

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

OCD - HOBBS
04/10/2020
RECEIVED

FORM APPROVED
OMB No. 1004-0137
Expires: January 31, 2018

1a. Type of work: ☐ DRILL ☐ REENTER		5. Lease Serial No.
1b. Type of Well: ☐ Oil Well ☐ Gas Well ☐ Other		6. If Indian, Allottee or Tribe Name
1c. Type of Completion: ☐ Hydraulic Fracturing ☐ Single Zone ☐ Multiple Zone		7. If Unit or CA Agreement, Name and No.
		8. Lease Name and Well No. [313878]
2. Name of Operator [215099]		9. API Well No. 30-025-47091
3a. Address	3b. Phone No. (include area code)	10. Field and Pool, or Exploratory 97983
4. Location of Well (Report location clearly and in accordance with any State requirements. *) At surface At proposed prod. zone		11. Sec., T. R. M. or Blk. and Survey or Area
14. Distance in miles and direction from nearest town or post office*		12. County or Parish
		13. State
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any)	16. No of acres in lease	17. Spacing Unit dedicated to this well
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.	19. Proposed Depth	20. BLM/BIA Bond No. in file
21. Elevations (Show whether DF, KDB, RT, GL, etc.)	22. Approximate date work will start*	23. Estimated duration
24. Attachments		

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. 1, and the Hydraulic Fracturing rule per 43 CFR 3162.3-3 (as applicable)

- | | |
|--|---|
| 1. Well plat certified by a registered surveyor. | 4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above). |
| 2. A Drilling Plan. | 5. Operator certification. |
| 3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office). | 6. Such other site specific information and/or plans as may be requested by the BLM. |

25. Signature	Name (Printed/Typed)	Date
Title		
Approved by (Signature)	Name (Printed/Typed)	Date
Title		
Office		

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.
Conditions of approval, if any, are attached.

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

GCP Rec 04/10/2020

SL

(Continued on page 2)

APPROVED WITH CONDITIONS
Approval Date: 04/08/2020

Kz
04/17/2020

*(Instructions on page 2)



Operator Certification

I hereby certify that I, or someone under my direct supervision, have inspected the drill site and access route proposed herein; that I am familiar with the conditions which currently exist; that I have full knowledge of state and Federal laws applicable to this operation; that the statements made in this APD package are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed in conformity with this APD package and the terms and conditions under which it is approved. I also certify that I, or the company I represent, am responsible for the operations conducted under this application. These statements are subject to the provisions of 18 U.S.C. 1001 for the filing of false statements.

NAME: Amithy Crawford

Signed on: 10/09/2018

Title: Regulatory Analyst

Street Address: 600 N MARIENFELD STE 600

City: MIDLAND

State: TX

Zip: 79701

Phone: (432)620-1909

Email address: acrawford@cimarex.com

Field Representative

Representative Name:

Street Address:

City:

State:

Zip:

Phone:

Email address:



APD ID: 10400034954

Submission Date: 10/09/2018

Highlighted data
reflects the most
recent changes

Operator Name: CIMAREX ENERGY COMPANY

Well Name: LEA 7 FEDERAL COM

Well Number: 57H

[Show Final Text](#)

Well Type: OIL WELL

Well Work Type: Drill

Section 1 - General

APD ID: 10400034954

Tie to previous NOS? Y

Submission Date: 10/09/2018

BLM Office: CARLSBAD

User: Amithy Crawford

Title: Regulatory Analyst

Federal/Indian APD: FED

Is the first lease penetrated for production Federal or Indian? FED

Lease number: NMNM128835

Lease Acres: 319.67

Surface access agreement in place?

Allotted?

Reservation:

Agreement in place? NO

Federal or Indian agreement:

Agreement number:

Agreement name:

Keep application confidential? YES

Permitting Agent? NO

APD Operator: CIMAREX ENERGY COMPANY

Operator letter of designation:

Operator Info

Operator Organization Name: CIMAREX ENERGY COMPANY

Operator Address: 600 N. Marienfeld St., Suite 600

Zip: 79701

Operator PO Box:

Operator City: Midland

State: TX

Operator Phone: (432)620-1936

Operator Internet Address: tstathem@cimarex.com

Section 2 - Well Information

Well in Master Development Plan? NO

Master Development Plan name:

Well in Master SUPO? NO

Master SUPO name:

Well in Master Drilling Plan? NO

Master Drilling Plan name:

Well Name: LEA 7 FEDERAL COM

Well Number: 57H

Well API Number:

Field/Pool or Exploratory? Field and Pool

Field Name: WOLFCAMP

Pool Name: WILDCAT BONE
SPRING

Is the proposed well in an area containing other mineral resources? USEABLE WATER

Operator Name: CIMAREX ENERGY COMPANY

Well Name: LEA 7 FEDERAL COM

Well Number: 57H

Is the proposed well in an area containing other mineral resources? USEABLE WATER

Is the proposed well in a Helium production area? N Use Existing Well Pad? NO New surface disturbance?

Type of Well Pad: SINGLE WELL

Multiple Well Pad Name:

Number:

Well Class: HORIZONTAL

Number of Legs: 1

Well Work Type: Drill

Well Type: OIL WELL

Describe Well Type:

Well sub-Type: EXPLORATORY (WILDCAT)

Describe sub-type:

Distance to town: 14 Miles

Distance to nearest well: 446 FT

Distance to lease line: 641 FT

Reservoir well spacing assigned acres Measurement: 159.4 Acres

Well plat: Lea_7_Fed_Com_57H_C102_Plat_20181009080532.pdf

Well work start Date: 02/01/2018

Duration: 30 DAYS

Section 3 - Well Location Table

Survey Type: RECTANGULAR

Describe Survey Type:

Datum: NAD83

Vertical Datum: NAVD88

Survey number:

Reference Datum:

Wellbore	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD	Will this well produce from this lease?
SHL Leg #1	776	FSL	641	FW L	20S	35E	7	Lot 4	32.582508	- 103.503083	LEA	NEW MEXI CO	NEW MEXI CO	F	FEE	3671	0	0	
KOP Leg #1	776	FSL	641	FW L	20S	35E	7	Lot 4	32.5825083	- 103.5030833	LEA	NEW MEXI CO	NEW MEXI CO	F	FEE	- 5501	9172	9172	
PPP Leg #1-1	776	FSL	641	FW L	20S	35E	7	Lot 4	32.5825083	- 103.5030833	LEA	NEW MEXI CO	NEW MEXI CO	F	FEE	- 4583	8254	8254	

Operator Name: CIMAREX ENERGY COMPANY

Well Name: LEA 7 FEDERAL COM

Well Number: 57H

Wellbore	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD	Will this well produce from this lease?
EXIT Leg #1	2640	FSL	660	FWL	20S	35E	7	Lot 2	32.5876028	- 103.5030194	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 128835	- 5979	11300	9650	
BHL Leg #1	100	FNL	660	FWL	20S	35E	7	Lot 1	32.59461	- 103.503017	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 128835	- 5979	13849	9650	



APD ID: 10400034954

Submission Date: 10/09/2018

Highlighted data
reflects the most
recent changes

Operator Name: CIMAREX ENERGY COMPANY

Well Name: LEA 7 FEDERAL COM

Well Number: 57H

[Show Final Text](#)

Well Type: OIL WELL

Well Work Type: Drill

Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
316961	RUSTLER	3673	1730	1730		USEABLE WATER	N
316956	SALADO	1843	1830	1830		NONE	N
316952	TANSILL	163	3510	3510		NONE	N
316951	CAPITAN REEF	-87	3760	3760		NONE	N
316963	DELAWARE SAND	-2027	5700	5700		NONE	N
316962	BRUSHY CANYON	-4393	8066	8066		NATURAL GAS, OIL	N
316960	BONE SPRING	-4581	8254	8254		NATURAL GAS, OIL	N
316949	BONE SPRING 1ST	-5888	9561	9561		NATURAL GAS, OIL	Y
316950	BONE SPRING 2ND	-6015	9688	9688		NATURAL GAS, OIL	N

Section 2 - Blowout Prevention

Pressure Rating (PSI): 2M

Rating Depth: 1780

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 13-3/8" surface casing, a 13 5/8" BOP/BOPE system with a minimum working pressure of 3000 psi will be installed on the wellhead system and will be pressure tested to 250 psi low followed by a 3000 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

Operator Name: CIMAREX ENERGY COMPANY

Well Name: LEA 7 FEDERAL COM

Well Number: 57H

intermediate casing. After installation the pack-off and lower flange will be pressure tested to 3000 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:

Lea_7_Fed_Com_57H_Choke_2M3M_20181009080946.pdf

BOP Diagram Attachment:

Lea_7_Fed_Com_57H_BOP_2M_20181009080955.pdf

Pressure Rating (PSI): 3M

Rating Depth: 13849

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 13-3/8" surface casing, a 13 5/8" BOP/BOPE system with a minimum working pressure of 3000 psi will be installed on the wellhead system and will be pressure tested to 250 psi low followed by a 3000 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 3000 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:

Lea_7_Fed_Com_57H_Choke_2M3M_20181009081011.pdf

BOP Diagram Attachment:

Lea_7_Fed_Com_57H_BOP_3M_20181009081022.pdf

Operator Name: CIMAREX ENERGY COMPANY

Well Name: LEA 7 FEDERAL COM

Well Number: 57H

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	1780	0	1780	0	1780	1780	J-55	54.5	BUTT	1.39	3.36	BUOY	8.79	BUOY	8.79
2	INTERMEDIATE	12.25	9.625	NEW	API	N	0	5680	0	5680	0	5680	5680	J-55	40	LT&C	1.51	1.31	BUOY	2.29	BUOY	2.29
3	PRODUCTION	8.75	5.5	NEW	API	N	0	9173	0	9173	0	9173	9173	L-80	17	LT&C	1.47	1.8	BUOY	2.06	BUOY	2.06
4	PRODUCTION	8.75	5.5	NEW	API	N	9173	13849	9173	9650	9173	13849	4676	L-80	17	BUTT	1.39	1.71	BUOY	48.96	BUOY	48.96

Casing Attachments

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Lea_7_Fed_Com_57H_Casing_Assumptions_20181009081104.pdf

Operator Name: CIMAREX ENERGY COMPANY

Well Name: LEA 7 FEDERAL COM

Well Number: 57H

Casing Attachments

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Lea_7_Fed_Com_57H_Casing_Assumptions_20181009081138.pdf

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Lea_7_Fed_Com_57H_Casing_Assumptions_20181009081240.pdf

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Lea_7_Fed_Com_57H_Casing_Assumptions_20181009081409.pdf

Section 4 - Cement

Operator Name: CIMAREX ENERGY COMPANY

Well Name: LEA 7 FEDERAL COM

Well Number: 57H

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
SURFACE	Lead		0	1780	863	1.72	13.5	1483	50	Class C	Bentonite
SURFACE	Tail		0	1780	231	1.34	14.8	309	25	Class C	LCM
INTERMEDIATE	Lead	3510	0	5680	293	1.88	12.9	550	50	35:65 (Poz:C)	Salt, Bentonite
INTERMEDIATE	Tail		0	5680	292	1.34	14.8	391	25	Class C	LCM
INTERMEDIATE	Lead		0	5680	777	1.88	12.9	1459	50	35:65 (Poz:C)	Salt, Bentonite

PRODUCTION	Lead		0	1384 9	485	3.64	10.3	1765	25	Tuned Light	LCM
PRODUCTION	Tail		0	1384 9	1420	1.3	14.2	1846	10	50:50 (Poz:H)	Salt, Bentonite, Fluid Loss, Dispersant, SMS
PRODUCTION	Lead		0	1384 9	485	3.64	10.3	1765	25	Tuned Light	LCM
PRODUCTION	Tail		0	1384 9	1420	1.3	14.2	1846	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

Operator Name: CIMAREX ENERGY COMPANY

Well Name: LEA 7 FEDERAL COM

Well Number: 57H

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	1780	SPUD MUD	8.3	8.8							
1780	5680	SALT SATURATED	9.7	10.2							
5680	13849	OTHER : FW/Cut Brine	8.5	9							

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: 4516

Anticipated Surface Pressure: 2393

Anticipated Bottom Hole Temperature(F): 167

Anticipated abnormal pressures, temperatures, or potential geologic hazards? NO

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:

Lea_7_Fed_Com_57H_H2S_Plan_20181009081942.pdf

Operator Name: CIMAREX ENERGY COMPANY

Well Name: LEA 7 FEDERAL COM

Well Number: 57H

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

Lea_7_Fed_Com_57H_AC_Report_20181009082009.pdf

Lea_7_Fed_Com_57H_Directional_Plan_20181009082010.pdf

Other proposed operations facets description:

Other proposed operations facets attachment:

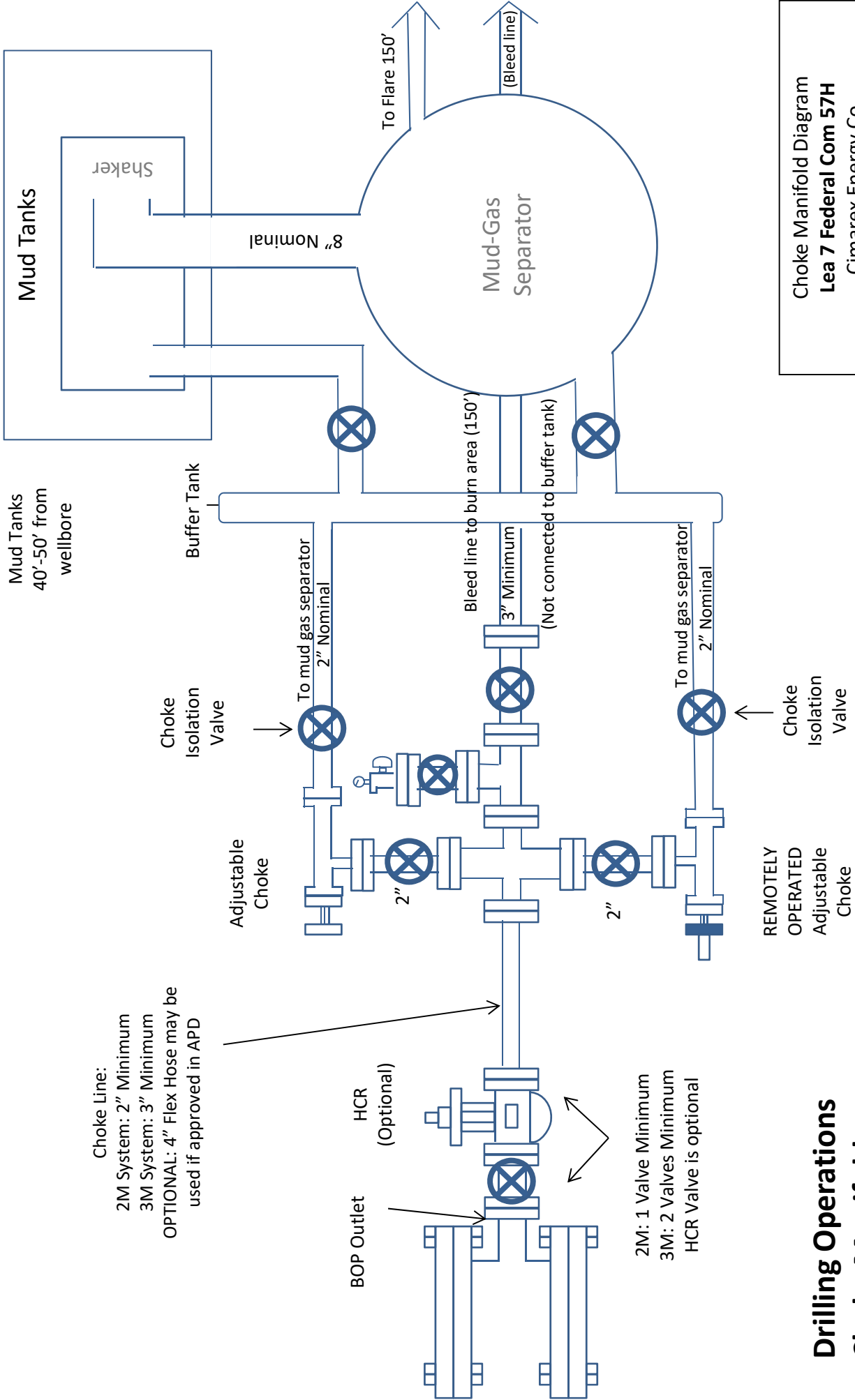
Lea_7_Fed_Com_57H_Flex_Hose_20181009082036.pdf

Lea_7_Fed_Com_57H_Gas_Capture_Plan_20181009082038.pdf

Lea_7_Fed_Com_57H_Drilling_Plan_20200403092529.pdf

Other Variance attachment:

Lea_7_Fed_Com_57H_Multibowl_Wellhead_20200331075349.pdf



Choke Manifold Diagram
Lea 7 Federal Com 57H
 Cimarex Energy Co.
 7-20S-35E
 Lea Co., NM

Drilling Operations
Choke Manifold
2M/3M Service

Choke Line:
 2M System: 2" Minimum
 3M System: 3" Minimum
 OPTIONAL: 4" Flex Hose may be
 used if approved in APD

BOP Outlet
 HCR
 (Optional)

2M: 1 Valve Minimum
 3M: 2 Valves Minimum
 HCR Valve is optional

Choke
 Isolation
 Valve

Adjustable
 Choke

To mud gas separator
 2" Nominal

Bleed line to burn area (150')
 3" Minimum
 (Not connected to buffer tank)

Mud-Gas
 Separator

To Flare 150'

(Bleed line)

Mud Tanks

Mud Tanks
 40'-50' from
 wellbore

Shaker

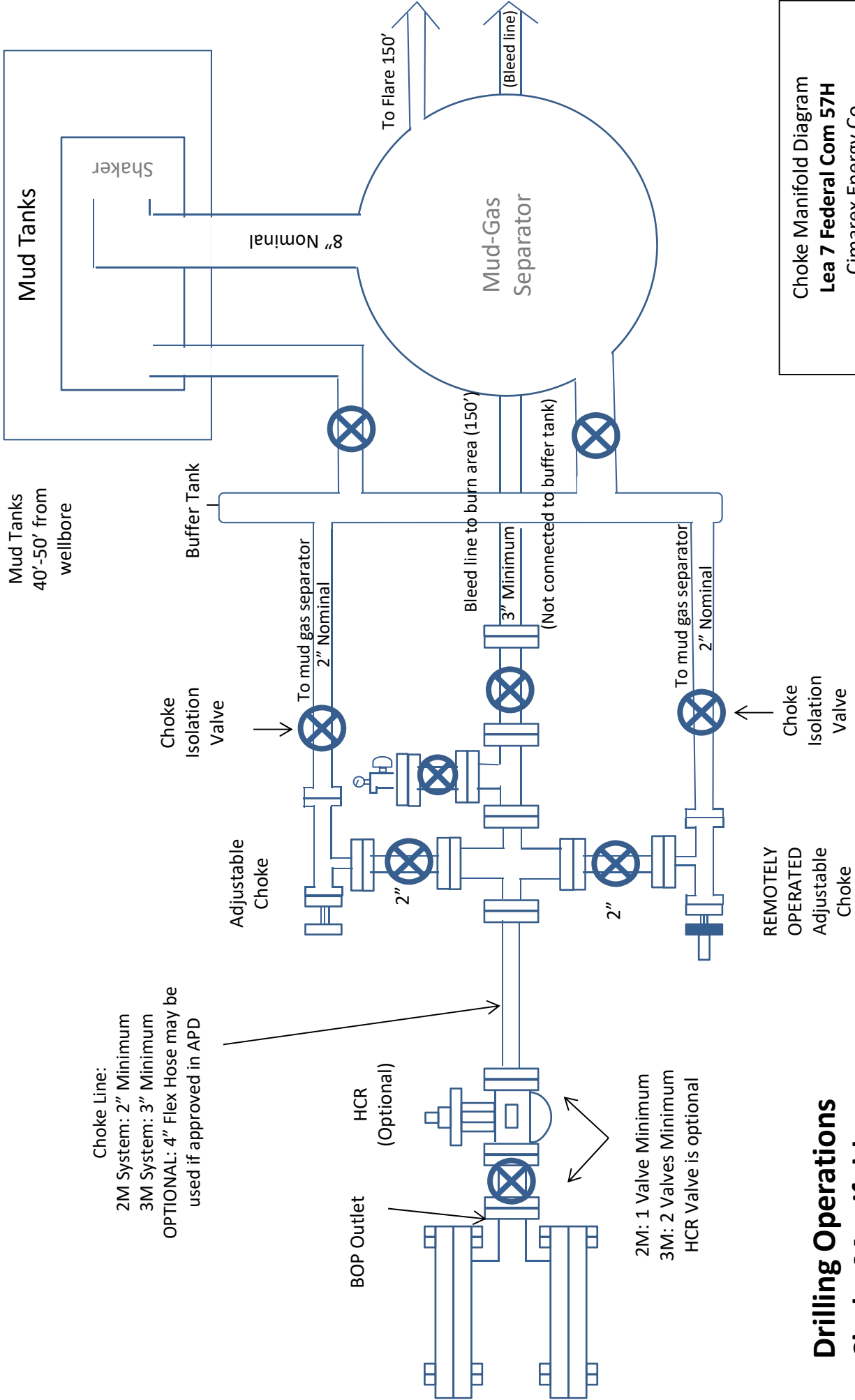
8" Nominal

Buffer Tank

REMOTELY
 OPERATED
 Adjustable
 Choke

Choke
 Isolation
 Valve

To mud gas separator
 2" Nominal



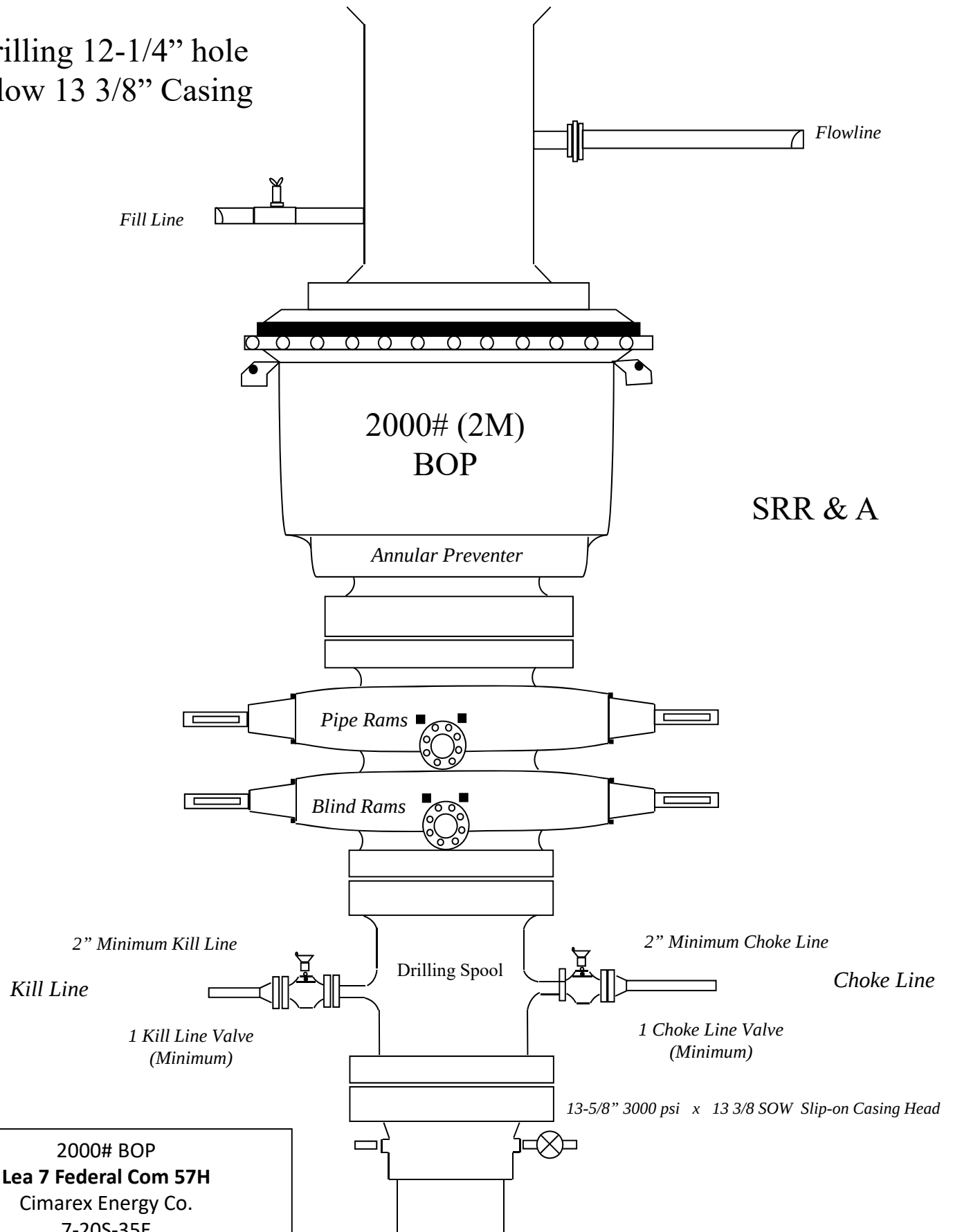
Choke Line:
 2M System: 2" Minimum
 3M System: 3" Minimum
 OPTIONAL: 4" Flex Hose may be used if approved in APD

2M: 1 Valve Minimum
 3M: 2 Valves Minimum
 HCR Valve is optional

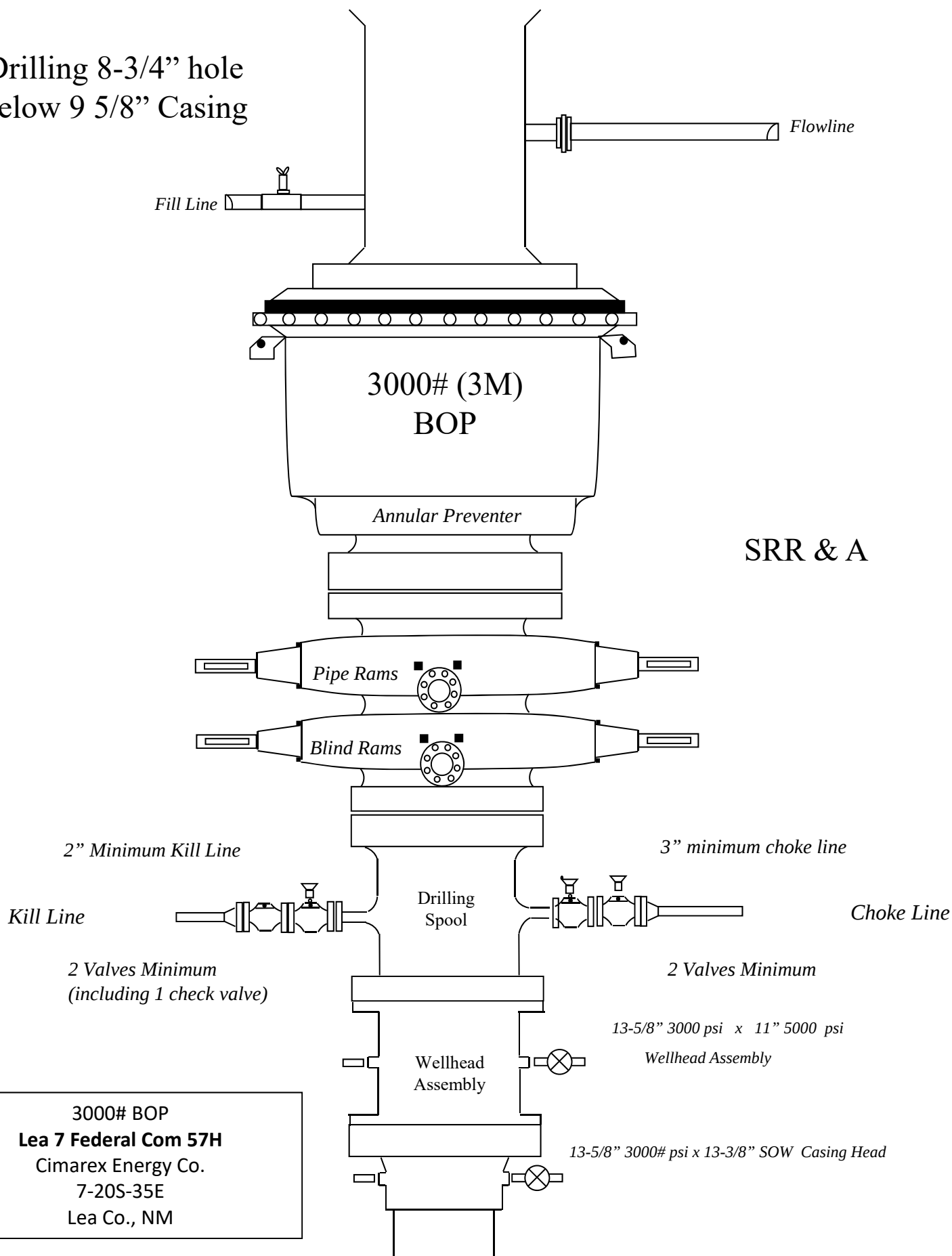
Drilling Operations Choke Manifold 2M/3M Service

Choke Manifold Diagram
Lea 7 Federal Com 57H
 Cimarex Energy Co.
 7-20S-35E
 Lea Co., NM

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



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



3000# BOP
Lea 7 Federal Com 57H
Cimarex Energy Co.
7-20S-35E
Lea Co., NM

Lea 7 Federal Com 57H

Casing Assumptions

Casing Program

Hole Size	Casing Depth From	Casing Depth To	Setting Depth TVD	Casing Size	Weight (lb/ft)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
17 1/2	0	1780	1780	13-3/8"	54.50	J-55	BT&C	1.39	3.36	8.79
12 1/4	0	5680	5680	9-5/8"	40.00	J-55	LT&C	1.51	1.31	2.29
8 3/4	0	9173	9173	5-1/2"	17.00	L-80	LT&C	1.47	1.80	2.06
8 3/4	9173	13849	9650	5-1/2"	17.00	L-80	BT&C	1.39	1.71	48.96
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 IILB.1.h

Lea 7 Federal Com 57H

Casing Assumptions

Casing Program

Hole Size	Casing Depth From	Casing Depth To	Setting Depth TVD	Casing Size	Weight (lb/ft)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
17 1/2	0	1780	1780	13-3/8"	54.50	J-55	BT&C	1.39	3.36	8.79
12 1/4	0	5680	5680	9-5/8"	40.00	J-55	LT&C	1.51	1.31	2.29
8 3/4	0	9173	9173	5-1/2"	17.00	L-80	LT&C	1.47	1.80	2.06
8 3/4	9173	13849	9650	5-1/2"	17.00	L-80	BT&C	1.39	1.71	48.96
BLM Minimum Safety Factor								1.125	1	1.6 Dry 1.8 Wet

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Lea 7 Federal Com 57H

Casing Assumptions

Casing Program

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17 1/2	0	1780	1780	13-3/8"	54.50	J-55	BT&C	1.39	3.36	8.79
12 1/4	0	5680	5680	9-5/8"	40.00	J-55	LT&C	1.51	1.31	2.29
8 3/4	0	9173	9173	5-1/2"	17.00	L-80	LT&C	1.47	1.80	2.06
8 3/4	9173	13849	9650	5-1/2"	17.00	L-80	BT&C	1.39	1.71	48.96
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 IILB.1.h

Lea 7 Federal Com 57H

Casing Assumptions

Casing Program

Hole Size	Casing Depth From	Casing Depth To	Setting Depth TVD	Casing Size	Weight (lb/ft)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
17 1/2	0	1780	1780	13-3/8"	54.50	J-55	BT&C	1.39	3.36	8.79
12 1/4	0	5680	5680	9-5/8"	40.00	J-55	LT&C	1.51	1.31	2.29
8 3/4	0	9173	9173	5-1/2"	17.00	L-80	LT&C	1.47	1.80	2.06
8 3/4	9173	13849	9650	5-1/2"	17.00	L-80	BT&C	1.39	1.71	48.96
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 IILB.1.h

Lea 7 Federal Com 57H

Cimarex Energy Co.

UL: 4, Sec. 7, 20S, 35E

Lea Co., NM

- 1 All Company and Contract personnel admitted on location must be trained by a qualified H₂S safety instructor to the following:
 - A. Characteristics of H₂S
 - B. Physical effects and hazards
 - C. Principal and operation of H₂S detectors, warning system and briefing areas.
 - D. Evacuation procedure, routes and first aid.
 - E. Proper use of safety equipment & life support systems
 - F. Essential personnel meeting Medical Evaluation criteria will receive additional training on the proper use of 30 minute pressure demand air packs.

H₂S Detection and Alarm Systems:

 - A. H₂S sensors/detectors to be located on the drilling rig floor, in the base of the sub structure/cellar area, on the mud pits in the shale shaker area. Additional H₂S detectors may play placed as deemed necessary.
 - B.
An audio alarm system will be installed on the derrick floor and in the top doghouse.
- 3 Windsock and/or wind streamers:
 - A. Windsock at mudpit area should be high enough to be visible.
 - B.
Windsock on the rig floor and / or top doghouse should be high enough to be visible.
- 4 Condition Flags and Signs
 - A. Warning sign on access road to location.
 - B. Flags to be displayed on sign at entrance to location. Green flag indicates normal safe condition. Yellow flag indicates potential pressure and danger. Red flag indicates danger (H₂S present in dangerous concentration). Only H₂S trained and certified personnel admitted to location.
- 5 Well control equipment:
 - A. See exhibit "E-1"
- 6 Communication:
 - A. While working under masks chalkboards will be used for communication.
 - B. Hand signals will be used where chalk board is inappropriate.
 - C. Two way radio will be used to communicate off location in case of emergency help is required. In most cases cellular telephones will be available at most drilling foreman's trailer or living quarters.
- 7 Drillstem Testing:

No DSTs r cores are planned at this time.
- 8 Drilling contractor supervisor will be required to be familiar with the effects H₂S has on tubular goods and other mechanical equipment.
- 9 If H₂S is encountered, mud system will be altered if necessary to maintain control of formation. A mud gas separator will be brought into service along with H₂S scavengers if necessary.

H₂S Contingency Plan
Lea 7 Federal Com 57H
Cimarex Energy Co.
UL: 4, Sec. 7, 20S, 35E
Lea Co., NM

Emergency Procedures

In the event of a release of gas containing H₂S, the first responder(s) must:

- « Isolate the area and prevent entry by other persons into the 100 ppm ROE.
- « Evacuate any public places encompassed by the 100 ppm ROE.
- « Be equipped with H₂S monitors and air packs in order to control the release.
- « Use the "buddy system" to ensure no injuries occur during the 432-620-1975
- « Take precautions to avoid personal injury during this operation.
- « Contact operator and/or local officials to aid in operation. See list of phone numbers attached.
- « Have received training in the:
 - Detection of H₂S, and
 - Measures for protection against the gas,
 - Equipment used for protection and emergency response.

Ignition of Gas Source

Should control of the well be considered lost and ignition considered, take care to protect against exposure to Sulfur Dioxide (SO₂). Intentional ignition must be coordinated with the NMOCD and local officials. Additionally, the NM State Police may become involved. NM State Police shall be the Incident Command on scene of any major release. Take care to protect downwind whenever there is an ignition of the gas.

Characteristics of H₂S and SO₂

Please see attached International Chemical Safety Cards.

Contacting Authorities

Cimarex Energy Co. of Colorado's personnel must liaise with local and state agencies to ensure a proper response to a major release. Additionally, the OCD must be notified of the release as soon as possible but no later than 4 hours. Agencies will ask for information such as type and volume of release, wind direction, location of release, etc. Be prepared with all information available including directions to site. The following call list of essential and potential responders has been prepared for use during a release. Cimarex Energy Co. of Colorado's response must be in coordination with the State of New Mexico's "Hazardous Materials Emergency Response Plan" (HMER).

H₂S Contingency Plan Emergency Contacts

Lea 7 Federal Com 57H

Cimarex Energy Co.

UL: 4, Sec. 7, 20S, 35E

Lea Co., NM

Company Office

Cimarex Energy Co. of Colorado	800-969-4789
Co. Office and After-Hours Menu	

Key Personnel

Name	Title	Office	Mobile
Larry Seigrist	Drilling Manager	432-620-1934	580-243-8485
Charlie Pritchard	Drilling Superintendent	432-620-1975	432-238-7084
Roy Shirley	Construction Superintendent		432-634-2136

Artesia

Ambulance	911
State Police	575-746-2703
City Police	575-746-2703
Sheriff's Office	575-746-9888
Fire Department	575-746-2701
Local Emergency Planning Committee	575-746-2122
New Mexico Oil Conservation Division	575-748-1283

Carlsbad

Ambulance	911
State Police	575-885-3137
City Police	575-885-2111
Sheriff's Office	575-887-7551
Fire Department	575-887-3798
Local Emergency Planning Committee	575-887-6544
US Bureau of Land Management	575-887-6544

Santa Fe

New Mexico Emergency Response Commission (Santa Fe)	505-476-9600
New Mexico Emergency Response Commission (Santa Fe) 24 Hrs	505-827-9126
New Mexico State Emergency Operations Center	505-476-9635

National

National Emergency Response Center (Washington, D.C.)	800-424-8802
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Medical

Flight for Life - 4000 24th St.; Lubbock, TX	806-743-9911
Aerocare - R3, Box 49F; Lubbock, TX	806-747-8923
Med Flight Air Amb - 2301 Yale Blvd S.E., #D3; Albuquerque, NM	505-842-4433
SB Air Med Service - 2505 Clark Carr Loop S.E.; Albuquerque, NM	505-842-4949

Other

Boots & Coots IWC	800-256-9688	or	281-931-8884
Cudd Pressure Control	432-699-0139	or	432-563-3356
Halliburton	575-746-2757		
B.J. Services	575-746-3569		

Cimarex Lea 7 Federal Com 57H Rev0 RM 05Oct18 Anti-Collision Summary Report

Analysis Date-24hr Time: October 05, 2018 - 14:29
Client: Cimarex Energy
Field: NM Lea County (NAD 83)
Structure: Cimarex Lea 7 Federal Com 57H
Slot: New Slot
Well: Lea 7 Federal Com 57H
Borehole: Lea 7 Federal Com 57H
Scan MD Range: 0.00ft ~ 13849.00ft

Analysis Method: 3D Least Distance
Reference Trajectory: Cimarex Lea 7 Federal Com 57H Rev0 RM 05Oct18 (Non-Def Plan)
Depth Interval: Every 10.00 Measured Depth (ft)
Rule Set: NAL Procedure: D&M AntiCollision Standard S002
Min Pts: All local minima indicated.
Version / Patch: 2.10.740.0
Database \ Project: US1153APP452.dir.slb.com\drilling-NM Lea County 2.10

Trajectory Error Model: ISCWSA0 3-D 95.000% Confidence 2.7955 sigma, for subject well. For offset wells, error model version is specified with each well respectively.

Offset Trajectories Summary

Offset Selection Criteria

Wellhead distance scan: Not performed!
 Selection filters: Definitive Surveys - Definitive Plans - Definitive surveys exclude definitive plans
 - All Non-Def Surveys when no Def-Survey is set in a borehole - All Non-Def Plans when no Def-Plan is set in a borehole

Offset Trajectory	Separation			Allow Dev. (ft)	Sep. Fact.	Controlling Rule	Reference Trajectory		Risk Level			Alert	Status
	Ct-Ct (ft)	MAS (ft)	EOU (ft)				MD (ft)	TVD (ft)	Alert	Minor	Major		

Results highlighted: Sep-Factor separation <= 1.50 ft

Sinclair Federal Lea 6025 #1
(Plugged Offset) (Def Survey)

Fail Major

2527.57	32.81	2526.10	2494.77	N/A	MAS = 10.00 (m)	0.00	0.00					Surface
2527.54	32.81	2526.06	2494.73	988285.03	MAS = 10.00 (m)	10.00	10.00					MinPt-O-SF
2527.54	32.81	2526.06	2494.73	N/A	MAS = 10.00 (m)	26.00	26.00					WRP
2524.90	280.60	2337.34	2244.30	13.56	OSF1.50	6560.00	6560.00					MinPt-CtCt
2180.26	658.17	1740.75	1522.09	4.98	OSF1.50	9790.00	9632.04	OSF<5.00				Enter Alert
663.29	663.78	219.43	-0.49	1.50	OSF1.50	11330.00	9650.39		OSF<1.50			Enter Minor
440.19	663.93	-3.80	-223.75	0.99	OSF1.50	11570.00	9650.35			OSF<1.00		Enter Major
198.50	663.50	-244.32	-465.00	0.45	OSF1.50	11960.00	9650.29					MinPts
435.01	660.96	-6.12	-225.95	0.99	OSF1.50	12350.00	9650.23			OSF>1.00		Exit Major
657.75	660.36	217.02	-2.61	1.49	OSF1.50	12590.00	9650.19		OSF>1.50			Exit Minor
1896.50	658.95	1456.70	1237.55	4.32	OSF1.50	13849.00	9650.00					TD

Cimarex Lea 7 Federal Com
1H XEM+MWD Surveys 0ft -
15433ft MD (Def Survey)

Pass

442.06	32.81	439.56	409.25	N/A	MAS = 10.00 (m)	0.00	0.00					Surface
442.02	32.81	439.51	409.21	28627.18	MAS = 10.00 (m)	26.00	26.00					WRP
312.90	67.14	267.24	245.76	7.22	OSF1.50	8740.00	8740.00					MinPt-CtCt
313.38	68.86	266.57	244.52	7.04	OSF1.50	9000.00	9000.00					MINPT-O-EOU
313.57	69.08	266.61	244.48	7.02	OSF1.50	9040.00	9040.00					MinPt-O-ADP
314.87	69.93	267.35	244.94	6.96	OSF1.50	9180.00	9180.00					MinPt-O-SF
1439.76	90.18	1378.81	1349.58	24.59	OSF1.50	12130.00	9650.26					MinPt-CtCt
1432.72	140.23	1338.40	1292.49	15.58	OSF1.50	13620.00	9650.04					MinPt-CtCt
1432.97	141.11	1338.06	1291.86	15.48	OSF1.50	13650.00	9650.03					MINPT-O-EOU
1433.20	141.40	1338.10	1291.80	15.45	OSF1.50	13660.00	9650.03					MinPt-O-ADP
1450.47	145.89	1352.38	1304.58	15.15	OSF1.50	13849.00	9650.00					MinPt-O-SF

Offset Trajectory	Separation			Allow Dev. (ft)	Sep. Fact.	Controlling Rule	Reference Trajectory		Risk Level			Alert	Status
	Ct-Ct (ft)	MAS (ft)	EOU (ft)				MD (ft)	TVD (ft)	Alert	Minor	Major		



Cimarex Lea 7 Federal Com 57H Rev0 RM 05Oct18 Proposal Geodetic Report

(Non-Def Plan)



Report Date: October 05, 2018 - 02:28 PM
Client: Cimarex Energy
Field: NM Lea County (NAD 83)
Structure / Slot: Cimarex Lea 7 Federal Com 57H / New Slot
Well: Lea 7 Federal Com 57H
Borehole: Lea 7 Federal Com 57H
UWI / API#: Unknown / Unknown
Survey Name: Cimarex Lea 7 Federal Com 57H Rev0 RM 05Oct18
Survey Date: October 05, 2018
Tort / AHD / DDI / ERD Ratio: 90.145 ° / 4403.702 ft / 5.756 / 0.456
Coordinate Reference System: NAD83 New Mexico State Plane, Eastern Zone, US Feet
Location Lat / Long: N 32° 34' 57.02722", W 103° 30' 11.09997"
Location Grid N/E Y/X: N 576644.780 ftUS, E 797068.470 ftUS
CRS Grid Convergence Angle: 0.4471 °
Grid Scale Factor: 0.99998399
Version / Patch: 2.10.740.0

Survey / DLS Computation: Minimum Curvature / Lubinski
Vertical Section Azimuth: 359.574 ° (Grid North)
Vertical Section Origin: 0.000 ft, 0.000 ft
TVD Reference Datum: RKB
TVD Reference Elevation: 3696.700 ft above MSL
Seabed / Ground Elevation: 3670.700 ft above MSL
Magnetic Declination: 6.607 °
Total Gravity Field Strength: 998.5061mgn (9.80665 Based)
Gravity Model: GARM
Total Magnetic Field Strength: 48147.097 nT
Magnetic Dip Angle: 60.513 °
Declination Date: October 05, 2018
Magnetic Declination Model: HDGM 2018
North Reference: Grid North
Grid Convergence Used: 0.4471 °
Total Corr Mag North->Grid North: 6.1603 °
Local Coord Referenced To: Well Head

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
SHL [776' FSL, 641' FWL]	0.00	0.00	359.82	0.00	0.00	0.00	0.00	N/A	576644.78	797068.47	N 32 34 57.03 W 103 30 11.10	
	100.00	0.00	4.30	100.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N 32 34 57.03 W 103 30 11.10	
	200.00	0.00	4.30	200.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N 32 34 57.03 W 103 30 11.10	
	300.00	0.00	4.30	300.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N 32 34 57.03 W 103 30 11.10	
	400.00	0.00	4.30	400.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N 32 34 57.03 W 103 30 11.10	
	500.00	0.00	4.30	500.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N 32 34 57.03 W 103 30 11.10	
	600.00	0.00	4.30	600.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N 32 34 57.03 W 103 30 11.10	
	700.00	0.00	4.30	700.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N 32 34 57.03 W 103 30 11.10	
	800.00	0.00	4.30	800.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N 32 34 57.03 W 103 30 11.10	
	900.00	0.00	4.30	900.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N 32 34 57.03 W 103 30 11.10	
	1000.00	0.00	4.30	1000.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N 32 34 57.03 W 103 30 11.10	
	1100.00	0.00	4.30	1100.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N 32 34 57.03 W 103 30 11.10	
	1200.00	0.00	4.30	1200.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N 32 34 57.03 W 103 30 11.10	
	1300.00	0.00	4.30	1300.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N 32 34 57.03 W 103 30 11.10	
	1400.00	0.00	4.30	1400.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N 32 34 57.03 W 103 30 11.10	
	1500.00	0.00	4.30	1500.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N 32 34 57.03 W 103 30 11.10	
	1600.00	0.00	4.30	1600.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N 32 34 57.03 W 103 30 11.10	
	1700.00	0.00	4.30	1700.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N 32 34 57.03 W 103 30 11.10	
Rustler	1730.00	0.00	4.30	1730.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N 32 34 57.03 W 103 30 11.10	
	1800.00	0.00	4.30	1800.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N 32 34 57.03 W 103 30 11.10	
Top of Salt	1830.00	0.00	4.30	1830.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N 32 34 57.03 W 103 30 11.10	
	1900.00	0.00	4.30	1900.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N 32 34 57.03 W 103 30 11.10	
	2000.00	0.00	4.30	2000.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N 32 34 57.03 W 103 30 11.10	
	2100.00	0.00	4.30	2100.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N 32 34 57.03 W 103 30 11.10	
	2200.00	0.00	4.30	2200.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N 32 34 57.03 W 103 30 11.10	
	2300.00	0.00	4.30	2300.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N 32 34 57.03 W 103 30 11.10	
	2400.00	0.00	4.30	2400.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N 32 34 57.03 W 103 30 11.10	
	2500.00	0.00	4.30	2500.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N 32 34 57.03 W 103 30 11.10	

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)		Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
	2600.00	0.00	4.30	2600.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N	32 34 57.03 W	103 30 11.10
	2700.00	0.00	4.30	2700.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N	32 34 57.03 W	103 30 11.10
	2800.00	0.00	4.30	2800.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N	32 34 57.03 W	103 30 11.10
	2900.00	0.00	4.30	2900.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N	32 34 57.03 W	103 30 11.10
	3000.00	0.00	4.30	3000.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N	32 34 57.03 W	103 30 11.10
	3100.00	0.00	4.30	3100.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N	32 34 57.03 W	103 30 11.10
	3200.00	0.00	4.30	3200.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N	32 34 57.03 W	103 30 11.10
	3300.00	0.00	4.30	3300.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N	32 34 57.03 W	103 30 11.10
	3400.00	0.00	4.30	3400.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N	32 34 57.03 W	103 30 11.10
	3500.00	0.00	4.30	3500.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N	32 34 57.03 W	103 30 11.10
Tansil (Base Salt)	3510.00	0.00	4.30	3510.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N	32 34 57.03 W	103 30 11.10
	3600.00	0.00	4.30	3600.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N	32 34 57.03 W	103 30 11.10
	3700.00	0.00	4.30	3700.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N	32 34 57.03 W	103 30 11.10
Capitan	3760.00	0.00	4.30	3760.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N	32 34 57.03 W	103 30 11.10
	3800.00	0.00	4.30	3800.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N	32 34 57.03 W	103 30 11.10
	3900.00	0.00	4.30	3900.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N	32 34 57.03 W	103 30 11.10
	4000.00	0.00	4.30	4000.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N	32 34 57.03 W	103 30 11.10
	4100.00	0.00	4.30	4100.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N	32 34 57.03 W	103 30 11.10
	4200.00	0.00	4.30	4200.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N	32 34 57.03 W	103 30 11.10
	4300.00	0.00	4.30	4300.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N	32 34 57.03 W	103 30 11.10
	4400.00	0.00	4.30	4400.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N	32 34 57.03 W	103 30 11.10
	4500.00	0.00	4.30	4500.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N	32 34 57.03 W	103 30 11.10
	4600.00	0.00	4.30	4600.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N	32 34 57.03 W	103 30 11.10
Base Capitan	4680.00	0.00	4.30	4680.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N	32 34 57.03 W	103 30 11.10
	4700.00	0.00	4.30	4700.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N	32 34 57.03 W	103 30 11.10
	4800.00	0.00	4.30	4800.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N	32 34 57.03 W	103 30 11.10
	4900.00	0.00	4.30	4900.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N	32 34 57.03 W	103 30 11.10
	5000.00	0.00	4.30	5000.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N	32 34 57.03 W	103 30 11.10
	5100.00	0.00	4.30	5100.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N	32 34 57.03 W	103 30 11.10
	5200.00	0.00	4.30	5200.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N	32 34 57.03 W	103 30 11.10
	5300.00	0.00	4.30	5300.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N	32 34 57.03 W	103 30 11.10
	5400.00	0.00	4.30	5400.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N	32 34 57.03 W	103 30 11.10
	5500.00	0.00	4.30	5500.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N	32 34 57.03 W	103 30 11.10
	5600.00	0.00	4.30	5600.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N	32 34 57.03 W	103 30 11.10
Delaware Sands (Ch. Cyn.)	5700.00	0.00	4.30	5700.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N	32 34 57.03 W	103 30 11.10
	5800.00	0.00	4.30	5800.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N	32 34 57.03 W	103 30 11.10
	5900.00	0.00	4.30	5900.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N	32 34 57.03 W	103 30 11.10
	6000.00	0.00	4.30	6000.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N	32 34 57.03 W	103 30 11.10
	6100.00	0.00	4.30	6100.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N	32 34 57.03 W	103 30 11.10
	6200.00	0.00	4.30	6200.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N	32 34 57.03 W	103 30 11.10
	6300.00	0.00	4.30	6300.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N	32 34 57.03 W	103 30 11.10
	6400.00	0.00	4.30	6400.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N	32 34 57.03 W	103 30 11.10
	6500.00	0.00	4.30	6500.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N	32 34 57.03 W	103 30 11.10
	6600.00	0.00	4.30	6600.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N	32 34 57.03 W	103 30 11.10
	6700.00	0.00	4.30	6700.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N	32 34 57.03 W	103 30 11.10
	6800.00	0.00	4.30	6800.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N	32 34 57.03 W	103 30 11.10
	6900.00	0.00	4.30	6900.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N	32 34 57.03 W	103 30 11.10
	7000.00	0.00	4.30	7000.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N	32 34 57.03 W	103 30 11.10
	7100.00	0.00	4.30	7100.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N	32 34 57.03 W	103 30 11.10
	7200.00	0.00	4.30	7200.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N	32 34 57.03 W	103 30 11.10
	7300.00	0.00	4.30	7300.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N	32 34 57.03 W	103 30 11.10
	7400.00	0.00	4.30	7400.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N	32 34 57.03 W	103 30 11.10
	7500.00	0.00	4.30	7500.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N	32 34 57.03 W	103 30 11.10
	7600.00	0.00	4.30	7600.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N	32 34 57.03 W	103 30 11.10
	7700.00	0.00	4.30	7700.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N	32 34 57.03 W	103 30 11.10
	7800.00	0.00	4.30	7800.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N	32 34 57.03 W	103 30 11.10

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
	7900.00	0.00	4.30	7900.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N 32 34 57.03 W 103 30 11.10	
Brushy Canyon	8000.00	0.00	4.30	8000.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N 32 34 57.03 W 103 30 11.10	
	8066.00	0.00	4.30	8066.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N 32 34 57.03 W 103 30 11.10	
	8100.00	0.00	4.30	8100.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N 32 34 57.03 W 103 30 11.10	
Bone Spring	8200.00	0.00	4.30	8200.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N 32 34 57.03 W 103 30 11.10	
	8254.00	0.00	4.30	8254.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N 32 34 57.03 W 103 30 11.10	
	8300.00	0.00	4.30	8300.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N 32 34 57.03 W 103 30 11.10	
	8400.00	0.00	4.30	8400.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N 32 34 57.03 W 103 30 11.10	
	8500.00	0.00	4.30	8500.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N 32 34 57.03 W 103 30 11.10	
	8600.00	0.00	4.30	8600.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N 32 34 57.03 W 103 30 11.10	
	8700.00	0.00	4.30	8700.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N 32 34 57.03 W 103 30 11.10	
	8800.00	0.00	4.30	8800.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N 32 34 57.03 W 103 30 11.10	
	8900.00	0.00	4.30	8900.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N 32 34 57.03 W 103 30 11.10	
	9000.00	0.00	4.30	9000.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N 32 34 57.03 W 103 30 11.10	
KOP - Build 12"/100' DLS	9100.00	0.00	4.30	9100.00	0.00	0.00	0.00	0.00	576644.78	797068.47	N 32 34 57.03 W 103 30 11.10	
	9172.54	0.00	4.30	9172.54	0.00	0.00	0.00	0.00	576644.78	797068.47	N 32 34 57.03 W 103 30 11.10	
	9200.00	3.29	4.30	9199.98	0.79	0.79	0.06	12.00	576645.57	797068.53	N 32 34 57.04 W 103 30 11.10	
	9300.00	15.29	4.30	9298.49	16.85	16.86	1.27	12.00	576661.64	797069.74	N 32 34 57.19 W 103 30 11.08	
Build & Turn 12"/100' DLs	9400.00	27.29	4.30	9391.49	52.98	53.01	3.99	12.00	576697.79	797072.46	N 32 34 57.55 W 103 30 11.05	
	9464.21	35.00	4.30	9446.41	86.05	86.11	6.48	12.00	576730.88	797074.95	N 32 34 57.88 W 103 30 11.02	
	9500.00	39.28	3.62	9474.93	107.59	107.66	7.96	12.00	576752.43	797076.43	N 32 34 58.09 W 103 30 11.00	
1st Bone Spring Sand	9600.00	51.24	2.23	9545.20	178.37	178.46	11.49	12.00	576823.24	797079.96	N 32 34 58.79 W 103 30 10.95	
	9626.14	54.36	1.95	9561.00	199.17	199.26	12.25	12.00	576844.04	797080.72	N 32 34 59.00 W 103 30 10.94	
	9700.00	63.21	1.24	9599.24	262.23	262.35	13.99	12.00	576907.12	797082.46	N 32 34 59.62 W 103 30 10.91	
1 Bone Spring Sand Target	9800.00	75.18	0.45	9634.70	355.52	355.64	15.34	12.00	577000.42	797083.81	N 32 35 0.54 W 103 30 10.89	
	9899.72	87.13	359.74	9650.00	453.87	454.00	15.49	12.00	577098.77	797083.96	N 32 35 1.52 W 103 30 10.88	
	9900.00	87.16	359.74	9650.01	454.15	454.28	15.49	12.00	577099.05	797083.96	N 32 35 1.52 W 103 30 10.88	
Landing Point	9923.75	90.01	359.57	9650.60	477.89	478.02	15.35	12.00	577122.79	797083.82	N 32 35 1.76 W 103 30 10.88	
	10000.00	90.01	359.57	9650.59	554.14	554.27	14.78	0.00	577199.04	797083.25	N 32 35 2.51 W 103 30 10.88	
	10100.00	90.01	359.57	9650.57	654.14	654.26	14.04	0.00	577299.03	797082.51	N 32 35 3.50 W 103 30 10.88	
	10200.00	90.01	359.57	9650.56	754.14	754.26	13.30	0.00	577399.03	797081.77	N 32 35 4.49 W 103 30 10.88	
	10300.00	90.01	359.57	9650.54	854.14	854.26	12.55	0.00	577499.02	797081.02	N 32 35 5.48 W 103 30 10.88	
	10400.00	90.01	359.57	9650.53	954.14	954.26	11.81	0.00	577599.02	797080.28	N 32 35 6.47 W 103 30 10.87	
	10500.00	90.01	359.57	9650.51	1054.14	1054.25	11.07	0.00	577699.01	797079.54	N 32 35 7.46 W 103 30 10.87	
	10600.00	90.01	359.57	9650.50	1154.14	1154.25	10.32	0.00	577799.01	797078.79	N 32 35 8.45 W 103 30 10.87	
	10700.00	90.01	359.57	9650.48	1254.14	1254.25	9.58	0.00	577899.01	797078.05	N 32 35 9.44 W 103 30 10.87	
	10800.00	90.01	359.57	9650.47	1354.14	1354.25	8.84	0.00	577999.00	797077.31	N 32 35 10.43 W 103 30 10.87	
	10900.00	90.01	359.57	9650.45	1454.14	1454.24	8.09	0.00	578099.00	797076.56	N 32 35 11.42 W 103 30 10.87	
	11000.00	90.01	359.57	9650.44	1554.14	1554.24	7.35	0.00	578198.99	797075.82	N 32 35 12.40 W 103 30 10.87	
	11100.00	90.01	359.57	9650.42	1654.14	1654.24	6.61	0.00	578298.99	797075.08	N 32 35 13.39 W 103 30 10.87	
	11200.00	90.01	359.57	9650.40	1754.14	1754.23	5.86	0.00	578398.98	797074.33	N 32 35 14.38 W 103 30 10.87	
	11300.00	90.01	359.57	9650.39	1854.14	1854.23	5.12	0.00	578498.98	797073.59	N 32 35 15.37 W 103 30 10.87	
	11400.00	90.01	359.57	9650.37	1954.14	1954.23	4.38	0.00	578598.97	797072.85	N 32 35 16.36 W 103 30 10.87	
	11500.00	90.01	359.57	9650.36	2054.14	2054.23	3.63	0.00	578698.97	797072.10	N 32 35 17.35 W 103 30 10.87	
	11600.00	90.01	359.57	9650.34	2154.14	2154.22	2.89	0.00	578798.96	797071.36	N 32 35 18.34 W 103 30 10.87	
	11700.00	90.01	359.57	9650.33	2254.14	2254.22	2.15	0.00	578898.96	797070.62	N 32 35 19.33 W 103 30 10.87	
	11800.00	90.01	359.57	9650.31	2354.14	2354.22	1.40	0.00	578998.96	797069.87	N 32 35 20.32 W 103 30 10.87	
	11900.00	90.01	359.57	9650.30	2454.14	2454.21	0.66	0.00	579098.95	797069.13	N 32 35 21.31 W 103 30 10.87	
	12000.00	90.01	359.57	9650.28	2554.14	2554.21	-0.08	0.00	579198.95	797068.39	N 32 35 22.30 W 103 30 10.87	
	12100.00	90.01	359.57	9650.27	2654.14	2654.21	-0.83	0.00	579298.94	797067.64	N 32 35 23.29 W 103 30 10.87	
	12200.00	90.01	359.57	9650.25	2754.14	2754.21	-1.57	0.00	579398.94	797066.90	N 32 35 24.28 W 103 30 10.87	
	12300.00	90.01	359.57	9650.24	2854.14	2854.20	-2.31	0.00	579498.93	797066.16	N 32 35 25.27 W 103 30 10.87	
	12400.00	90.01	359.57	9650.22	2954.14	2954.20	-3.06	0.00	579598.93	797065.41	N 32 35 26.26 W 103 30 10.87	
	12500.00	90.01	359.57	9650.21	3054.14	3054.20	-3.80	0.00	579698.92	797064.67	N 32 35 27.25 W 103 30 10.87	
	12600.00	90.01	359.57	9650.19	3154.14	3154.20	-4.54	0.00	579798.92	797063.93	N 32 35 28.24 W 103 30 10.87	

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
1 Bone Spring Sand Target Cimarex Lea 7 Federal Com 57H - PBHL [100' FNL, 660' FWL]	12700.00	90.01	359.57	9650.18	3254.14	3254.19	-5.29	0.00	579898.91	797063.18	N 32 35 29.23 W 103 30 10.86	
	12800.00	90.01	359.57	9650.16	3354.14	3354.19	-6.03	0.00	579998.91	797062.44	N 32 35 30.21 W 103 30 10.86	
	12900.00	90.01	359.57	9650.15	3454.14	3454.19	-6.78	0.00	580098.90	797061.69	N 32 35 31.20 W 103 30 10.86	
	13000.00	90.01	359.57	9650.13	3554.14	3554.18	-7.52	0.00	580198.90	797060.95	N 32 35 32.19 W 103 30 10.86	
	13100.00	90.01	359.57	9650.11	3654.14	3654.18	-8.26	0.00	580298.90	797060.21	N 32 35 33.18 W 103 30 10.86	
	13200.00	90.01	359.57	9650.10	3754.14	3754.18	-9.01	0.00	580398.89	797059.46	N 32 35 34.17 W 103 30 10.86	
	13300.00	90.01	359.57	9650.08	3854.14	3854.18	-9.75	0.00	580498.89	797058.72	N 32 35 35.16 W 103 30 10.86	
	13400.00	90.01	359.57	9650.07	3954.14	3954.17	-10.49	0.00	580598.88	797057.98	N 32 35 36.15 W 103 30 10.86	
	13500.00	90.01	359.57	9650.05	4054.14	4054.17	-11.24	0.00	580698.88	797057.23	N 32 35 37.14 W 103 30 10.86	
	13600.00	90.01	359.57	9650.04	4154.14	4154.17	-11.98	0.00	580798.87	797056.49	N 32 35 38.13 W 103 30 10.86	
	13700.00	90.01	359.57	9650.02	4254.14	4254.16	-12.72	0.00	580898.87	797055.75	N 32 35 39.12 W 103 30 10.86	
	13800.00	90.01	359.57	9650.01	4354.14	4354.16	-13.47	0.00	580998.86	797055.00	N 32 35 40.11 W 103 30 10.86	
	13849.00	90.01	359.57	9650.00	4403.14	4403.16	-13.83	0.00	581047.86	797054.64	N 32 35 40.59 W 103 30 10.86	

Survey Type: Non-Def Plan

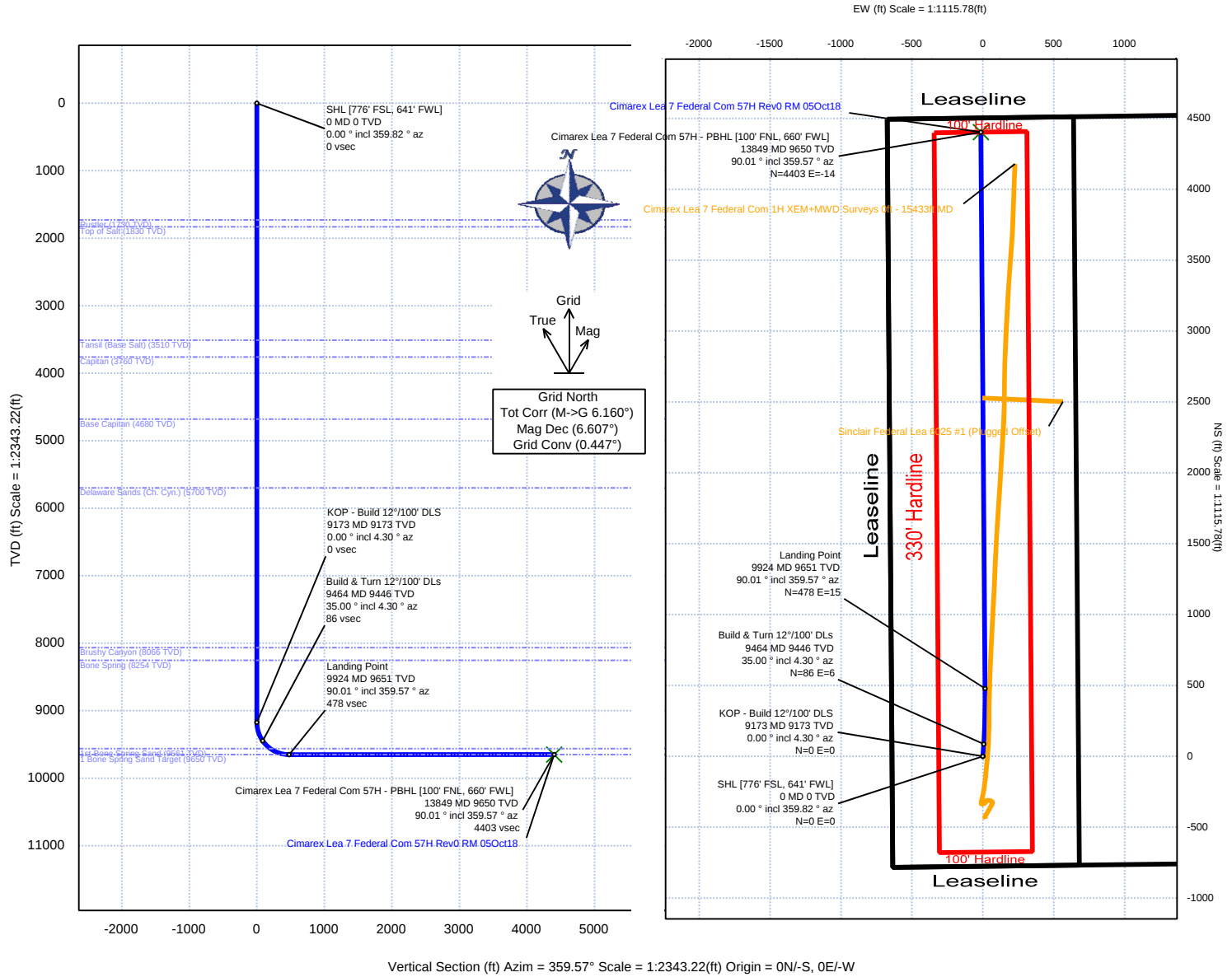
Survey Error Model: ISCWSA Rev 0 *** 3-D 95.000% Confidence 2.7955 sigma

Survey Program:

Description	Part	MD From (ft)	MD To (ft)	EOU Freq (ft)	Hole Size (in)	Casing Diameter (in)	Expected Max Inclination (deg)	Survey Tool Type	Borehole / Survey
	1	0.000	26.000	1/100.000	30.000	30.000		NAL_MWD_IFR1+MS-Depth Only	Lea 7 Federal Com 57H / Cimarex Lea 7 Federal Com 57H Rev0 RM 05Oct18
	1	26.000	13848.999	1/100.000	30.000	30.000		NAL_MWD_IFR1+MS	Lea 7 Federal Com 57H / Cimarex Lea 7 Federal Com 57H

Borehole:	Well:	Field:	Structure:
Lea 7 Federal Com 57H	Lea 7 Federal Com 57H	NM Lea County (NAD 83)	Cimarex Lea 7 Federal Com 57H

Gravity & Magnetic Parameters						Surface Location NAD83 New Mexico State Plane, Eastern Zone, US Feet						Miscellaneous			
Model:	HDGM 2018	Dip:	60.513°	Date:	05-Oct-2018	Lat:	N 32 34 57.03	Northing:	576644.78RUS	Grid Conv:	0.4471°	Slot:	New Slot	TVD Ref:	RKB(3696.7ft above MSL)
MagDec:	6.607°	FS:	48147.097nT	Gravity FS:	998.506mgN (9.80665 Based)	Lon:	W 103 30 11.10	Easting:	797068.47RUS	Scale Fact:	0.9998399	Plan:	Cimarex Lea 7 Federal Com 57H Rev0 RM 05Oct18		



Critical Points

Critical Point	MD	INCL	AZIM	TVD	VSEC	N(+)/S(-)	E(+)/W(-)	DLS
SHL [776' FSL, 641' FWL]	0.00	0.00	359.82	0.00	0.00	0.00	0.00	
Rustler	1730.00	0.00	4.30	1730.00	0.00	0.00	0.00	0.00
Top of Salt	1830.00	0.00	4.30	1830.00	0.00	0.00	0.00	0.00
Tansil (Base Salt)	3510.00	0.00	4.30	3510.00	0.00	0.00	0.00	0.00
Capitan	3760.00	0.00	4.30	3760.00	0.00	0.00	0.00	0.00
Base Capitan	4680.00	0.00	4.30	4680.00	0.00	0.00	0.00	0.00
Delaware Sands (Ch. Cyn.)	5700.00	0.00	4.30	5700.00	0.00	0.00	0.00	0.00
Brushy Canyon	8066.00	0.00	4.30	8066.00	0.00	0.00	0.00	0.00
Bone Spring	8254.00	0.00	4.30	8254.00	0.00	0.00	0.00	0.00
KOP - Build 12"/100' DLS	9172.54	0.00	4.30	9172.54	0.00	0.00	0.00	0.00
Build & Turn 12"/100' DLS	9464.21	35.00	4.30	9446.41	86.05	86.11	6.48	12.00
1st Bone Spring Sand	9626.14	54.36	1.95	9561.00	199.17	199.26	12.25	12.00
1 Bone Spring Sand Target	9899.72	87.13	359.74	9650.00	453.87	454.00	15.49	12.00
Landing Point	9923.75	90.01	359.57	9650.60	477.89	478.02	15.35	12.00
1 Bone Spring Sand Target	13849.00	90.01	359.57	9650.00	4403.14	4403.16	-13.83	0.00
Cimarex Lea 7 Federal Com 57H - PBHL [100' FNL, 660' FWL]	13849.00	90.01	359.57	9650.00	4403.14	4403.16	-13.83	0.00
2nd Bone Spring Carb	NaN			9688.00				

1. Geological Formations

TVD of target 9,650

Pilot Hole TD N/A

MD at TD 13,849

Deepest expected fresh water

Formation	Depth (TVD) from KB	Water/Mineral Bearing/Target Zone	Hazards
Rustler	1730	N/A	
Top Salt	1830	N/A	
Tansil (Base salt)	3510	N/A	
Capitan	3760	N/A	
Delaware Sand	5700	N/A	
Brushy Canyon	8066	Hydrocarbons	
Bone Spring	8254	Hydrocarbons	
1st Bone Spring	9561	Hydrocarbons	
1st Bone Spring Target	9650	Hydrocarbons	
2nd Bone Spring	9688	Hydrocarbons	

2. Casing Program

Hole Size	Casing Depth From	Casing Depth To	Setting Depth TVD	Casing Size	Weight (lb/ft)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
17 1/2	0	1780	1780	13-3/8"	54.50	J-55	BT&C	1.39	3.36	8.79
12 1/4	0	5680	5680	9-5/8"	40.00	J-55	LT&C	1.51	1.31	2.29
8 3/4	0	9173	9173	5-1/2"	17.00	L-80	LT&C	1.47	1.80	2.06
8 3/4	9173	13849	9650	5-1/2"	17.00	L-80	BT&C	1.39	1.71	48.96
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
Is AC Report included?	N

3. Cementing Program

Casing	# Sk	Wt. lb/gal	Yld ft ³ /sack	H ₂ O gal/sk	500# Comp. Strength (hours)	Slurry Description
Surface	863	13.50	1.72	9.15	15.5	Lead: Class C + Bentonite
	231	14.80	1.34	6.32	9.5	Tail: Class C + LCM
Intermediate Stage 1	293	12.90	1.88	9.65	12	Lead: 35:65 (Poz:C) + Salt + Bentonite
	292	14.80	1.34	6.32	9.5	Tail: Class C + LCM
Intermediate Stage 2	777	12.90	1.88	9.65	12	Lead: 35:65 (Poz:C) + Salt + Bentonite
Production	485	10.30	3.64	22.18		Lead: Tuned Light + LCM
	1420	14.20	1.30	5.86	14:30	Tail: 50:50 (Poz:H) + Salt + Bentonite + Fluid Loss + Dispersant + SMS

DV tool with possible annular casing packer as needed is proposed at a depth of +/- 3,510'.

Casing String	TOC	% Excess
Surface	0	45
Intermediate Stage 1	3510	50
Intermediate Stage 2	0	50
Production	5480	25

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		2M
			Pipe Ram		
			Double Ram	X	
			Other		
8 3/4	13 5/8	3M	Annular	X	50% of working pressure
			Blind Ram		3M
			Pipe Ram		
			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.

	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 1780'	FW Spud Mud	8.30 - 8.80	30-32	N/C
1780' to 5680'	Brine Water	9.70 - 10.20	30-32	N/C
5680' to 13849'	FW/Cut Brine	8.50 - 9.00	30-32	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
---	-----------------------------

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	4516 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	H ₂ S is present
X	H ₂ S 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 3000 psi will be installed on the wellhead system and will be pressure tested to 250 psi low followed by a 3000 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 3000 psi.

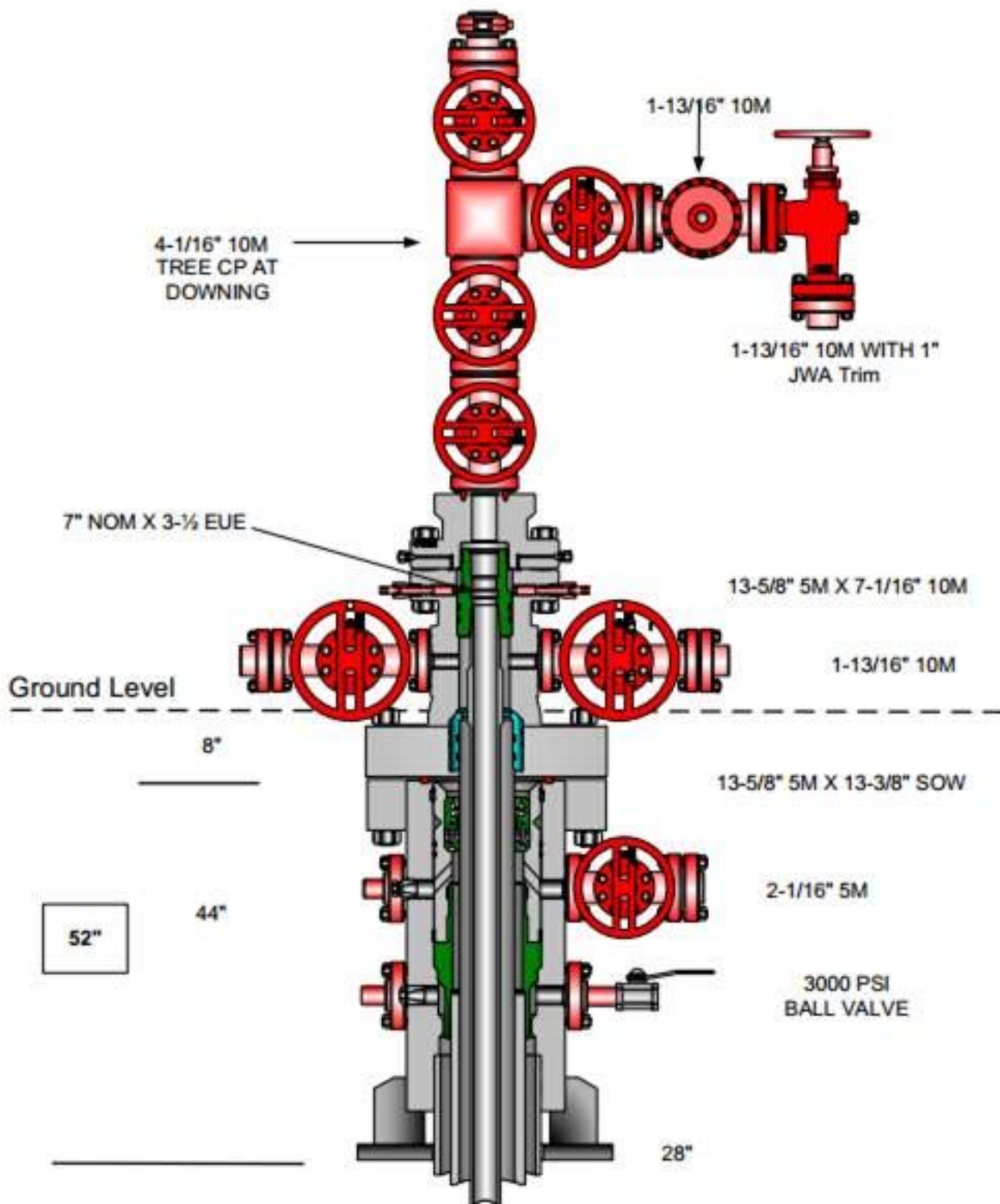
The surface casing string will be tested as per Onshore Order No. 2 to at least 0.22 psi/ft or 1500 psi, whichever is greater.

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.

Multi-bowl Wellhead Diagram

Lea 7 Federal Com 57H



Hole Size	Casing Depth From	Casing Depth To	Setting Depth TVD	Casing Size	Weight (lb/ft)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
17 1/2	0	1780	1780	13-3/8"	54.50	J-55	BT&C	1.39	3.36	8.79
12 1/4	0	5680	5680	9-5/8"	40.00	J-55	LT&C	1.51	1.31	2.29
8 3/4	0	9173	9173	5-1/2"	17.00	L-80	LT&C	1.47	1.80	2.06
8 3/4	9173	13849	9650	5-1/2"	17.00	L-80	BT&C	1.39	1.71	48.96
BLM Minimum Safety Factor								1.125	1	1.6 Dry 1.8 Wet



APD ID: 10400034954

Submission Date: 10/09/2018

Operator Name: CIMAREX ENERGY COMPANY

Well Name: LEA 7 FEDERAL COM

Well Number: 57H

Well Type: OIL WELL

Well Work Type: Drill

Section 1 - General

Would you like to address long-term produced water disposal? NO

Section 2 - Lined Pits

Would you like to utilize Lined Pit PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Lined pit PWD on or off channel:

Lined pit PWD discharge volume (bbl/day):

Lined pit specifications:

Pit liner description:

Pit liner manufacturers information:

Precipitated solids disposal:

Describe precipitated solids disposal:

Precipitated solids disposal permit:

Lined pit precipitated solids disposal schedule:

Lined pit precipitated solids disposal schedule attachment:

Lined pit reclamation description:

Lined pit reclamation attachment:

Leak detection system description:

Leak detection system attachment:

Operator Name: CIMAREX ENERGY COMPANY

Well Name: LEA 7 FEDERAL COM

Well Number: 57H

Lined pit Monitor description:

Lined pit Monitor attachment:

Lined pit: do you have a reclamation bond for the pit?

Is the reclamation bond a rider under the BLM bond?

Lined pit bond number:

Lined pit bond amount:

Additional bond information attachment:

Section 3 - Unlined Pits

Would you like to utilize Unlined Pit PWD options? NO

Produced Water Disposal (PWD) Location:

PWD disturbance (acres):

PWD surface owner:

Unlined pit PWD on or off channel:

Unlined pit PWD discharge volume (bbl/day):

Unlined pit specifications:

Precipitated solids disposal:

Describe precipitated solids disposal:

Precipitated solids disposal permit:

Unlined pit precipitated solids disposal schedule:

Unlined pit precipitated solids disposal schedule attachment:

Unlined pit reclamation description:

Unlined pit reclamation attachment:

Unlined pit Monitor description:

Unlined pit Monitor attachment:

Do you propose to put the produced water to beneficial use?

Beneficial use user confirmation:

Estimated depth of the shallowest aquifer (feet):

Does the produced water have an annual average Total Dissolved Solids (TDS) concentration equal to or less than that of the existing water to be protected?

TDS lab results:

Geologic and hydrologic evidence:

State authorization:

Unlined Produced Water Pit Estimated percolation:

Unlined pit: do you have a reclamation bond for the pit?

Operator Name: CIMAREX ENERGY COMPANY

Well Name: LEA 7 FEDERAL COM

Well Number: 57H

Is the reclamation bond a rider under the BLM bond?

Unlined pit bond number:

Unlined pit bond amount:

Additional bond information attachment:

Section 4 - Injection

Would you like to utilize Injection PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Injection PWD discharge volume (bbl/day):

Injection well mineral owner:

Injection well type:

Injection well number:

Injection well name:

Assigned injection well API number?

Injection well API number:

Injection well new surface disturbance (acres):

Minerals protection information:

Mineral protection attachment:

Underground Injection Control (UIC) Permit?

UIC Permit attachment:

Section 5 - Surface Discharge

Would you like to utilize Surface Discharge PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Surface discharge PWD discharge volume (bbl/day):

Surface Discharge NPDES Permit?

Surface Discharge NPDES Permit attachment:

Surface Discharge site facilities information:

Surface discharge site facilities map:

Section 6 - Other

Would you like to utilize Other PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Other PWD discharge volume (bbl/day):

Operator Name: CIMAREX ENERGY COMPANY

Well Name: LEA 7 FEDERAL COM

Well Number: 57H

Other PWD type description:

Other PWD type attachment:

Have other regulatory requirements been met?

Other regulatory requirements attachment:



APD ID: 10400034954

Submission Date: 10/09/2018

Highlighted data
reflects the most
recent changes

Operator Name: CIMAREX ENERGY COMPANY

Well Name: LEA 7 FEDERAL COM

Well Number: 57H

[Show Final Text](#)

Well Type: OIL WELL

Well Work Type: Drill

Bond Information

Federal/Indian APD: FED

BLM Bond number: NMB001188

BIA Bond number:

Do you have a reclamation bond? NO

Is the reclamation bond a rider under the BLM bond?

Is the reclamation bond BLM or Forest Service?

BLM reclamation bond number:

Forest Service reclamation bond number:

Forest Service reclamation bond attachment:

Reclamation bond number:

Reclamation bond amount:

Reclamation bond rider amount:

Additional reclamation bond information attachment: