (Poz:H) + Salt + Bentonite + Fluid Loss + Dispersant + SMS

Casing String	TOC	% Excess
Surface	0	45
Intermediate	0	48
Production	12267	9

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
9 7/8	13 5/8	5M	Annular	X	50% of working pressure
			Blind Ram		5M
			Pipe Ram		
			Double Ram	X	
			Other		
6 3/4	13 5/8	10M	Annular	X	50% of working pressure
			Blind Ram		10M
			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 12467'	Brine Diesel Emulsion	8.50 - 9.00	30-35	N/C
12467' to 22179'	Oil Based Mud	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.

The Brine Emulsion is completely saturated brine fluid that ties diesel into itself to lower the weight of the fluid. The drilling fluid is completely salt saturated.

What will be used to monitor the loss or gain of fluid?	PVT/Pason/Visual Monitoring

6. Logging and Testing Procedures

	Logging, Coring and Testing
X	Will run GR/CNL fromTD 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	8041 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 10-3/4" 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.

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.

Exhibit F – Co-Flex Hose

Vaca Draw 20-17 Fed 7H

Cimarex Energy Co.

20-25S-33E

Lea County, NM

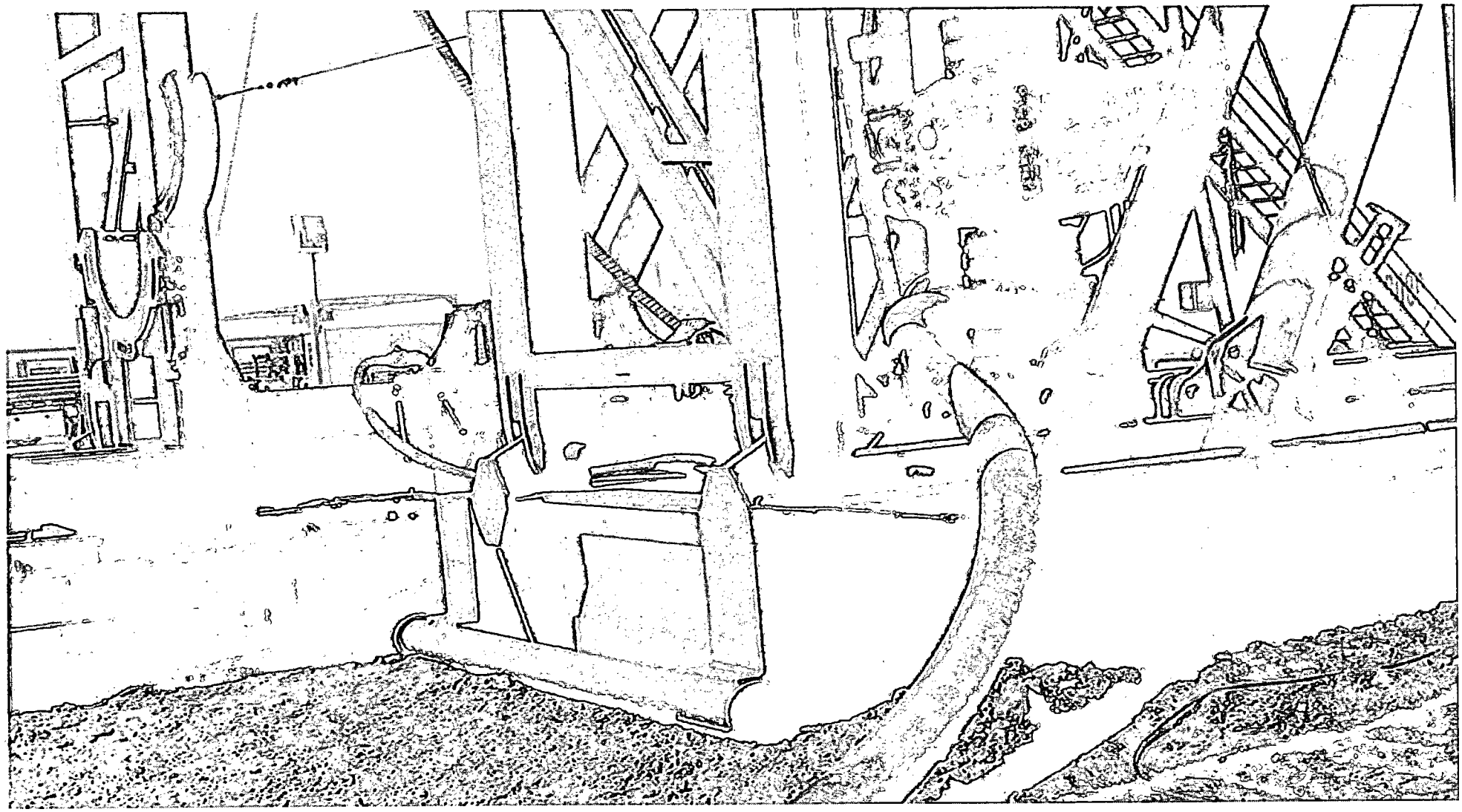


Exhibit F-1 – Co-Flex Hose Hydrostatic Test
Vaca Draw 20-17 Fed 7H
Cimarex Energy Co.
20-25S-33E
Lea County, NM

Midwest Hose
& Specialty, Inc.

INTERNAL HYDROSTATIC TEST REPORT

Customer:	P.O. Number:
Oderco Inc	odyd-271

HOSE SPECIFICATIONS

Type: Stainless Steel Armor Choke & Kill Hose	Hose Length: 45'ft.
I.D. 4 *INCHES*	O.D. 9 *INCHES*

WORKING PRESSURE	TEST PRESSURE	BURST PRESSURE
10,000 *PSI*	15,000 *PSI*	0 *PSI*

COUPLINGS

Stem Part No.	Ferrule No.
OKC OKC	OKC OKC
Type of Coupling: Swage-It	

PROCEDURE

Hose assembly pressure tested with water at ambient temperature.

TIME HELD AT TEST PRESSURE	ACTUAL BURST PRESSURE:
15 *MIN.*	0 *PSI*

Hose Assembly Serial Number:	Hose Serial Number:
79793	OKC

Comments:

Date:	Tested:	Approved:
3/8/2011		

Midwest Hose & Specialty, Inc.

Internal Hydrostatic Test Graph

March 3, 2011

Customer: Houston

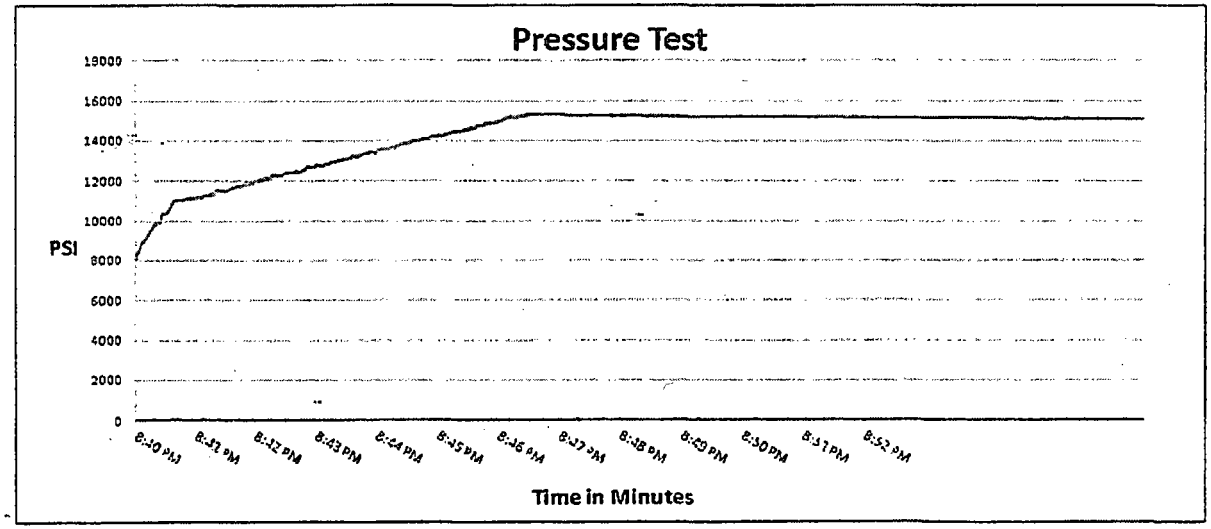
Pick Ticket #: 94260

Hose Specifications

Hose Type	Length
C & K	45'
I.D.	O.D.
4"	6.09"
Working Pressure	Burst Pressure
10000 PSI	Standard Safety Multiplier Applies

Verification

Type of Fitting	Coupling Method
4 1/16 10K	Swage
Die Size	Final O.D.
6.38"	6.25"
Hose Serial #	Hose Assembly Serial #
5544	79793



Test Pressure	Time Held at Test Pressure	Actual Burst Pressure	Peak Pressure
15000 PSI	11 Minutes		15483 PSI

Comments: Hose assembly pressure tested with water at ambient temperature.

Tested By: *Zac Mcconnell*

Approved By: *Kim Thomas*

Exhibit F-1 – Co-Flex Hose Hydrostatic Test
Vaca Draw 20-17 Fed 7H
Cimarex Energy Co.
20-25S-33E
Lea County, NM

Exhibit F-2 – Co-Flex Hose
Vaca Draw 20-17 Fed 7H
Cimarex Energy Co.
20-25S-33E
Lea County, NM

Midwest Hose
& Specialty, Inc.

Certificate of Conformity

Customer: DEM	**PO** ODYD-271
SPECIFICATIONS	
Sales Order 79793	**Dated:** 3/8/2011

We hereby cerify that the material supplied for the referenced purchase order to be true according to the requirements of the purchase order and current industry standards

Supplier:
Midwest Hose & Specialty, Inc.
10640 Tanner Road
Houston, Texas 77041

Comments:

Approved:	**Date:** 3/8/2011

Midwest Hose & Specialty, Inc.

Exhibit F -3– Co-Flex Hose
Vaca Draw 20-17 Fed 7H
Cimarex Energy Co.
20-25S-33E
Lea County, NM

Specification Sheet
Choke & Kill Hose

The Midwest Hose & Specialty Choke & Kill hose is manufactured with only premium componets.The reinforcement cables, inner liner and cover are made of the highest quality material to handle the tough drilling applications of today's industry. The end connections are available with API flanges, API male threads, hubs, hammer unions or other special fittings upon request. Hose assembly is manufactured to API 7K. This assembly is wrapped with fire resistant vermculite coated fiberglass insulation, rated at 2000 degrees with stainless steel armor cover.

Working Pressure:	5,000 or 10,000 psi working pressure
Test Pressure:	10,000 or 15,000 psi test pressure
Reinforcement:	Multiple steel cables
Cover:	Stainless Steel Armor
Inner Tube:	Petroleum resistant, Abrasion resistant
End Fitting:	API flanges, API male threads, threaded or butt weld hammer unions, unibolt and other special connections
Maximum Length:	110 Feet
ID:	2-1/2", 3", 3-1/2", 4"
Operating Temperature:	-22 deg F to +180 deg F (-30 deg C to +82 deg C)

P.O. Box 96558 – 1421 S.E. 29th St. Oklahoma City, OK 73143 * (405) 670-6718 * Fax: (405) 670-6816

APD ID: 10400013634 **Submission Date:** 05/03/2017

Operator Name: CIMAREX ENERGY COMPANY

Well Name: VACA DRAW 20-17 FEDERAL **Well Number:** 7H

Well Type: CONVENTIONAL GAS WELL **Well Work Type:** Drill

Highlighted data reflects the most recent changes

Show Final Text

Section 1 - Existing Roads

Will existing roads be used? NO

Section 2 - New or Reconstructed Access Roads

Will new roads be needed? YES

New Road Map:

Vaca_Draw_20_17_Fed_7H_Access_Road_ROW_04-21-2017.pdf

New road type: COLLECTOR

Length: 1103 Feet **Width (ft.):** 30

Max slope (%): 20 **Max grade (%):** 6

Army Corp of Engineers (ACOE) permit required? NO

ACOE Permit Number(s):

New road travel width: 15

New road access erosion control: The side slopes of any drainage channels or swales that are crossed will be re-contoured to original grade and compacted and mulched as necessary to avoid erosion. Where steeper slopes cannot be avoided, water bars or silt fence will be constructed, mulch/rip-rap applied, or other measures employed as necessary to control erosion. Hay bales, straw waddles or silt fence may also be installed to control erosion as needed. All disturbed areas will be seeded with a mix appropriate for the area unless specified otherwise by the landowner.

New road access plan or profile prepared? NO

New road access plan attachment:

Access road engineering design? NO

Access road engineering design attachment:

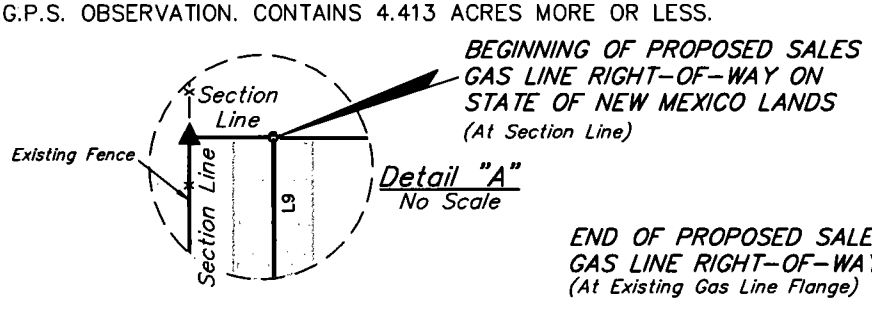
Access surfacing type: GRAVEL

Access topsoil source: ONSITE

SALES GAS LINE RIGHT-OF-WAY DESCRIPTION ON STATE OF NEW MEXICO LANDS

A 30' WIDE RIGHT-OF-WAY 15' ON EACH SIDE OF THE FOLLOWING DESCRIBED CENTERLINE.

BEGINNING AT A POINT ON THE NORTH LINE OF NW 1/4 NW 1/4 OF SECTION 32, T25S, R33E, N.M.P.M., WHICH BEARS N89°53'08"E 30.46' FROM THE NORTHWEST CORNER OF SAID SECTION 32, THENCE S00°07'45"E 5105.44'; THENCE N89°47'29"E 1287.14'; THENCE S00°10'16"E 15.06' TO A POINT IN THE SW 1/4 SW 1/4 OF SAID SECTION 32, WHICH BEARS N82°40'17"E 1327.57' FROM THE SOUTHWEST CORNER OF SAID SECTION 32. THE SIDE LINES OF SAID DESCRIBED RIGHT-OF-WAY BEING SHORTENED OR ELONGATED TO MEET THE GRANTOR'S PROPERTY LINES. BASIS OF BEARINGS IS A G.P.S. OBSERVATION. CONTAINS 4.413 ACRES MORE OR LESS.



CIMAREX ENERGY CO.-VACA DRAW 20-17 FEDERAL TANK BATTERY			
SECTION CORNER	DESCRIPTION	LATITUDE (NAD 83)	LONGITUDE (NAD 83)
NW COR. SEC. 32, T25S, R33E	2" IRON PIPE W/ BRASS CAP	N 32°05'39.55"	W 103°36'10.28"
N 1/4 COR. SEC. 32, T25S, R33E	1" IRON PIPE W/ BRASS CAP	N 32°05'39.54"	W 103°35'39.55"
NE COR. SEC. 32, T25S, R33E	2" IRON PIPE W/ BRASS CAP	N 32°05'39.51"	W 103°35'08.80"
E 1/4 COR. SEC. 32, T25S, R33E	1" IRON PIPE W/ BRASS CAP, 1918	N 32°05'13.38"	W 103°35'08.81"
W 1/4 COR. SEC. 32, T25S, R33E	1" IRON PIPE W/ BRASS CAP	N 32°05'13.45"	W 103°36'10.27"
SW COR. SEC. 32, T25S, R33E	3" IRON PIPE W/ BRASS CAP	N 32°04'47.26"	W 103°36'10.29"
S 1/4 COR. SEC. 32, T25S, R33E	1" IRON PIPE W/ BRASS CAP	N 32°04'47.29"	W 103°35'39.55"
SE COR. SEC. 32, T25S, R33E	3" IRON PIPE W/ BRASS CAP, 1918	N 32°04'47.25"	W 103°35'08.82"

CIMAREX ENERGY CO.-VACA DRAW 20-17 FEDERAL TANK BATTERY			
NUMBER	STATION	LATITUDE (NAD 83)	LONGITUDE (NAD 83)
BEGIN	77+63.90	N 32°05'39.55"	W 103°36'09.92"
1	128+69.34	N 32°04'49.04"	W 103°36'09.94"
2	141+56.48	N 32°04'49.05"	W 103°35'54.99"
END	141+71.54	N 32°04'48.90"	W 103°35'54.99"

BEGINNING OF SALES GAS LINE ON STATE OF NEW MEXICO LANDS IN SEC. 32 BEARS N89°53'08"E 30.46' FROM THE NORTHWEST CORNER OF SECTION 32, T25S, R33E, N.M.P.M.

END OF SALES GAS LINE BEARS N82°40'17"E 1327.57' FROM THE SOUTHWEST CORNER OF SECTION 32, T25S, R33E, N.M.P.M.

CERTIFICATE

THIS IS TO CERTIFY THAT THIS EASEMENT PLAT AND THE ACTUAL SURVEY ON THE GROUND UPON WHICH IT IS BASED WERE PERFORMED BY ME OR UNDER MY DIRECT SUPERVISION; THAT I AM RESPONSIBLE FOR THIS SURVEY; THAT THIS SURVEY MEETS THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO; AND THAT IT IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

NEW MEXICO 23782 PROFESSIONAL SURVEYOR
02-04-17

FILE: 61388-E2

NOTES:

CIMAREX ENERGY CO.

VACA DRAW 20-17 FEDERAL BATTERY
SECTION 32, T25S, R33E, N.M.P.M.
LEA COUNTY, NEW MEXICO

UINTAH ENGINEERING & LAND SURVEYING

UELS, LLC
Corporate Office * 85 South 200 East
Vernal, UT 84078 * (435) 789-1017

SURVEYED BY	C.J., D.J.	01-24-17	SCALE
DRAWN BY	B.D.H.	02-04-17	N/A

SALES GAS LINE R-O-W OPTION "A"

EXHIBIT NO. 1

Date of Issue:
8/21/2017

Bureau of Land Management, Carlsbad Field Office
620 E. Greene Street Carlsbad, NM 88220

Cultural and Archaeological Resources

NOTICE OF STIPULATIONS

BLM Report No.
17-0295

17-0334

Historic properties in the vicinity of this project are protected by federal law. In order to ensure that they are not damaged or destroyed by construction activities, the project proponent and construction supervisors shall ensure that the following stipulations are implemented.

Project Name:	**Vaca Draw 20-17**
	1). A 3-day preconstruction call-in notification. Contact BLM Inspection and Enforcement at
Required	***2. Professional archaeological monitoring***. Contact your BLM project archaeologist at (575) 234-5917 for assistance.
A. ☒	These stipulations must be given to your monitor at least **5 days** prior to the start of construction.
B. ☒	No construction, including vegetation removal or other site prep may begin prior to the arrival of the monitor.
	3. Cultural site barrier fencing. (Your monitor will assist you).
A. ☐	**A temporary site protection barrier**(s) shall be erected prior to all ground-disturbing activities. The minimum barrier(s) shall consist of upright wooden survey lath spaced no more than ten (10) feet apart and marked with blue ribbon flagging or blue paint. There shall be no construction activities or vehicular traffic past the barrier(s) at any time.
B. ☐	**A permanent, 4-strand barbed wire fence** strung on standard "T-posts" shall be erected prior to all ground-disturbing activities. No construction activities or vehicle traffic are allowed past the fence.
Required	***4. The archaeological monitor shall:***
A. ☐	
B. ☒	Observe all ground-disturbing activities within 100 feet of cultural sites LA 128148 and LA 128149.
C. ☐	Ensure that the proposed
D. ☒	Ensure the proposed reroute for LA 128149 is adhered to.
E. ☒	Submit a brief monitoring report within 30 days of completion of monitoring.
	If subsurface cultural resources are encountered during the monitoring, all activities shall cease and a BLM-CFO archaeologist shall be notified immediately.
Other:	**IF THE CONTRACT ARCHAEOLOGIST DOES NOT KNOW WHERE THE SITE(S) ARE LOCATED AT PLEASE COME BY THE CARLSBAD BLM AND MAPS AND OTHER DATA WILL BE PROVIDED UPON REQUEST TO THE CONTRACT ARCHAEOLOGIST**

Site Protection and Employee Education: It is the responsibility of the project proponent and his construction supervisor to inform all employees and subcontractors that cultural and archaeological sites are to be avoided by all personnel, vehicles, and equipment; and that it is illegal to collect, damage, or disturb cultural resources on Public Lands.

For assistance contact: Bruce Boeke (575) 234-5917