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Form 3160-3
(June 2015)

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.
NMNM026394

6. If Indian, Allotee or Tribe Name

1a. Type of work: ☑ DRILL ☐ REENTER

1b. Type of Well: ☑ Oil Well ☐ Gas Well ☐ Other

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.
CASCADE 28 FEDERAL
85H (318104)

2. Name of Operator
CIMAREX ENERGY COMPANY (215099)

9. API Well No.
30-025-46313

3a. Address
600 N. Marienfeld St., Suite 600 Midland TX 79701

3b. Phone No. *(include area code)*
(432)620-1936

10. Field and Pool, or Exploratory (97900)
BONE SPRING / RED HILLS UPPER BOI

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*
At surface NWNE / 390 FNL / 1360 FEL / LAT 32.107722 / LONG -103.573181
At proposed prod. zone SESE / 330 FSL / 380 FEL / LAT 32.09518 / LONG -103.569985

11. Sec., T. R. M. or Blk. and Survey or Area
SEC 28 / T25S / R33E / NMP

14. Distance in miles and direction from nearest town or post office*
22 miles

12. County or Parish
LEA

13. State
NM

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any)
390 feet

16. No of acres in lease
2560

17. Spacing Unit dedicated to this well
160

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.
20 feet

19. Proposed Depth
9310 feet / 13805 feet

20. BLM/BIA Bond No. in file
FED: NMB001188

21. Elevations (Show whether DF, KDB, RT, GL, etc.)
3364 feet

22. Approximate date work will start*
08/01/2018

23. Estimated duration
30 days

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.
2. A Drilling Plan.
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).
4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
5. Operator certification.
6. Such other site specific information and/or plans as may be requested by the BLM.

25. Signature	Name *(Printed/Typed)*	Date
(Electronic Submission)	Aricka Easterling / Ph: (918)560-7060	03/15/2018
Title: Regulatory Analyst		
Approved by *(Signature)* (Electronic Submission)	Name *(Printed/Typed)* Cody Layton / Ph: (575)234-5959	Date 03/21/2019
Title: Assistant Field Manager Lands & Minerals	Office: CARLSBAD	

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.

OCP Rec 08/22/19

APPROVED WITH CONDITIONS

KZ 08/26/19

(Continued on page 2)

*(Instructions on page 2)

GV

Approval Date: 03/21/2019

INSTRUCTIONS

GENERAL: This form is designed for submitting proposals to perform certain well operations, as indicated on Federal and Indian lands and leases for action by appropriate Federal agencies, pursuant to applicable Federal laws and regulations. Any necessary special instructions concerning the use of this form and the number of copies to be submitted, particularly with regard to local, area, or regional procedures and practices, either are shown below or will be issued by, or may be obtained from local Federal offices.

ITEM I: If the proposal is to redrill to the same reservoir at a different subsurface location or to a new reservoir, use this form with appropriate notations. Consult applicable Federal regulations concerning subsequent work proposals or reports on the well.

ITEM 4: Locations on Federal or Indian land should be described in accordance with Federal requirements. Consult local Federal offices for specific instructions.

ITEM 14: Needed only when location of well cannot readily be found by road from the land or lease description. A plat, or plats, separate or on the reverse side, showing the roads to, and the surveyed location of, the wen, and any other required information, should be furnished when required by Federal agency offices.

ITEMS 15 AND 18: If well is to be, or has been directionany drilled, give distances for subsurface location of hole in any present or objective productive zone.

ITEM 22: Consult applicable Federal regulations, or appropriate officials, concerning approval of the proposal before operations are started.

ITEM 24: If the proposal will involve hydraulic fracturing operations, you must comply with 43 CFR 3162.3-3, including providing information about the protection of usable water. Operators should provide the best available information about all formations containing water and their depths. This information could include data and interpretation of resistivity logs run on nearby wells. Information may also be obtained from state or tribal regulatory agencies and from local BLM offices.

NOTICES

The Privacy Act of 1974 and regulation in 43 CFR 2.48(d) provide that you be furnished the following information in connection with information required by this application.

AUTHORITY: 30 U.S.C. 181 et seq., 25 U.S.C. 396; 43 CFR 3160

PRINCIPAL PURPOSES: The information will be used to: (1) process and evaluate your application for a permit to drill a new oil, gas, or service wen or to reenter a plugged and abandoned well; and (2) document, for administrative use, information for the management, disposal and use of National Resource Lands and resources including (a) analyzing your proposal to discover and extract the Federal or Indian resources encountered; (b) reviewing procedures and equipment and the projected impact on the land involved; and (c) evaluating the effects of the proposed operation on the surface and subsurface water and other environmental impacts.

ROUTINE USE: Information from the record and/or the record win be transferred to appropriate Federal, State, and local or foreign agencies, when relevant to civil, criminal or regulatory investigations or prosecution, in connection with congressional inquiries and for regulatory responsibilities.

EFFECT OE NOT PROVIDING INFORMATION: Filing of this application and disclosure of the information is mandatory only if you elect to initiate a drilling or reentry operation on an oil and gas lease.

The Paperwork Reduction Act of 1995 requires us to inform you that:

The BLM conects this information to anow evaluation of the technical, safety, and environmental factors involved with drilling for oil and/or gas on Federal and Indian oil and gas leases. This information will be used to analyze and approve applications. Response to this request is mandatory only if the operator elects to initiate drilling or reentry operations on an oil and gas lease. The BLM would like you to know that you do not have to respond to this or any other Federal agency-sponsored information collection unless it displays a currently valid OMB control number.

BURDEN HOURS STATEMENT: Public reporting burden for this form is estimated to average 8 hours per response, including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding the burden estimate or any other aspect of this form to U.S. Department of the Interior, Bureau of Land Management (1004-0137), Bureau Information Conection Clearance Officer (WO-630), 1849 C Street, N.W., Mail Stop 401 LS, Washington, D.C. 20240.

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Additional Operator Remarks

Location of Well

1. SHL: NWNE / 390 FNL / 1360 FEL / TWSP: 25S / RANGE: 33E / SECTION: 28 / LAT: 32.107722 / LONG: -103.573181 (TVD: 0 feet, MD: 0 feet)
   PPP: NENE / 389 FNL / 380 FEL / TWSP: 25S / RANGE: 33E / SECTION: 28 / LAT: 32.1077028 / LONG: -103.5700167 (TVD: 9075 feet, MD: 9165 feet)
   BHL: SESE / 330 FSL / 380 FEL / TWSP: 25S / RANGE: 33E / SECTION: 28 / LAT: 32.09518 / LONG: -103.569985 (TVD: 9310 feet, MD: 13805 feet)

BLM Point of Contact

Name: Priscilla Perez
Title: Legal Instruments Examiner
Phone: 5752345934
Email: pperez@blm.gov

Review and Appeal Rights

A person contesting a decision shall request a State Director review. This request must be filed within 20 working days of receipt of the Notice with the appropriate State Director (see 43 CFR 3165.3). The State Director review decision may be appealed to the Interior Board of Land Appeals, 801 North Quincy Street, Suite 300, Arlington, VA 22203 (see 43 CFR 3165.4). Contact the above listed Bureau of Land Management office for further information.

PECOS DISTRICT
DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	**CIMAREX ENERGY COMPANY**
LEASE NO.:	**NMNM026394**
WELL NAME & NO.:	**85H- CASCADE 28 FEDERAL**
SURFACE HOLE FOOTAGE:	**390'/N & 1360'/E**
BOTTOM HOLE FOOTAGE	**330'/S & 380'/E**
LOCATION:	**Section.28.,T25S., R.33E., NMP**
COUNTY:	**LEA County, New Mexico**

COA

H2S	○ Yes	◉ No	
Potash	◉ None	○ Secretary	○ R-111-P
Cave/Karst Potential	◉ Low	○ Medium	○ High
Variance	○ None	◉ Flex Hose	○ Other
Wellhead	○ Conventional	◉ Multibowl	○ Both
Other	☐ 4 String Area	☐ Capitan Reef	☐ WIPP
Other	☐ Fluid Filled	☐ Cement Squeeze	☐ Pilot Hole
Special Requirements	☐ Water Disposal	☐ COM	☐ Unit

A. HYDROGEN SULFIDE

Hydrogen Sulfide (H2S) monitors shall be installed prior to drilling out the surface shoe. If H2S is detected in concentrations greater than 100 ppm, the Hydrogen Sulfide area shall meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, provide measured values and formations to the BLM.

B. CASING

1. The **13-3/8** inch surface casing shall be set at approximately **1045** feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt) and cemented to the surface.

    a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.
    b. Wait on cement (WOC) time for a primary cement job will be a minimum of **8 hours** or 500 pounds compressive strength, whichever is greater. (This is to include the lead cement)

c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.
d. If cement falls back, remedial cementing will be done prior to drilling out that string.

Operator shall filled 1/3rd casing with fluid while running intermediate casing to maintain collapse safety factor.

2. The minimum required fill of cement behind the **9-5/8** inch intermediate casing is:
   - Cement to surface. If cement does not circulate see B.1.a, c-d above.

Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst or potash.

3. The minimum required fill of cement behind the **5-1/2** inch production casing is:
   - Cement should tie-back at least **200 feet** into previous casing string. Operator shall provide method of verification.

C. PRESSURE CONTROL

1. Variance approved to use flex line from BOP to choke manifold. Manufacturer's specification to be readily available. No external damage to flex line. Flex line to be installed as straight as possible (no hard bends).

2. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **5000 (5M)** psi.

3. Operator has proposed a multi-bowl wellhead assembly. This assembly will only be tested when installed on the surface casing. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the intermediate casing shoe shall be **10,000 (10M)** psi. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.

   a. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
   b. Manufacturer representative shall install the test plug for the initial BOP test.
   c. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.
   d. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.

GENERAL REQUIREMENTS

The BLM is to be notified in advance for a representative to witness:

a. Spudding well (minimum of 24 hours)
b. Setting and/or Cementing of all casing strings (minimum of 4 hours)
c. BOPE tests (minimum of 4 hours)

☒ Chaves and Roosevelt Counties
Call the Roswell Field Office, 2909 West Second St., Roswell NM 88201.
During office hours call (575) 627-0272.
After office hours call (575)

☒ Eddy County
Call the Carlsbad Field Office, 620 East Greene St., Carlsbad, NM 88220, (575) 361-2822

☒ Lea County
Call the Hobbs Field Station, 414 West Taylor, Hobbs NM 88240, (575) 393-3612

1. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval.

   a. In the event the operator has proposed to drill multiple wells utilizing a skid/walking rig. Operator shall secure the wellbore on the current well, after installing and testing the wellhead, by installing a blind flange of like pressure rating to the wellhead and a pressure gauge that can be monitored while drilling is performed on the other well(s).
   b. When the operator proposes to set surface casing with Spudder Rig
      - Notify the BLM when moving in and removing the Spudder Rig.
      - Notify the BLM when moving in the 2nd Rig. Rig to be moved in within 90 days of notification that Spudder Rig has left the location.
      - BOP/BOPE test to be conducted per Onshore Oil and Gas Order No. 2 as soon as 2nd Rig is rigged up on well.

2. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works are located, this does not include the dog house or stairway area.

3. The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well – vertical portion of hole) shall be submitted to the BLM office as

well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.

A. CASING

1. Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size or are Non-API. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.). The initial wellhead installed on the well will remain on the well with spools used as needed.

2. Wait on cement (WOC) for Potash Areas: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi for all cement blends, 2) until cement has been in place at least 24 hours. WOC time will be recorded in the driller's log.

3. Wait on cement (WOC) for Water Basin: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi at the shoe, 2) until cement has been in place at least 8 hours. WOC time will be recorded in the driller's log. See individual casing strings for details regarding lead cement slurry requirements.

4. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. Have well specific cement details onsite prior to pumping the cement for each casing string.

5. No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.

6. 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. Formation at the shoe shall be tested to a minimum of the mud weight equivalent anticipated to control the formation pressure to the next casing depth or at total depth of the well. This test shall be performed before drilling more than 20 feet of new hole.

7. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.
8. Whenever a casing string is cemented in the R-111-P potash area, the NMOCD requirements shall be followed.

B. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.

2. If a variance is approved for a flexible hose to be installed from the BOP to the choke manifold, the following requirements apply: Check condition of flexible line from BOP to choke manifold, replace if exterior is damaged or if line fails test. Line to be as straight as possible with no hard bends and is to be anchored according to Manufacturer's requirements. The flexible hose can be exchanged with a hose of equal size and equal or greater pressure rating. Anchor requirements, specification sheet and hydrostatic pressure test certification matching the hose in service, to be onsite for review. These documents shall be posted in the company man's trailer and on the rig floor.

3. 5M or higher system requires an HCR valve, remote kill line and annular to match. The remote kill line is to be installed prior to testing the system and tested to stack pressure.

4. If the operator has proposed a multi-bowl wellhead assembly in the APD. The following requirements must be met:

    a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
    b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
    c. Manufacturer representative shall install the test plug for the initial BOP test.
    d. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.
    e. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.

5. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.

    a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin

after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).

b. In potash areas, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. For all casing strings, casing cut-off and BOP installation can be initiated at twelve hours after bumping the plug. However, **no tests** shall commence until the cement has had a minimum of 24 hours setup time.

c. The tests shall be done by an independent service company utilizing a test plug not a cup or J-packer. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to Onshore Order 2 with the pressure not to exceed 70% of the burst rating for the casing. Any test against the casing must meet the WOC time for water basin (8 hours) or potash (24 hours) or 500 pounds compressive strength, whichever is greater, prior to initiating the test (see casing segment as lead cement may be critical item).

d. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.

e. The results of the test shall be reported to the appropriate BLM office.

f. All tests are required to be recorded on a calibrated test chart. A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.

g. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.

h. BOP/BOPE must be tested by an independent service company within 500 feet of the top of the Wolfcamp formation if the time between the setting of the intermediate casing and reaching this depth exceeds 20 days. This test does not exclude the test prior to drilling out the casing shoe as per Onshore Order No. 2.

C. DRILLING MUD

Mud system monitoring equipment, with derrick floor indicators and visual and audio alarms, shall be operating before drilling into the Wolfcamp formation, and shall be used until production casing is run and cemented.

D. WASTE MATERIAL AND FLUIDS

All waste (i.e. drilling fluids, trash, salts, chemicals, sewage, gray water, etc.) created as a result of drilling operations and completion operations shall be safely contained and disposed of properly at a waste disposal facility. No waste material or fluid shall be disposed of on the well location or surrounding area.

Porto-johns and trash containers will be on-location during fracturing operations or any other crew-intensive operations.

ZS 022819

PECOS DISTRICT
SURFACE USE
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	CIMAREX ENERGY COMPANY
LEASE NO.:	NMNM026394
WELL NAME & NO.:	85H- CASCADE 28 FEDERAL
SURFACE HOLE FOOTAGE:	390'/N & 1360'/E
BOTTOM HOLE FOOTAGE	330'/S & 380'/E
LOCATION:	Section.28.,T25S., R.33E., NMP
COUNTY:	LEA County, New Mexico

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Standard Conditions of Approval (COA) apply to this APD. If any deviations to these standards exist or special COAs are required, the section with the deviation or requirement will be checked below.

Approval Date: 03/21/2019

I. GENERAL PROVISIONS

The approval of the Application For Permit To Drill (APD) is in compliance with all applicable laws and regulations: 43 Code of Federal Regulations 3160, the lease terms, Onshore Oil and Gas Orders, Notices To Lessees, New Mexico Oil Conservation Division (NMOCD) Rules, National Historical Preservation Act As Amended, and instructions and orders of the Authorized Officer. Any request for a variance shall be submitted to the Authorized Officer on Form 3160-5, Sundry Notices and Report on Wells.

II. PERMIT EXPIRATION

If the permit terminates prior to drilling and drilling cannot be commenced within 60 days after expiration, an operator is required to submit Form 3160-5, Sundry Notices and Reports on Wells, requesting surface reclamation requirements for any surface disturbance. However, if the operator will be able to initiate drilling within 60 days after the expiration of the permit, the operator must have set the conductor pipe in order to allow for an extension of 60 days beyond the expiration date of the APD. (Filing of a Sundry Notice is required for this 60 day extension.)

III. ARCHAEOLOGICAL, PALEONTOLOGY & HISTORICAL SITES

Any cultural and/or paleontological resource discovered by the operator or by any person working on the operator's behalf shall immediately report such findings to the Authorized Officer. The operator is fully accountable for the actions of their contractors and subcontractors. The operator shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery shall be made by the Authorized Officer to determine the appropriate actions that shall be required to prevent the loss of significant cultural or scientific values of the discovery. The operator shall be held responsible for the cost of the proper mitigation measures that the Authorized Officer assesses after consultation with the operator on the evaluation and decisions of the discovery. Any unauthorized collection or disturbance of cultural or paleontological resources may result in a shutdown order by the Authorized Officer.

IV. NOXIOUS WEEDS

The operator shall be held responsible if noxious weeds become established within the areas of operations. Weed control shall be required on the disturbed land where noxious weeds exist, which includes the roads, pads, associated pipeline corridor, and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA and BLM requirements and policies.

V. SPECIAL REQUIREMENT(S)

Wildlife Mitigation Measures:

Timing Limitation Stipulation/Condition of Approval for Lesser Prairie-Chicken:
Oil and gas activities including 3-D geophysical exploration, and drilling will not be allowed in lesser prairie-chicken habitat during the period from March 1st through June 15th annually. During that period, other activities that produce noise or involve human activity, such as the maintenance of oil and gas facilities, geophysical exploration other than 3-D operations, and pipeline, road, and well pad construction, will be allowed except between 3:00 am and 9:00 am. The 3:00 am to 9:00 am restriction will not apply to normal, around-the-clock operations, such as venting, flaring, or pumping, which do not require a human presence during this period. Additionally, no new drilling will be allowed within up to 200 meters of leks known at the time of permitting. Normal vehicle use on existing roads will not be restricted. Exhaust noise from pump jack engines must be muffled or otherwise controlled so as not to exceed 75 db measured at 30 ft. from the source of the noise.

Timing Limitation Exceptions:
The Carlsbad Field Office will publish an annual map of where the LPC timing and noise stipulations and conditions of approval (Limitations) will apply for the identified year (between March 1 and June 15) based on the latest survey information. The LPC Timing Area map will identify areas which are Habitat Areas (HA), Isolated Population Area (IPA), and Primary Population Area (PPA). The LPC Timing Area map will also have an area in red crosshatch. The red crosshatch area is the only area where an operator is required to submit a request for exception to the LPC Limitations. If an operator is operating outside the red crosshatch area, the LPC Limitations do not apply for that year and an exception to LPC Limitations is not required.

Below Ground-level Abandoned Well Marker to avoid raptor perching:
Upon the plugging and subsequent abandonment of the well, the well marker will be installed at ground level on a plate containing the pertinent information for the plugged well. For more installation details, contact the Carlsbad Field Office at 575-234-5972.

Rangeland Management Mitigation Measure:
Any damage to structures that provide water to livestock throughout the life of the well, caused by operations from the well site, must be immediately corrected by the operator. The operator must notify the BLM office (575-234-5972) and the private surface landowner or the grazing allotment holder if any damage occurs to structures that provide water to livestock.

Hydrology/Watershed Mitigation Measure:
The entire well pad will be bermed to prevent oil, salt, and other chemical contaminants from leaving the well pad. The compacted berm shall be constructed at a minimum of 12 inches with impermeable mineral material (e.g. caliche). Topsoil shall not be used to construct the berm. No water flow from the uphill side(s) of the pad shall be allowed to enter the well pad. The integrity of the berm shall be maintained around the surfaced pad

throughout the life of the well and around the downsized pad after interim reclamation has been completed. Any water erosion that may occur due to the construction of the well pad during the life of the well will be quickly corrected and proper measures will be taken to prevent future erosion. Stockpiling of topsoil is required. The top soil shall be stockpiled in an appropriate location to prevent loss of soil due to water or wind erosion and not used for berming or erosion control. If fluid collects within the bermed area, the fluid must be vacuumed into a safe container and disposed of properly at a state approved facility.

Tank battery locations will be lined and bermed. A 20 mil permanent liner will be installed with a 4 oz. felt backing to prevent tears or punctures. Tank battery berms must be large enough to contain 1 ½ times the content of the largest tank or 24 hour production, whichever is greater. Automatic shut off, check valves, or similar systems will be installed for tanks to minimize the effects of catastrophic line failures used in production or drilling.

A leak detection plan will be submitted to the BLM Carlsbad Field Office for approval prior to pipeline installation. The method could incorporate gauges to detect pressure drops, situating valves and lines so they can be visually inspected periodically or installing electronic sensors to alarm when a leak is present. The leak detection plan will incorporate an automatic shut off system that will be installed for proposed pipelines to minimize the effects of an undesirable event.

Electric Lines: Any water erosion that may occur due to the construction of overhead electric line and during the life of the power line will be quickly corrected and proper measures will be taken to prevent future erosion.

VI. CONSTRUCTION

A. NOTIFICATION

The BLM shall administer compliance and monitor construction of the access road and well pad. Notify the Carlsbad Field Office at (575) 234-5909 at least 3 working days prior to commencing construction of the access road and/or well pad.

When construction operations are being conducted on this well, the operator shall have the approved APD and Conditions of Approval (COA) on the well site and they shall be made available upon request by the Authorized Officer.

B. TOPSOIL

The operator shall strip the top portion of the soil (root zone) from the entire well pad area and stockpile the topsoil along the edge of the well pad as depicted in the APD. The root zone is typically six (6) inches in depth. All the stockpiled topsoil will be redistributed over the interim reclamation areas. Topsoil shall not be used for berming the pad or facilities. For final reclamation, the topsoil shall be spread over the entire pad area for seeding preparation.

Other subsoil (below six inches) stockpiles must be completely segregated from the topsoil stockpile. Large rocks or subsoil clods (not evident in the surrounding terrain) must be buried within the approved area for interim and final reclamation.

C. CLOSED LOOP SYSTEM

Tanks are required for drilling operations: No Pits.

The operator shall properly dispose of drilling contents at an authorized disposal site.

D. FEDERAL MINERAL MATERIALS PIT

Payment shall be made to the BLM prior to removal of any federal mineral materials. Call the Carlsbad Field Office at (575) 234-5972.

E. WELL PAD SURFACING

Surfacing of the well pad is not required.

If the operator elects to surface the well pad, the surfacing material may be required to be removed at the time of reclamation. The well pad shall be constructed in a manner which creates the smallest possible surface disturbance, consistent with safety and operational needs.

F. EXCLOSURE FENCING (CELLARS & PITS)

Exclosure Fencing
The operator will install and maintain exclosure fencing for all open well cellars to prevent access to public, livestock, and large forms of wildlife before and after drilling operations until the pit is free of fluids and the operator initiates backfilling. (For examples of exclosure fencing design, refer to BLM's Oil and Gas Gold Book, Exclosure Fence Illustrations, Figure 1, Page 18.)

G. ON LEASE ACCESS ROADS

Road Width
The access road shall have a driving surface that creates the smallest possible surface disturbance and does not exceed fourteen (14) feet in width. The maximum width of surface disturbance, when constructing the access road, shall not exceed twenty-five (25) feet.

Surfacing
Surfacing material is not required on the new access road driving surface. If the operator elects to surface the new access road or pad, the surfacing material may be required to be removed at the time of reclamation.

Where possible, no improvements should be made on the unsurfaced access road other than to remove vegetation as necessary, road irregularities, safety issues, or to fill low areas that may sustain standing water.

The Authorized Officer reserves the right to require surfacing of any portion of the access road at any time deemed necessary. Surfacing may be required in the event the road deteriorates, erodes, road traffic increases, or it is determined to be beneficial for future field development. The surfacing depth and type of material will be determined at the time of notification.

Crowning
Crowning shall be done on the access road driving surface. The road crown shall have a grade of approximately 2% (i.e., a 1" crown on a 14' wide road). The road shall conform to Figure 1; cross section and plans for typical road construction.

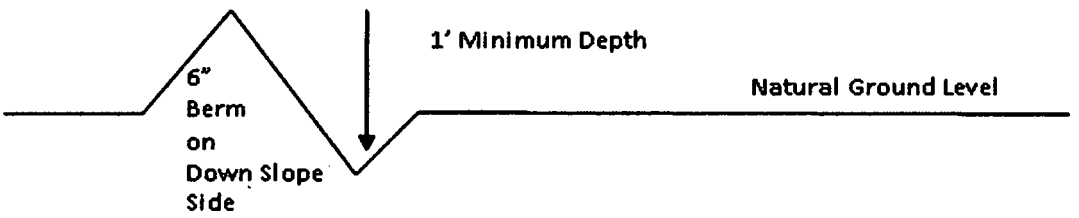
Ditching
Ditching shall be required on both sides of the road.

Turnouts
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall conform to Figure 1; cross section and plans for typical road construction.

Drainage
Drainage control systems shall be constructed on the entire length of road (e.g. ditches, sidehill outsloping and insloping, lead-off ditches, culvert installation, and low water crossings).

A typical lead-off ditch has a minimum depth of 1 foot below and a berm of 6 inches above natural ground level. The berm shall be on the down-slope side of the lead-off ditch.

Cross Section of a Typical Lead-off Ditch



All lead-off ditches shall be graded to drain water with a 1 percent minimum to 3 percent maximum ditch slope. The spacing interval are variable for lead-off ditches and shall be determined according to the formula for spacing intervals of lead-off ditches, but may be amended depending upon existing soil types and centerline road slope (in %);

Formula for Spacing Interval of Lead-off Ditches

Example - On a 4% road slope that is 400 feet long, the water flow shall drain water into a lead-off ditch. Spacing interval shall be determined by the following formula:

400 foot road with 4% road slope: $\frac{400'}{4\%} + 100' = 200'$ lead-off ditch interval

Cattle guards
An appropriately sized cattle guard sufficient to carry out the project shall be installed and maintained at fence/road crossings. Any existing cattle guards on the access road route shall be repaired or replaced if they are damaged or have deteriorated beyond practical use. The operator shall be responsible for the condition of the existing cattle guards that are in place and are utilized during lease operations.

Fence Requirement
Where entry is granted across a fence line, the fence shall be braced and tied off on both sides of the passageway prior to cutting. The operator shall notify the private surface landowner or the grazing allotment holder prior to crossing any fences.

Public Access
Public access on this road shall not be restricted by the operator without specific written approval granted by the Authorized Officer.

Construction Steps

1. Salvage topsoil
2. Construct road
3. Redistribute topsoil
4. Revegetate slopes

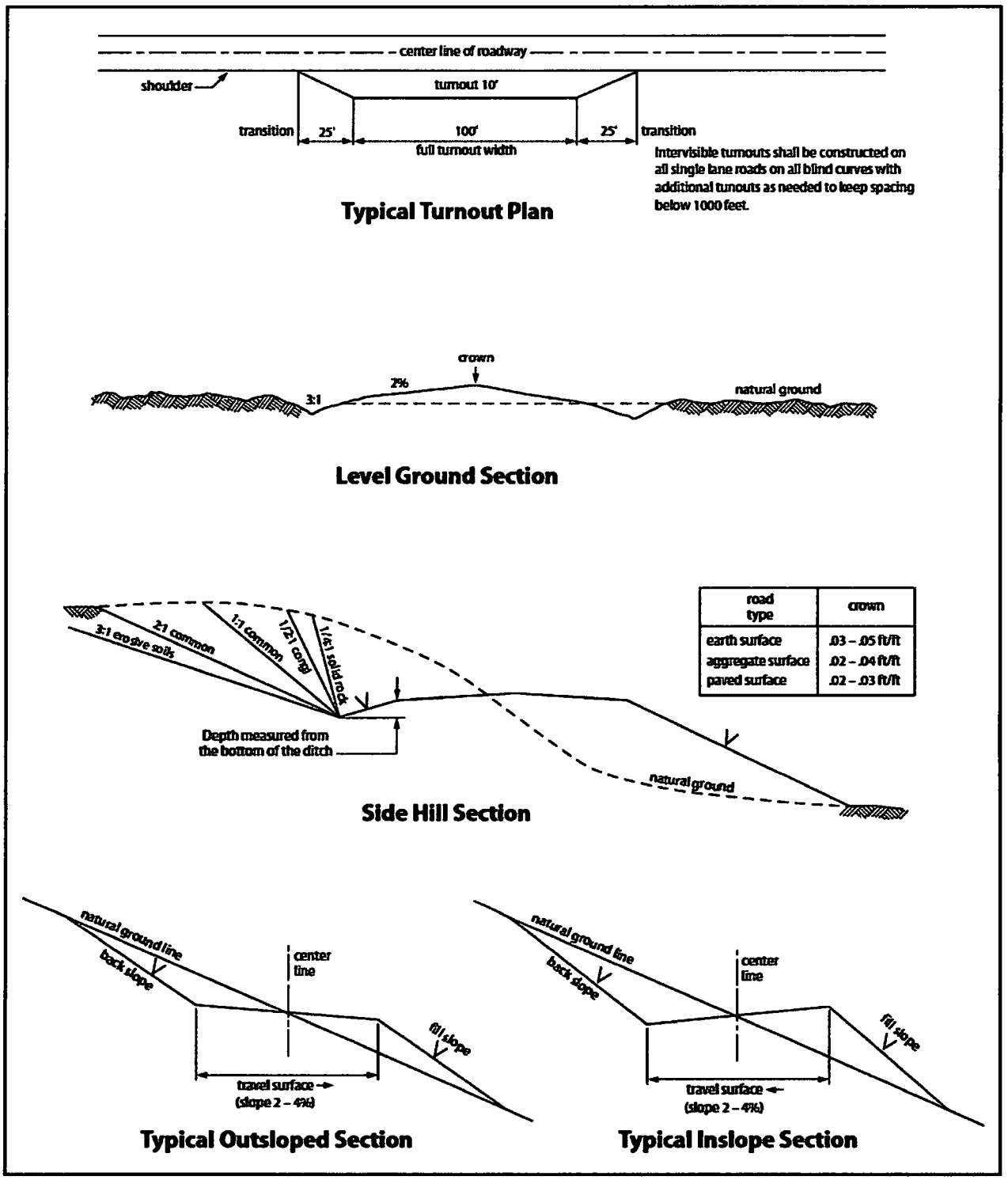


Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.

VII. PRODUCTION (POST DRILLING)

A. WELL STRUCTURES & FACILITIES

Placement of Production Facilities
Production facilities should be placed on the well pad to allow for maximum interim recontouring and revegetation of the well location.

Exclosure Netting (Open-top Tanks)
Immediately following active drilling or completion operations, the operator will take actions necessary to prevent wildlife and livestock access, including avian wildlife, to all open-topped tanks that contain or have the potential to contain salinity sufficient to cause harm to wildlife or livestock, hydrocarbons, or Resource Conservation and Recovery Act of 1976-exempt hazardous substances. At a minimum, the operator will net, screen, or cover open-topped tanks to exclude wildlife and livestock and prevent mortality. If the operator uses netting, the operator will cover and secure the open portion of the tank to prevent wildlife entry. The operator will net, screen, or cover the tanks until the operator removes the tanks from the location or the tanks no longer contain substances that could be harmful to wildlife or livestock. Use a maximum netting mesh size of 1 ½ inches. The netting must not be in contact with fluids and must not have holes or gaps.

Chemical and Fuel Secondary Containment and Exclosure Screening
The operator will prevent all hazardous, poisonous, flammable, and toxic substances from coming into contact with soil and water. At a minimum, the operator will install and maintain an impervious secondary containment system for any tank or barrel containing hazardous, poisonous, flammable, or toxic substances sufficient to contain the contents of the tank or barrel and any drips, leaks, and anticipated precipitation. The operator will dispose of fluids within the containment system that do not meet applicable state or U. S. Environmental Protection Agency livestock water standards in accordance with state law; the operator must not drain the fluids to the soil or ground. The operator will design, construct, and maintain all secondary containment systems to prevent wildlife and livestock exposure to harmful substances. At a minimum, the operator will install effective wildlife and livestock exclosure systems such as fencing, netting, expanded metal mesh, lids, and grate covers. Use a maximum netting mesh size of 1 ½ inches.

Open-Vent Exhaust Stack Exclosures
The operator will construct, modify, equip, and maintain all open-vent exhaust stacks on production equipment to prevent birds and bats from entering, and to discourage perching, roosting, and nesting. (*Recommended exclosure structures on open-vent exhaust stacks are in the shape of a cone.*) Production equipment includes, but may not be limited to, tanks, heater-treaters, separators, dehydrators, flare stacks, in-line units, and compressor mufflers.

Containment Structures

Proposed production facilities such as storage tanks and other vessels will have a secondary containment structure that is constructed to hold the capacity of 1.5 times the largest tank, plus freeboard to account for precipitation, unless more stringent protective requirements are deemed necessary.

Painting Requirement
All above-ground structures including meter housing that are not subject to safety requirements shall be painted a flat non-reflective paint color, **Shale Green** from the BLM Standard Environmental Color Chart (CC-001: June 2008).

B. PIPELINES

BURIED PIPELINE STIPULATIONS

A copy of the application (Grant, APD, or Sundry Notice) and attachments, including conditions of approval, survey plat and/or map, will be on location during construction. BLM personnel may request to you a copy of your permit during construction to ensure compliance with all stipulations.

Holder agrees to comply with the following stipulations to the satisfaction of the Authorized Officer:

1. The Holder shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of public lands under this grant.

2. The Holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the holder shall comply with the Toxic Substances Control Act of 1976 as amended, 15 USC 2601 et seq. (1982) with regards to any toxic substances that are used, generated by or stored on the right-of-way or on facilities authorized under this right-of-way grant. (See 40 CFR Part 702-799 and especially, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193.) Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation, and Liability Act, section 102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the authorized officer concurrent with the filing of the reports to the involved Federal agency or State government.

3. The holder agrees to indemnify the United States against any liability arising from the release of any hazardous substance or hazardous waste (as these terms are defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. 9601, et seq. or the Resource Conservation and Recovery Act, 42 U.S.C.6901, et seq.) on the Right-of-Way (unless the release or threatened release is wholly unrelated to the Right-of-Way holder's activity on the Right-of-Way), or resulting from the activity of

the Right-of-Way holder on the Right-of-Way. This agreement applies without regard to whether a release is caused by the holder, its agent, or unrelated third parties.

4. If, during any phase of the construction, operation, maintenance, or termination of the pipeline, any oil or other pollutant should be discharged from the pipeline system, impacting Federal lands, the control and total removal, disposal, and cleaning up of such oil or other pollutant, wherever found, shall be the responsibility of holder, regardless of fault. Upon failure of holder to control, dispose of, or clean up such discharge on or affecting Federal lands, or to repair all damages resulting therefrom, on the Federal lands, the Authorized Officer may take such measures as he deems necessary to control and clean up the discharge and restore the area, including where appropriate, the aquatic environment and fish and wildlife habitats, at the full expense of the holder. Such action by the Authorized Officer shall not relieve holder of any responsibility as provided herein.

5. All construction and maintenance activity will be confined to the authorized right-of-way.

6. The pipeline will be buried with a minimum cover of **36** inches between the top of the pipe and ground level.

7. The maximum allowable disturbance for construction in this right-of-way will be **30** feet:

- Blading of vegetation within the right-of-way will be allowed: maximum width of blading operations will not exceed **20** feet. The trench is included in this area. (*Blading is defined as the complete removal of brush and ground vegetation.*)

- Clearing of brush species within the right-of-way will be allowed: maximum width of clearing operations will not exceed **30** feet. The trench and bladed area are included in this area. (*Clearing is defined as the removal of brush while leaving ground vegetation (grasses, weeds, etc.) intact. Clearing is best accomplished by holding the blade 4 to 6 inches above the ground surface.*)

- The remaining area of the right-of-way (if any) shall only be disturbed by compressing the vegetation. (*Compressing can be caused by vehicle tires, placement of equipment, etc.*)

8. The holder shall stockpile an adequate amount of topsoil where blading is allowed. The topsoil to be stripped is approximately 6 inches in depth. The topsoil will be

segregated from other spoil piles from trench construction. The topsoil will be evenly distributed over the bladed area for the preparation of seeding.

9. The holder shall minimize disturbance to existing fences and other improvements on public lands. The holder is required to promptly repair improvements to at least their former state. Functional use of these improvements will be maintained at all times. The holder will contact the owner of any improvements prior to disturbing them. When necessary to pass through a fence line, the fence shall be braced on both sides of the passageway prior to cutting of the fence. No permanent gates will be allowed unless approved by the Authorized Officer.

10. Vegetation, soil, and rocks left as a result of construction or maintenance activity will be randomly scattered on this right-of-way and will not be left in rows, piles, or berms, unless otherwise approved by the Authorized Officer. The entire right-of-way shall be recontoured to match the surrounding landscape. The backfilled soil shall be compacted and a 6 inch berm will be left over the ditch line to allow for settling back to grade.

11. In those areas where erosion control structures are required to stabilize soil conditions, the holder will install such structures as are suitable for the specific soil conditions being encountered and which are in accordance with sound resource management practices.

12. The holder will reseed all disturbed areas. Seeding will be done according to the attached seeding requirements, using the following seed mix.

( ) seed mixture 1	( ) seed mixture 3
( ) seed mixture 2	( ) seed mixture 4
(X) seed mixture 2/LPC	( ) Aplomado Falcon Mixture

13. All above-ground structures not subject to safety requirements shall be painted by the holder to blend with the natural color of the landscape. The paint used shall be color which simulates "Standard Environmental Colors" – **Shale Green**, Munsell Soil Color No. 5Y 4/2.

14. The pipeline will be identified by signs at the point of origin and completion of the right-of-way and at all road crossings. At a minimum, signs will state the holder's name, BLM serial number, and the product being transported. All signs and information thereon will be posted in a permanent, conspicuous manner, and will be maintained in a legible condition for the life of the pipeline.

15. The holder shall not use the pipeline route as a road for purposes other than routine maintenance as determined necessary by the Authorized Officer in consultation with the holder before maintenance begins. The holder will take whatever steps are necessary to ensure that the pipeline route is not used as a roadway. As determined necessary during the life of the pipeline, the Authorized Officer may ask the holder to construct temporary deterrence structures.

16. Any cultural and/or paleontological resources (historic or prehistoric site or object) discovered by the holder, or any person working on his behalf, on public or Federal land shall be immediately reported to the Authorized Officer. Holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery will be made by the Authorized Officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

17. The operator shall be held responsible if noxious weeds become established within the areas of operations. Weed control shall be required on the disturbed land where noxious weeds exist, which includes associated roads, pipeline corridor and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA and BLM requirements and policies.

18. Escape Ramps - The operator will construct and maintain pipeline/utility trenches [that are not otherwise fenced, screened, or netted] to prevent livestock, wildlife, and humans from becoming entrapped. At a minimum, the operator will construct and maintain escape ramps, ladders, or other methods of avian and terrestrial wildlife escape in the trenches according to the following criteria:

a. Any trench left open for eight (8) hours or less is not required to have escape ramps; however, before the trench is backfilled, the contractor/operator shall inspect the trench for wildlife, remove all trapped wildlife, and release them at least 100 yards from the trench.
b. For trenches left open for eight (8) hours or more, earthen escape ramps (built at no more than a 30 degree slope and spaced no more than 500 feet apart) shall be placed in the trench.

STANDARD STIPULATIONS FOR SURFACE INSTALLED PIPELINES

A copy of the application (Grant, Sundry Notice, APD) and attachments, including stipulations, survey plat and/or map, will be on location during construction. BLM personnel may request to you a copy of your permit during construction to ensure compliance with all stipulations.

Holder agrees to comply with the following stipulations to the satisfaction of the Authorized Officer:

1. The holder shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of public lands under this grant.

2. The holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the holder shall comply with the Toxic Substances Control Act of 1976 as amended, 15 USC 2601 et seq. (1982) with regards to any toxic substances that are used, generated by or stored on the right-of-way or on facilities authorized under this right-of-way grant. (See 40 CFR, Part 702-799 and especially, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193.) Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR, Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation, and Liability Act, section 102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the authorized officer concurrent with the filing of the reports to the involved Federal agency or State government.

3. The holder agrees to indemnify the United States against any liability arising from the release of any hazardous substance or hazardous waste (as these terms are defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. 9601, et seq. or the Resource Conservation and Recovery Act, 42 U.S.C. 6901, et seq.) on the Right-of-Way (unless the release or threatened release is wholly unrelated to activity of the Right-of-Way holder's activity on the Right-of-Way), or resulting from the activity of the Right-of-Way holder on the Right-of-Way. This agreement applies without regard to whether a release is caused by the holder, its agent, or unrelated third parties.

4. The holder shall be liable for damage or injury to the United States to the extent provided by 43 CFR Sec. 2883.1-4. The holder shall be held to a standard of strict liability for damage or injury to the United States resulting from pipe rupture, fire, or spills caused or substantially aggravated by any of the following within the right-of-way or permit area:

a. Activities of the holder including, but not limited to construction, operation, maintenance, and termination of the facility.
b. Activities of other parties including, but not limited to:

(1) Land clearing.
(2) Earth-disturbing and earth-moving work.
(3) Blasting.
(4) Vandalism and sabotage.

c. Acts of God.

The maximum limitation for such strict liability damages shall not exceed one million dollars ($1,000,000) for any one event, and any liability in excess of such amount shall be determined by the ordinary rules of negligence of the jurisdiction in which the damage or injury occurred.

This section shall not impose strict liability for damage or injury resulting primarily from an act of war or from the negligent acts or omissions of the United States.

5. If, during any phase of the construction, operation, maintenance, or termination of the pipeline, any oil, salt water, or other pollutant should be discharged from the pipeline system, impacting Federal lands, the control and total removal, disposal, and cleaning up of such oil, salt water, or other pollutant, wherever found, shall be the responsibility of the holder, regardless of fault. Upon failure of the holder to control, dispose of, or clean up such discharge on or affecting Federal lands, or to repair all damages resulting therefrom, on the Federal lands, the Authorized Officer may take such measures as he deems necessary to control and clean up the discharge and restore the area, including, where appropriate, the aquatic environment and fish and wildlife habitats, at the full expense of the holder. Such action by the Authorized Officer shall not relieve the holder of any responsibility as provided herein.

6. All construction and maintenance activity will be confined to the authorized right-of-way width of **20** feet. If the pipeline route follows an existing road or buried pipeline right-of-way, the surface pipeline must be installed no farther than 10 feet from the edge of the road or buried pipeline right-of-way. If existing surface pipelines prevent this distance, the proposed surface pipeline must be installed immediately adjacent to the outer surface pipeline. All construction and maintenance activity will be confined to existing roads or right-of-ways.

7. No blading or clearing of any vegetation will be allowed unless approved in writing by the Authorized Officer.

8. The holder shall install the pipeline on the surface in such a manner that will minimize suspension of the pipeline across low areas in the terrain. In hummocky of duney areas, the pipeline will be "snaked" around hummocks and dunes rather then suspended across these features.

9. The pipeline shall be buried with a minimum of **24** inches under all roads, "two-tracks," and trails. Burial of the pipe will continue for 20 feet on each side of each crossing. The condition of the road, upon completion of construction, shall be returned to at least its former state with no bumps or dips remaining in the road surface.

10. The holder shall minimize disturbance to existing fences and other improvements on public lands. The holder is required to promptly repair improvements to at least their former state. Functional use of these improvements will be maintained at all times. The holder will contact the owner of any improvements prior to disturbing them. When necessary to pass through a fence line, the fence shall be braced on both sides of the passageway prior to cutting of the fence. No permanent gates will be allowed unless approved by the Authorized Officer.

11. In those areas where erosion control structures are required to stabilize soil conditions, the holder will install such structures as are suitable for the specific soil conditions being encountered and which are in accordance with sound resource management practices.

12. Excluding the pipe, all above-ground structures not subject to safety requirement shall be painted by the holder to blend with the natural color of the landscape. The paint used shall be a color which simulates "Standard Environmental Colors" – **Shale Green,** Munsell Soil Color No. 5Y 4/2; designated by the Rocky Mountain Five State Interagency Committee.

13. The pipeline will be identified by signs at the point of origin and completion of the right-of-way and at all road crossings. At a minimum, signs will state the holder's name, BLM serial number, and the product being transported. Signs will be maintained in a legible condition for the life of the pipeline.

14. The holder shall not use the pipeline route as a road for purposes other than routine maintenance as determined necessary by the Authorized Officer in consultation with the holder. The holder will take whatever steps are necessary to ensure that the pipeline route is not used as a roadway.

15. Any cultural and/or paleontological resource (historic or prehistoric site or object) discovered by the holder, or any person working on his behalf, on public or Federal land shall be immediately reported to the authorized officer. Holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the authorized officer. An evaluation of the discovery will be made by the authorized officer to determine appropriate cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to proper mitigation measures will be made by the authorized officer after consulting with the holder.

16. The operator shall be held responsible if noxious weeds become established within the areas of operations. Weed control shall be required on the disturbed land where noxious weeds exist, which includes the roads, powerline corridor, and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA and BLM requirements and policies.

17. Surface pipelines must be less than or equal to 4 inches and a working pressure below 125 psi.

18. Special Stipulations:

- A leak detection plan will be submitted to the BLM Carlsbad Field Office for approval prior to surface pipeline installations. The method could incorporate gauges to detect pressure drops, situating values and lines so they can be visually inspected periodically or installing electronic sensors to alarm when a leak is present. The leak detection plan will incorporate an automatic shut off system that will be installed for proposed pipelines to minimize the effects of an undesirable event.

C. ELECTRIC LINES

STANDARD STIPULATIONS FOR OVERHEAD ELECTRIC DISTRIBUTION LINES

A copy of the grant and attachments, including stipulations, survey plat and/or map, will be on location during construction. BLM personnel may request to you a copy of your permit during construction to ensure compliance with all stipulations.

Holder agrees to comply with the following stipulations to the satisfaction of the Authorized Officer:

1. The holder shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of public lands under this grant.

2. The holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the holder shall comply with the Toxic Substances Control Act of 1976 as amended, 15 USC 2601 et seq. (1982) with regards to any toxic substances that are used, generated by or stored on the right-of-way or on facilities authorized under this right-of-way grant. (See 40 CFR, Part 702-799 and especially, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193.) Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR, Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation, and Liability Act, section 102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the authorized officer concurrent with the filing of the reports to the involved Federal agency or State government.

3. The holder agrees to indemnify the United States against any liability arising from the release of any hazardous substance or hazardous waste (as these terms are defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. 9601, et seq. or the Resource Conservation and Recovery Act, 42 U.S.C. 6901, et seq.) on the Right-of-Way (unless the release or threatened release is wholly unrelated to

the Right-of-Way holder's activity on the Right-of-Way), or resulting from the activity of the Right-of-Way holder on the Right-of-Way. This agreement applies without regard to whether a release is caused by the holder, its agent, or unrelated third parties.

4. There will be no clearing or blading of the right-of-way unless otherwise agreed to in writing by the Authorized Officer.

5. Power lines shall be constructed and designed in accordance to standards outlined in "Suggested Practices for Avian Protection on Power lines: The State of the Art in 2006" Edison Electric Institute, APLIC, and the California Energy Commission 2006 . The holder shall assume the burden and expense of proving that pole designs not shown in the above publication deter raptor perching, roosting, and nesting. Such proof shall be provided by a raptor expert approved by the Authorized Officer. The BLM reserves the right to require modification or additions to all powerline structures placed on this right-of-way, should they be necessary to ensure the safety of large perching birds. Such modifications and/or additions shall be made by the holder without liability or expense to the United States.

Raptor deterrence will consist of but not limited to the following: triangle perch discouragers shall be placed on each side of the cross arms and a nonconductive perching deterrence shall be placed on all vertical poles that extend past the cross arms.

6. The holder shall minimize disturbance to existing fences and other improvements on public lands. The holder is required to promptly repair improvements to at least their former state. Functional use of these improvements will be maintained at all times. The holder will contact the owner of any improvements prior to disturbing them. When necessary to pass through a fence line, the fence shall be braced on both sides of the passageway prior to cutting the fence. No permanent gates will be allowed unless approved by the Authorized Officer.

7. The BLM serial number assigned to this authorization shall be posted in a permanent, conspicuous manner where the power line crosses roads and at all serviced facilities. Numbers will be at least two inches high and will be affixed to the pole nearest the road crossing and at the facilities served.

8. Upon cancellation, relinquishment, or expiration of this grant, the holder shall comply with those abandonment procedures as prescribed by the Authorized Officer.

9. All surface structures (poles, lines, transformers, etc.) shall be removed within 180 days of abandonment, relinquishment, or termination of use of the serviced facility or facilities or within 180 days of abandonment, relinquishment, cancellation, or expiration of this grant, whichever comes first. This will not apply where the power line extends service to an active, adjoining facility or facilities.

10. Any cultural and/or paleontological resource (historic or prehistoric site or object) discovered by the holder, or any person working on his behalf, on public or Federal land

shall be immediately reported to the Authorized Officer. Holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery will be made by the Authorized Officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

11. Special Stipulations:
    - For reclamation remove poles, lines, transformer, etc. and dispose of properly.
    - Fill in any holes from the poles removed.

Timing Limitation Stipulation/Condition of Approval for Lesser Prairie-Chicken: Oil and gas activities including 3-D geophysical exploration, and drilling will not be allowed in lesser prairie-chicken habitat during the period from March 1st through June 15th annually. During that period, other activities that produce noise or involve human activity, such as the maintenance of oil and gas facilities, geophysical exploration other than 3-D operations, and pipeline, road, and well pad construction, will be allowed except between 3:00 am and 9:00 am. The 3:00 am to 9:00 am restriction will not apply to normal, around-the-clock operations, such as venting, flaring, or pumping, which do not require a human presence during this period. Additionally, no new drilling will be allowed within up to 200 meters of leks known at the time of permitting. Normal vehicle use on existing roads will not be restricted. Exhaust noise from pump jack engines must be muffled or otherwise controlled so as not to exceed 75 db measured at 30 ft. from the source of the noise.

VIII. INTERIM RECLAMATION

During the life of the development, all disturbed areas not needed for active support of production operations should undergo interim reclamation in order to minimize the environmental impacts of development on other resources and uses.

Within six (6) months of well completion, operators should work with BLM surface management specialists (Jim Amos: 575-234-5909) to devise the best strategies to reduce the size of the location. Interim reclamation should allow for remedial well operations, as well as safe and efficient removal of oil and gas.

During reclamation, the removal of caliche is important to increasing the success of revegetating the site. Removed caliche that is free of contaminants may be used for road repairs, fire walls or for building other roads and locations. In order to operate the well or complete workover operations, it may be necessary to drive, park and operate on restored interim vegetation within the previously disturbed area. Disturbing revegetated areas for production or workover operations will be allowed. If there is significant disturbance and loss of vegetation, the area will need to be revegetated. Communicate with the appropriate BLM office for any exceptions/exemptions if needed.

All disturbed areas after they have been satisfactorily prepared need to be reseeded with the seed mixture provided below.

Upon completion of interim reclamation, the operator shall submit a Sundry Notices and Reports on Wells, Subsequent Report of Reclamation (Form 3160-5).

IX. FINAL ABANDONMENT & RECLAMATION

At final abandonment, well locations, production facilities, and access roads must undergo "final" reclamation so that the character and productivity of the land are restored.

Earthwork for final reclamation must be completed within six (6) months of well plugging. All pads, pits, facility locations and roads must be reclaimed to a satisfactory revegetated, safe, and stable condition, unless an agreement is made with the landowner or BLM to keep the road and/or pad intact.

After all disturbed areas have been satisfactorily prepared, these areas need to be revegetated with the seed mixture provided below. Seeding should be accomplished by drilling on the contour whenever practical or by other approved methods. Seeding may need to be repeated until revegetation is successful, as determined by the BLM.

Operators shall contact a BLM surface protection specialist prior to surface abandonment operations for site specific objectives (Jim Amos: 575-234-5909).

Below Ground-level Abandoned Well Marker to avoid raptor perching: Upon the plugging and subsequent abandonment of the well, the well marker will be installed at ground level on a plate containing the pertinent information for the plugged well.

Seed Mixture for LPC Sand/Shinnery Sites

Holder shall seed all disturbed areas with the seed mixture listed below. The seed mixture shall be planted in the amounts specified in pounds of pure live seed (PLS)* per acre. There shall be no primary or secondary noxious weeds in the seed mixture. Seed will be tested and the viability testing of seed shall be done in accordance with State law(s) and within nine (9) months prior to purchase. Commercial seed shall be either certified or registered seed. The seed container shall be tagged in accordance with State law(s) and available for inspection by the Authorized Officer.

Seed will be planted using a drill equipped with a depth regulator to ensure proper depth of planting where drilling is possible. The seed mixture will be evenly and uniformly planted over the disturbed area (smaller/heavier seeds have a tendency to drop the bottom of the drill and are planted first). Holder shall take appropriate measures to ensure this does not occur. Where drilling is not possible, seed will be broadcast and the area shall be raked or chained to cover the seed. When broadcasting the seed, the pounds per acre are to be doubled. Seeding shall be repeated until a satisfactory stand is established as determined by the Authorized Officer. Evaluation of growth may not be made before completion of at least one full growing season after seeding.

Species to be planted in pounds of pure live seed* per acre:

Species	lb/acre
Plains Bristlegrass	5lbs/A
Sand Bluestem	5lbs/A
Little Bluestem	3lbs/A
Big Bluestem	6lbs/A
Plains Coreopsis	2lbs/A
Sand Dropseed	1lbs/A

*Pounds of pure live seed:

Pounds of seed **x** percent purity **x** percent germination = pounds pure live seed

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BUREAU OF LAND MANAGEMENT

Operator Certification Data Report

03/25/2019

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: Aricka Easterling **Signed on:** 03/15/2018

Title: Regulatory Analyst

Street Address: 202 S. Cheyenne Ave, Ste 1000

City: Tulsa **State:** OK **Zip:** 74103

Phone: (918)560-7060

Email address: regulatory@cimarex.com

Field Representative

Representative Name:

Street Address:

City: **State:** **Zip:**

Phone:

Email address:

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U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT

Application Data Report
03/25/2019

APD ID: 10400028333 **Submission Date:** 03/15/2018

Operator Name: CIMAREX ENERGY COMPANY

Well Name: CASCADE 28 FEDERAL **Well Number:** 85H

Show Final Text

Well Type: OIL WELL **Well Work Type:** Drill

Section 1 - General

APD ID: 10400028333 **Tie to previous NOS?** 10400026252 **Submission Date:** 03/15/2018

BLM Office: CARLSBAD **User:** Aricka Easterling **Title:** Regulatory Analyst

Federal/Indian APD: FED

Lease number: NMNM026394 **Lease Acres:** 2560

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 **Mater Development Plan name:**

Well in Master SUPO? NO **Master SUPO name:**

Well in Master Drilling Plan? NO **Master Drilling Plan name:**

Well Name: CASCADE 28 FEDERAL **Well Number:** 85H **Well API Number:**

Field/Pool or Exploratory? Field and Pool **Field Name:** BONE SPRING **Pool Name:** RED HILLS UPPER BONE SPRING SHALE

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

Operator Name: CIMAREX ENERGY COMPANY

Well Name: CASCADE 28 FEDERAL **Well Number:** 85H

Describe other minerals:

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

Type of Well Pad: MULTIPLE WELL **Multiple Well Pad Name:** CASCADE 28 FEDERAL W2E2 **Number:** 85H PAD

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: 22 Miles **Distance to nearest well:** 20 FT **Distance to lease line:** 390 FT

Reservoir well spacing assigned acres Measurement: 160 Acres

Well plat: Cascade_28_Fed_85H_C102_Plat_20180315070455.pdf

Well work start Date: 08/01/2018 **Duration:** 30 DAYS

Section 3 - Well Location Table

Survey Type: RECTANGULAR

Describe Survey Type:

Datum: NAD83 **Vertical Datum:** NAVD88

Survey number:

	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
SHL Leg #1	390	FNL	1360	FEL	25S	33E	28	Aliquot NWNE	32.107722	-103.573181	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 026394	3364	0	0
KOP Leg #1	325	FNL	380	FEL	25S	33E	28	Aliquot NENE	32.107722	-103.573181	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 026394	-5469	8910	8833
PPP Leg #1	389	FNL	380	FEL	25S	33E	28	Aliquot NENE	32.107702 8	-103.570016 7	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 026394	-5711	9165	9075

Operator Name: CIMAREX ENERGY COMPANY

Well Name: CASCADE 28 FEDERAL **Well Number:** 85H

	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
EXIT Leg #1	330	FSL	380	FEL	25S	33E	28	Aliquot SESE	32.09518	-103.569985	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 026394	-5946	13805	9310
BHL Leg #1	330	FSL	380	FEL	25S	33E	28	Aliquot SESE	32.09518	-103.569985	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 026394	-5946	13805	9310

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U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT

Drilling Plan Data Report

03/25/2019

APD ID: 10400028333 **Submission Date:** 03/15/2018

Operator Name: CIMAREX ENERGY COMPANY

Well Name: CASCADE 28 FEDERAL **Well Number:** 85H

Well Type: OIL WELL **Well Work Type:** Drill

Show Final Text

Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
1	RUSTLER	3364	995	995		USEABLE WATER	No
2	TOP SALT	2034	1330	1330		NONE	No
3	LAMAR	-1556	4920	4920		NONE	No
4	BELL CANYON	-1596	4960	4960		NONE	No
5	CHERRY CANYON	-2666	6030	6030		NONE	No
6	BRUSHY CANYON	-4151	7515	7515		NATURAL GAS,OIL	No
7	BONE SPRING	-5641	9005	9005		NATURAL GAS,OIL	Yes
8	BONE SPRING 1ST	-6686	10050	10050		NATURAL GAS,OIL	No
9	BONE SPRING 2ND	-7241	10605	10605		NATURAL GAS,OIL	No
10	BONE SPRING 3RD	-8351	11715	11715		NATURAL GAS,OIL	No
11	WOLFCAMP	-8801	12165	12165		NATURAL GAS,OIL	No

Section 2 - Blowout Prevention

Pressure Rating (PSI): 2M **Rating Depth:** 1045

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:

Cascade_28_Fed_85H_Choke_2M3M_20180315072002.pdf

BOP Diagram Attachment:

Cascade_28_Fed_85H_BOP_2M_20180315072043.pdf

Pressure Rating (PSI): 3M **Rating Depth:** 4940

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:

Cascade_28_Fed_85H_Choke_2M3M_20180315072101.pdf

BOP Diagram Attachment:

Cascade_28_Fed_85H_BOP_3M_20180315072111.pdf

Operator Name: CIMAREX ENERGY COMPANY

Well Name: CASCADE 28 FEDERAL **Well Number:** 85H

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	NON API	N	0	1045	0	1045	0	1045	1045	OTHER	48	STC	1.55	3.62	BUOY	6.42	BUOY	6.42
2	INTERMEDIATE	12.25	9.625	NEW	API	N	0	4940	0	4940	0	4940	4940	J-55	40	LTC	1.56	1.51	BUOY	2.63	BUOY	2.63
3	PRODUCTION	8.75	5.5	NEW	API	N	0	8910	0	8910	0	8910	8910	L-80	17	LTC	1.51	1.86	BUOY	2.14	BUOY	2.14
4	PRODUCTION	8.75	5.5	NEW	API	N	8910	13805	8910	13805	8910	13805	4895	L-80	17	BUTT	1.44	1.78	BUOY	58.38	BUOY	58.38

Casing Attachments

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

Inspection Document:

Spec Document:

Cascade_28_Fed_85H_Spec_Sheet_20180315072142.pdf

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Cascade_28_Fed_85H_Casing_Assumptions_20180315072454.pdf

Operator Name: CIMAREX ENERGY COMPANY

Well Name: CASCADE 28 FEDERAL **Well Number:** 85H

Casing Attachments

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Cascade_28_Fed_85H_Casing_Assumptions_20180315072445.pdf

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Cascade_28_Fed_85H_Casing_Assumptions_20180315072435.pdf

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Cascade_28_Fed_85H_Casing_Assumptions_20180315072422.pdf

Section 4 - Cement

Operator Name: CIMAREX ENERGY COMPANY

Well Name: CASCADE 28 FEDERAL **Well Number:** 85H

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
SURFACE	Lead		0	1045	507	1.72	13.5	871	50	Class C	Bentonite
SURFACE	Tail		0	1045	136	1.34	14.8	181	25	Class C	LCM
INTERMEDIATE	Lead		0	4940	937	1.88	12.9	1760	50	35:65 (Poz:C)	Salt, Bentonite
INTERMEDIATE	Tail		0	4940	289	1.34	14.8	386	25	Class C	LCM
PRODUCTION	Lead		0	8910	359	3.64	10.3	1306	25	Tuned Light	LCM
PRODUCTION	Tail		0	8910	1047	1.3	14.2	1361	10	50:50 (Poz:H)	Salt, Bentonite, Fluid Loss, Dispersant, SMS
PRODUCTION	Lead		8910	13805	359	3.64	10.3	1306	25	Tuned Light	LCM
PRODUCTION	Tail		8910	13805	1047	1.3	14.2	1361	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
0	1045	SPUD MUD	8.3	8.8							

Operator Name: CIMAREX ENERGY COMPANY

Well Name: CASCADE 28 FEDERAL **Well Number:** 85H

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
1045	4940	SALT SATURATED	9.7	10.2							
4940	13805	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: 4357 **Anticipated Surface Pressure:** 2308.8

Anticipated Bottom Hole Temperature(F): 164

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:

Cascade_28_Fed_85H_H2S_Plan_20180315072839.pdf

Operator Name: CIMAREX ENERGY COMPANY

Well Name: CASCADE 28 FEDERAL **Well Number:** 85H

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

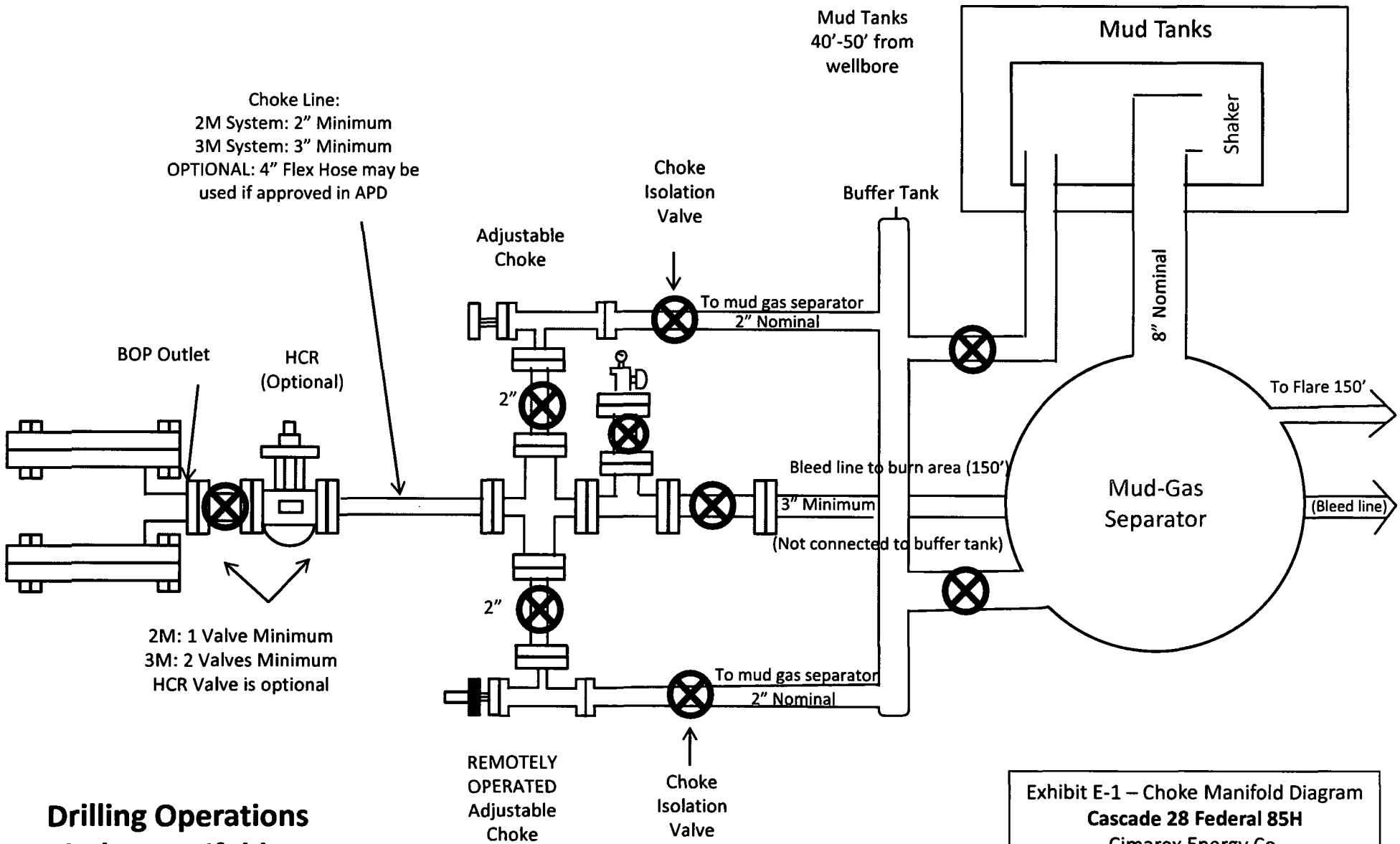
Cascade_28_Fed_85H_Directional_Plan_20180315072851.pdf

Other proposed operations facets description:

Other proposed operations facets attachment:

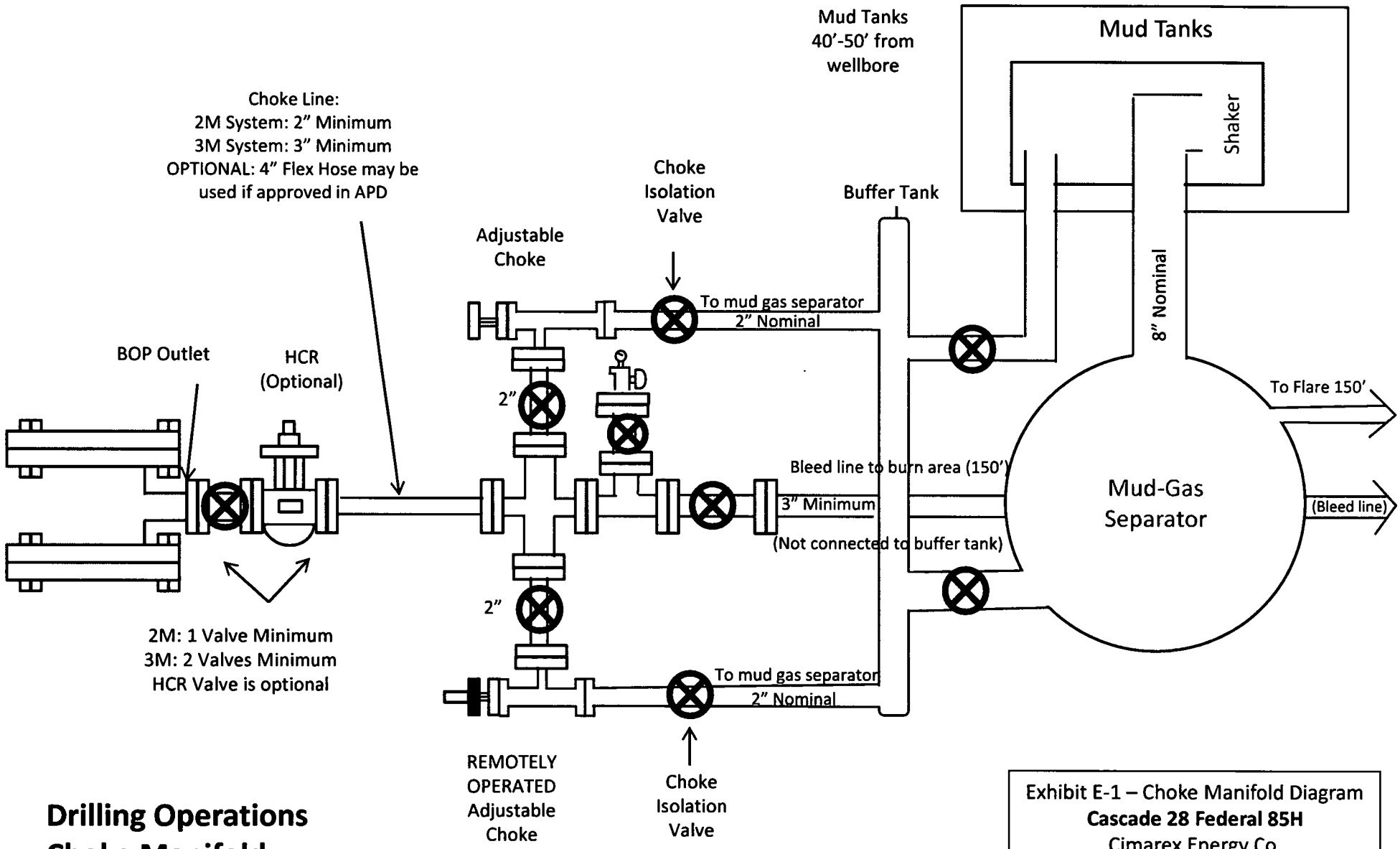
Cascade_28_Fed_85H_AC_Report_20180315072904.pdf
Cascade_28_Fed_85H_Drilling_Plan_20180315072905.pdf
Cascade_28_Fed_85H_Flex_Hose_20180315072908.pdf
Cascade_28_Fed_85H_Gas_Capture_Plan_20180315072909.pdf

Other Variance attachment:



Drilling Operations
Choke Manifold
2M/3M Service

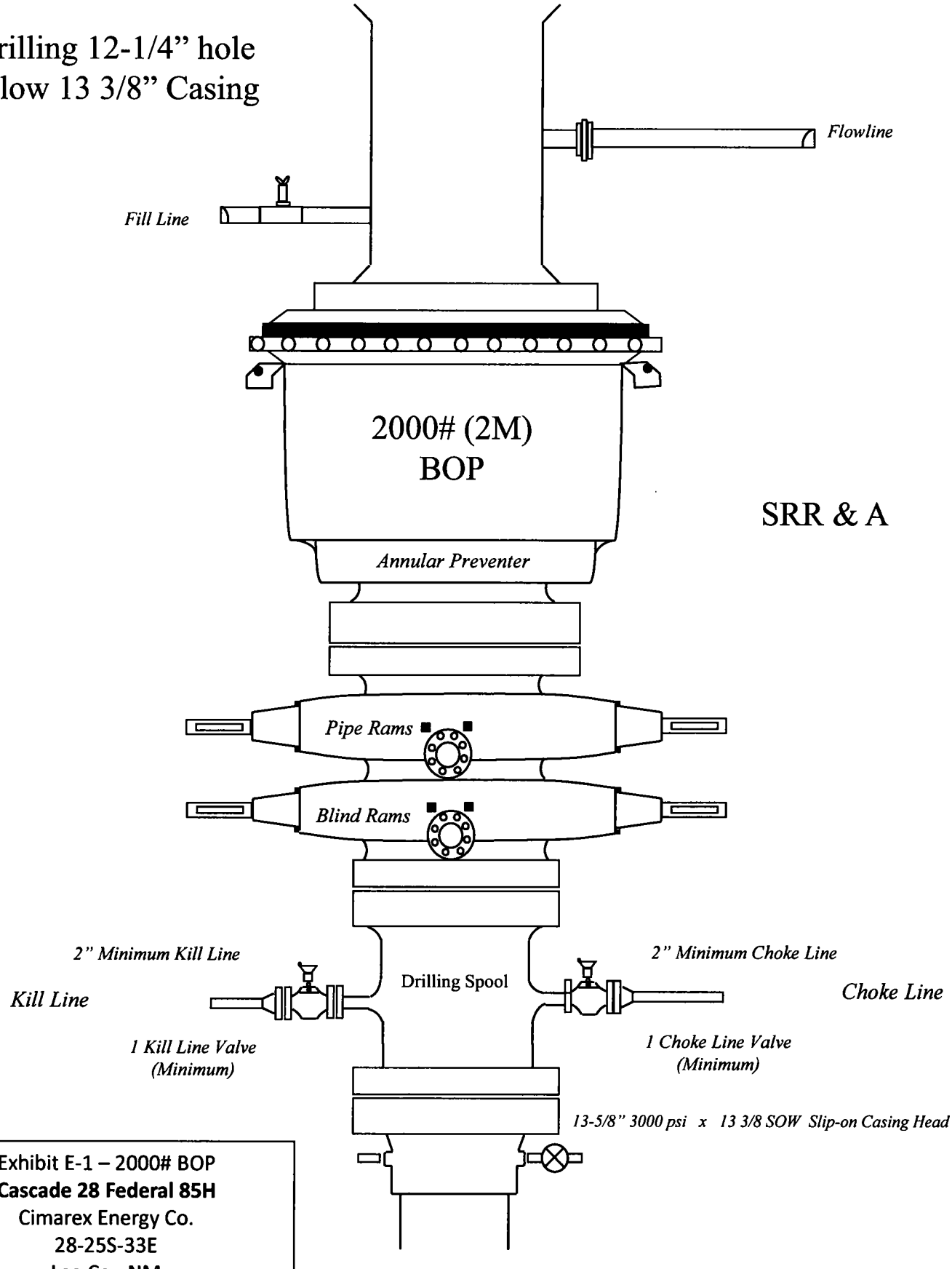
Exhibit E-1 – Choke Manifold Diagram
Cascade 28 Federal 85H
Cimarex Energy Co.
28-25S-33E
Lea Co., NM



Drilling Operations
Choke Manifold
2M/3M Service

Exhibit E-1 – Choke Manifold Diagram
Cascade 28 Federal 85H
Cimarex Energy Co.
28-25S-33E
Lea Co., NM

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



SRR & A

Exhibit E-1 – 2000# BOP
Cascade 28 Federal 85H
Cimarex Energy Co.
28-25S-33E
Lea Co., NM

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

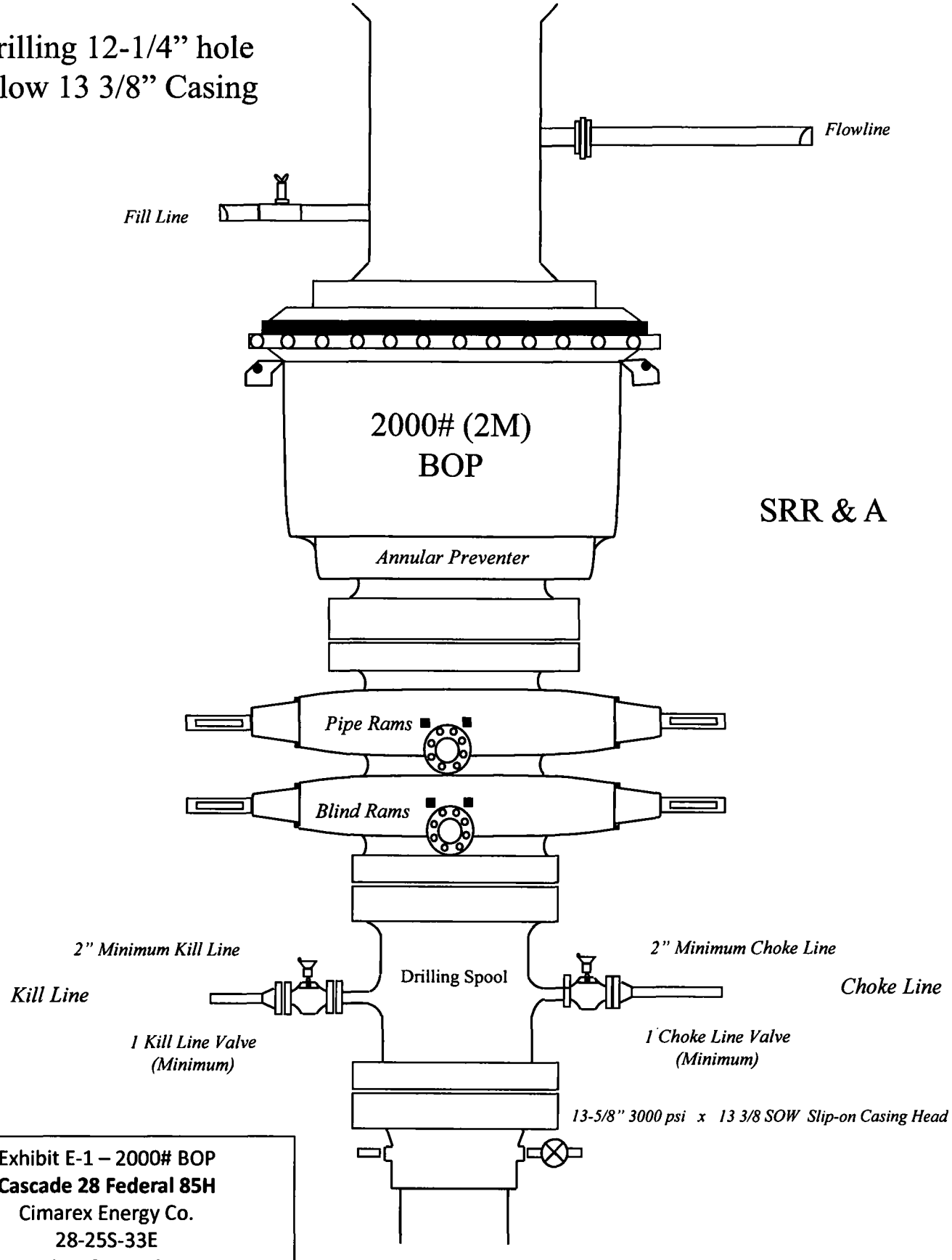


Exhibit E-1 – 2000# BOP
Cascade 28 Federal 85H
Cimarex Energy Co.
28-25S-33E
Lea Co., NM

Print

EVRAZ

Cascade 28 Federal 85H Surface Casing Spec Sheet

OCTG Performance Data

Casing Performance

Availability: ERW

Pipe Body Geometry

Outside Diameter:	13.375 in	Inside Diameter:	12.715 in
Wall Thickness:	0.330 in	Cross Section Area:	13.524 sq in
Nominal Weight:	48.00 lb/ft	Drift Diameter:	12.559 in
Plain End Weight:	46.02 lb/ft	Alternate Drift Diameter:	-

Pipe Body Performance

Grade:	H40	Collapse Strength (ERW):	740 psi
Pipe Body Yield Strength:	541000 lbf	Collapse Strength (SMLS):	-

SC Connection

Connection Geometry

	Optimum	Minimum	Maximum
Make Up Torque:	3220 lb·ft	2420 lb·ft	4030 lb·ft
Coupling Outside Diameter:	14.375 in		

Connection Performance

Grade:	H40	Minimum Internal Yield Pressure:	1730 psi
Joint Strength:	322000 lbf		

LC Connection

Connection Geometry

	Optimum	Minimum	Maximum
Make Up Torque:	-	-	-
Coupling Outside Diameter:	14.375 in		

Connection Performance

Grade:	H40	Minimum Internal Yield Pressure:	-
Joint Strength:	-		

BC Connection

Connection Geometry

	Optimum	Minimum	Maximum
Make Up Torque:	-	-	-
Coupling Outside Diameter:	14.375 in		

Connection Performance

Grade:	H40	Minimum Internal Yield Pressure:	-
Joint Strength:	-		

PE Connection

Connection Geometry

	Optimum	Minimum	Maximum
Make Up Torque:	-	-	-
Coupling Outside Diameter:	14.375 in		

Connection Performance

Grade:	H40	Minimum Internal Yield Pressure:	1730 psi
Joint Strength:	-		

Cascade 28 Federal 85H

Casing Assumptions

Casing Program

Hole Size	Casing Depth From	Casing Depth To	Casing Size	Weight (lb/ft)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
17 1/2	0	1045	13-3/8"	48.00	H-40/J-55 Hybrid	ST&C	1.55	3.62	6.42
12 1/4	0	4940	9-5/8"	40.00	J-55	LT&C	1.56	1.51	2.63
8 3/4	0	8910	5-1/2"	17.00	L-80	LT&C	1.51	1.86	2.14
8 3/4	8910	13805	5-1/2"	17.00	L-80	BT&C	1.44	1.78	58.38
				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

Cascade 28 Federal 85H

Casing Assumptions

Casing Program

Hole Size	Casing Depth From	Casing Depth To	Casing Size	Weight (lb/ft)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
17 1/2	0	1045	13-3/8"	48.00	H-40/J-55 Hybrid	ST&C	1.55	3.62	6.42
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8 3/4	0	8910	5-1/2"	17.00	L-80	LT&C	1.51	1.86	2.14
8 3/4	8910	13805	5-1/2"	17.00	L-80	BT&C	1.44	1.78	58.38
				BLM Minimum Safety Factor			1.125	1	1.6 Dry 1.8 Wet

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Cascade 28 Federal 85H

Casing Assumptions

Casing Program

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Cascade 28 Federal 85H

Casing Assumptions

Casing Program

Hole Size	Casing Depth From	Casing Depth To	Casing Size	Weight (lb/ft)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
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12 1/4	0	4940	9-5/8"	40.00	J-55	LT&C	1.56	1.51	2.63
8 3/4	0	8910	5-1/2"	17.00	L-80	LT&C	1.51	1.86	2.14
8 3/4	8910	13805	5-1/2"	17.00	L-80	BT&C	1.44	1.78	58.38
				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

Hydrogen Sulfide Drilling Operations Plan
Cascade 28 Federal 85H
Cimarex Energy Co.
UL: B, Sec. 28, 25S, 33E
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 H_2S
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.

H_2S 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 (H_2S 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 H_2S 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.

H_2S Contingency Plan
Cascade 28 Federal 85H
Cimarex Energy Co.
UL: B, Sec. 28, 25S, 33E
Lea Co., NM

Emergency Procedures

In the event of a release of gas containing H_2S, 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 H_2S 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 H_2S, 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 (SO_2). 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 H_2S and SO_2

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).

H_2S Contingency Plan Emergency Contacts
Cascade 28 Federal 85H
Cimarex Energy Co.
UL: B, Sec. 28, 25S, 33E
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	
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	

Schlumberger

Cimarex Cascade 28 Federal 85H Rev0 RM 9Mar18 Proposal Geodetic Report

(Non-Def Plan)

CIMAREX

Report Date:	March 14, 2018 - 01:39 PM	**Survey / DLS Computation:**	Minimum Curvature / Lubinski
Client:	Cimarex	**Vertical Section Azimuth:**	179.472 ° (Grid North)
Field:	NM Lea County (NAD 83)	**Vertical Section Origin:**	0.000 ft, 0.000 ft
Structure / Slot:	Cimarex Cascade 28 Federal 85H / Cimarex Cascade 28 Federal 85H	**TVD Reference Datum:**	RKB
Well:	Cimarex Cascade 28 Federal 85H	**TVD Reference Elevation:**	3388.000 ft above MSL
Borehole:	Original Borehole	**Seabed / Ground Elevation:**	3364.000 ft above MSL
UWI / API#:	Unknown / Unknown	**Magnetic Declination:**	6.770 °
Survey Name:	Cimarex Cascade 28 Federal 85H Rev0 RM 9Mar18	**Total Gravity Field Strength:**	998.4375mgn (9.80665 Based)
Survey Date:	March 09, 2018	**Gravity Model:**	GARM
Tort / AHD / DDI / ERD Ratio:	108.594 ° / 5603.626 ft / 5.955 / 0.602	**Total Magnetic Field Strength:**	47903.710 nT
Coordinate Reference System:	NAD83 New Mexico State Plane, Eastern Zone, US Feet	**Magnetic Dip Angle:**	59.778 °
Location Lat / Long:	N 32° 6' 27.79854", W 103° 34' 23.45237"	**Declination Date:**	March 12, 2018
Location Grid N/E Y/X:	N 403755.510 ftUS, E 776702.700 ftUS	**Magnetic Declination Model:**	HDGM 2018
CRS Grid Convergence Angle:	0.4040 °	**North Reference:**	Grid North
Grid Scale Factor:	0.99997254	**Grid Convergence Used:**	0.4040 °
Version / Patch:	2.10.706.0	**Total Corr Mag North->Grid North:**	6.3664 °
		Local Coord Referenced To:	Structure Reference Point

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 [390' FNL, 1360' FEL]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	403755.51	776702.70	N 32 6 27.80	W 103 34 23.45
	100.00	0.00	86.15	100.00	0.00	0.00	0.00	0.00	403755.51	776702.70	N 32 6 27.80	W 103 34 23.45
	200.00	0.00	86.15	200.00	0.00	0.00	0.00	0.00	403755.51	776702.70	N 32 6 27.80	W 103 34 23.45
	300.00	0.00	86.15	300.00	0.00	0.00	0.00	0.00	403755.51	776702.70	N 32 6 27.80	W 103 34 23.45
	400.00	0.00	86.15	400.00	0.00	0.00	0.00	0.00	403755.51	776702.70	N 32 6 27.80	W 103 34 23.45
	500.00	0.00	86.15	500.00	0.00	0.00	0.00	0.00	403755.51	776702.70	N 32 6 27.80	W 103 34 23.45
	600.00	0.00	86.15	600.00	0.00	0.00	0.00	0.00	403755.51	776702.70	N 32 6 27.80	W 103 34 23.45
	700.00	0.00	86.15	700.00	0.00	0.00	0.00	0.00	403755.51	776702.70	N 32 6 27.80	W 103 34 23.45
	800.00	0.00	86.15	800.00	0.00	0.00	0.00	0.00	403755.51	776702.70	N 32 6 27.80	W 103 34 23.45
	900.00	0.00	86.15	900.00	0.00	0.00	0.00	0.00	403755.51	776702.70	N 32 6 27.80	W 103 34 23.45
Rustler	*995.00*	*0.00*	*86.15*	*995.00*	*0.00*	*0.00*	*0.00*	*0.00*	*403755.51*	*776702.70*	*N 32 6 27.80*	*W 103 34 23.45*
	1000.00	0.00	86.15	1000.00	0.00	0.00	0.00	0.00	403755.51	776702.70	N 32 6 27.80	W 103 34 23.45
	1100.00	0.00	86.15	1100.00	0.00	0.00	0.00	0.00	403755.51	776702.70	N 32 6 27.80	W 103 34 23.45
	1200.00	0.00	86.15	1200.00	0.00	0.00	0.00	0.00	403755.51	776702.70	N 32 6 27.80	W 103 34 23.45
	1300.00	0.00	86.15	1300.00	0.00	0.00	0.00	0.00	403755.51	776702.70	N 32 6 27.80	W 103 34 23.45
	1400.00	0.00	86.15	1400.00	0.00	0.00	0.00	0.00	403755.51	776702.70	N 32 6 27.80	W 103 34 23.45
Nudge 2°/100' DLS	1500.00	0.00	86.15	1500.00	0.00	0.00	0.00	0.00	403755.51	776702.70	N 32 6 27.80	W 103 34 23.45
	1600.00	2.00	86.15	1599.98	-0.10	0.12	1.74	2.00	403755.63	776704.44	N 32 6 27.80	W 103 34 23.43
	1700.00	4.00	86.15	1699.84	-0.40	0.47	6.96	2.00	403755.98	776709.66	N 32 6 27.80	W 103 34 23.37
	1800.00	6.00	86.15	1799.45	-0.91	1.05	15.66	2.00	403756.56	776718.36	N 32 6 27.81	W 103 34 23.27
	1900.00	8.00	86.15	1898.70	-1.61	1.87	27.82	2.00	403757.38	776730.52	N 32 6 27.82	W 103 34 23.13
Hold Nudge	1964.84	9.30	86.15	1962.81	-2.18	2.52	37.55	2.00	403758.03	776740.24	N 32 6 27.82	W 103 34 23.02
	2000.00	9.30	86.15	1997.50	-2.51	2.91	43.21	0.00	403758.41	776745.91	N 32 6 27.82	W 103 34 22.95
	2100.00	9.30	86.15	2096.19	-3.44	3.99	59.33	0.00	403759.50	776762.03	N 32 6 27.83	W 103 34 22.76
	2200.00	9.30	86.15	2194.87	-4.38	5.07	75.45	0.00	403760.58	776778.15	N 32 6 27.84	W 103 34 22.57

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 ° ' ")
	2300.00	9.30	86.15	2293.56	-5.31	6.16	91.57	0.00	403761.67	776794.27	N 32 6 27.85	W 103 34 22.39
	2400.00	9.30	86.15	2392.25	-6.25	7.24	107.69	0.00	403762.75	776810.38	N 32 6 27.86	W 103 34 22.20
	2500.00	9.30	86.15	2490.93	-7.18	8.32	123.81	0.00	403763.83	776826.50	N 32 6 27.87	W 103 34 22.01
	2600.00	9.30	86.15	2589.62	-8.12	9.41	139.92	0.00	403764.92	776842.62	N 32 6 27.88	W 103 34 21.82
	2700.00	9.30	86.15	2688.31	-9.05	10.49	156.04	0.00	403766.00	776858.74	N 32 6 27.89	W 103 34 21.64
	2800.00	9.30	86.15	2786.99	-9.99	11.57	172.16	0.00	403767.08	776874.86	N 32 6 27.90	W 103 34 21.45
	2900.00	9.30	86.15	2885.68	-10.92	12.66	188.28	0.00	403768.17	776890.97	N 32 6 27.91	W 103 34 21.26
	3000.00	9.30	86.15	2984.37	-11.86	13.74	204.40	0.00	403769.25	776907.09	N 32 6 27.92	W 103 34 21.07
	3100.00	9.30	86.15	3083.05	-12.79	14.82	220.52	0.00	403770.33	776923.21	N 32 6 27.93	W 103 34 20.89
	3200.00	9.30	86.15	3181.74	-13.73	15.91	236.64	0.00	403771.42	776939.33	N 32 6 27.94	W 103 34 20.70
	3300.00	9.30	86.15	3280.43	-14.66	16.99	252.75	0.00	403772.50	776955.45	N 32 6 27.95	W 103 34 20.51
	3400.00	9.30	86.15	3379.11	-15.60	18.08	268.87	0.00	403773.58	776971.56	N 32 6 27.96	W 103 34 20.33
	3500.00	9.30	86.15	3477.80	-16.53	19.16	284.99	0.00	403774.67	776987.68	N 32 6 27.97	W 103 34 20.14
	3600.00	9.30	86.15	3576.48	-17.47	20.24	301.11	0.00	403775.75	777003.80	N 32 6 27.98	W 103 34 19.95
	3700.00	9.30	86.15	3675.17	-18.40	21.33	317.23	0.00	403776.84	777019.92	N 32 6 27.99	W 103 34 19.76
	3800.00	9.30	86.15	3773.86	-19.34	22.41	333.35	0.00	403777.92	777036.04	N 32 6 28.00	W 103 34 19.58
	3900.00	9.30	86.15	3872.54	-20.27	23.49	349.47	0.00	403779.00	777052.15	N 32 6 28.01	W 103 34 19.39
	4000.00	9.30	86.15	3971.23	-21.21	24.58	365.58	0.00	403780.09	777068.27	N 32 6 28.02	W 103 34 19.20
	4100.00	9.30	86.15	4069.92	-22.14	25.66	381.70	0.00	403781.17	777084.39	N 32 6 28.03	W 103 34 19.01
	4200.00	9.30	86.15	4168.60	-23.08	26.74	397.82	0.00	403782.25	777100.51	N 32 6 28.04	W 103 34 18.83
	4300.00	9.30	86.15	4267.29	-24.01	27.83	413.94	0.00	403783.34	777116.63	N 32 6 28.04	W 103 34 18.64
	4400.00	9.30	86.15	4365.98	-24.95	28.91	430.06	0.00	403784.42	777132.75	N 32 6 28.05	W 103 34 18.45
	4500.00	9.30	86.15	4464.66	-25.88	29.99	446.18	0.00	403785.50	777148.86	N 32 6 28.06	W 103 34 18.26
	4600.00	9.30	86.15	4563.35	-26.82	31.08	462.30	0.00	403786.59	777164.98	N 32 6 28.07	W 103 34 18.08
	4700.00	9.30	86.15	4662.04	-27.75	32.16	478.41	0.00	403787.67	777181.10	N 32 6 28.08	W 103 34 17.89
	4800.00	9.30	86.15	4760.72	-28.69	33.25	494.53	0.00	403788.75	777197.22	N 32 6 28.09	W 103 34 17.70
	4900.00	9.30	86.15	4859.41	-29.62	34.33	510.65	0.00	403789.84	777213.34	N 32 6 28.10	W 103 34 17.51
Lamar	*4961.40*	*9.30*	*86.15*	*4920.00*	*-30.20*	*34.99*	*520.55*	*0.00*	*403790.50*	*777223.23*	*N 32 6 28.11*	*W 103 34 17.40*
	5000.00	9.30	86.15	4958.09	-30.56	35.41	526.77	0.00	403790.92	777229.45	N 32 6 28.11	W 103 34 17.33
Bell Canyon	*5001.93*	*9.30*	*86.15*	*4960.00*	*-30.58*	*35.43*	*527.08*	*0.00*	*403790.94*	*777229.77*	*N 32 6 28.11*	*W 103 34 17.32*
	5100.00	9.30	86.15	5056.78	-31.49	36.50	542.89	0.00	403792.01	777245.57	N 32 6 28.12	W 103 34 17.14
	5200.00	9.30	86.15	5155.47	-32.43	37.58	559.01	0.00	403793.09	777261.69	N 32 6 28.13	W 103 34 16.95
	5300.00	9.30	86.15	5254.15	-33.36	38.66	575.13	0.00	403794.17	777277.81	N 32 6 28.14	W 103 34 16.76
	5400.00	9.30	86.15	5352.84	-34.30	39.75	591.24	0.00	403795.26	777293.93	N 32 6 28.15	W 103 34 16.58
	5500.00	9.30	86.15	5451.53	-35.23	40.83	607.36	0.00	403796.34	777310.04	N 32 6 28.16	W 103 34 16.39
	5600.00	9.30	86.15	5550.21	-36.17	41.91	623.48	0.00	403797.42	777326.16	N 32 6 28.17	W 103 34 16.20
	5700.00	9.30	86.15	5648.90	-37.10	43.00	639.60	0.00	403798.51	777342.28	N 32 6 28.18	W 103 34 16.01
	5800.00	9.30	86.15	5747.59	-38.04	44.08	655.72	0.00	403799.59	777358.40	N 32 6 28.19	W 103 34 15.83
	5900.00	9.30	86.15	5846.27	-38.97	45.17	671.84	0.00	403800.67	777374.52	N 32 6 28.20	W 103 34 15.64
	6000.00	9.30	86.15	5944.96	-39.91	46.25	687.96	0.00	403801.76	777390.64	N 32 6 28.21	W 103 34 15.45
Cherry Canyon	*6086.17*	*9.30*	*86.15*	*6030.00*	*-40.71*	*47.18*	*701.85*	*0.00*	*403802.69*	*777404.52*	*N 32 6 28.22*	*W 103 34 15.29*
	6100.00	9.30	86.15	6043.65	-40.84	47.33	704.07	0.00	403802.84	777406.75	N 32 6 28.22	W 103 34 15.26
	6200.00	9.30	86.15	6142.33	-41.78	48.42	720.19	0.00	403803.92	777422.87	N 32 6 28.23	W 103 34 15.08
	6300.00	9.30	86.15	6241.02	-42.71	49.50	736.31	0.00	403805.01	777438.99	N 32 6 28.24	W 103 34 14.89
	6400.00	9.30	86.15	6339.71	-43.65	50.58	752.43	0.00	403806.09	777455.11	N 32 6 28.25	W 103 34 14.70
	6500.00	9.30	86.15	6438.39	-44.58	51.67	768.55	0.00	403807.18	777471.23	N 32 6 28.26	W 103 34 14.51
	6600.00	9.30	86.15	6537.08	-45.52	52.75	784.67	0.00	403808.26	777487.34	N 32 6 28.27	W 103 34 14.33
	6700.00	9.30	86.15	6635.76	-46.45	53.83	800.79	0.00	403809.34	777503.46	N 32 6 28.28	W 103 34 14.14
	6800.00	9.30	86.15	6734.45	-47.39	54.92	816.90	0.00	403810.43	777519.58	N 32 6 28.28	W 103 34 13.95
	6900.00	9.30	86.15	6833.14	-48.32	56.00	833.02	0.00	403811.51	777535.70	N 32 6 28.29	W 103 34 13.76
	7000.00	9.30	86.15	6931.82	-49.26	57.08	849.14	0.00	403812.59	777551.82	N 32 6 28.30	W 103 34 13.58
	7100.00	9.30	86.15	7030.51	-50.19	58.17	865.26	0.00	403813.68	777567.93	N 32 6 28.31	W 103 34 13.39
	7200.00	9.30	86.15	7129.20	-51.13	59.25	881.38	0.00	403814.76	777584.05	N 32 6 28.32	W 103 34 13.20
	7300.00	9.30	86.15	7227.88	-52.06	60.34	897.50	0.00	403815.84	777600.17	N 32 6 28.33	W 103 34 13.01
	7400.00	9.30	86.15	7326.57	-53.00	61.42	913.62	0.00	403816.93	777616.29	N 32 6 28.34	W 103 34 12.83
	7500.00	9.30	86.15	7425.26	-53.93	62.50	929.73	0.00	403818.01	777632.41	N 32 6 28.35	W 103 34 12.64
Drop to Vertical 2°/100' DLS	7575.74	9.30	86.15	7500.00	-54.64	63.32	941.94	0.00	403818.83	777644.61	N 32 6 28.36	W 103 34 12.50
Brushy Canyon	*7590.93*	*8.99*	*86.15*	*7515.00*	*-54.78*	*63.49*	*944.35*	*2.00*	*403818.99*	*777647.02*	*N 32 6 28.36*	*W 103 34 12.47*

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 ° ' ")
	7600.00	8.81	86.15	7523.96	-54.86	63.58	945.75	2.00	403819.09	777648.42	N 32 6 28.36	W 103 34 12.45
	7700.00	6.81	86.15	7623.03	-55.65	64.49	959.31	2.00	403820.00	777661.98	N 32 6 28.37	W 103 34 12.29
	7800.00	4.81	86.15	7722.51	-56.23	65.17	969.41	2.00	403820.68	777672.09	N 32 6 28.38	W 103 34 12.18
	7900.00	2.81	86.15	7822.28	-56.62	65.62	976.05	2.00	403821.12	777678.72	N 32 6 28.38	W 103 34 12.10
	8000.00	0.81	86.15	7922.23	-56.80	65.83	979.20	2.00	403821.34	777681.87	N 32 6 28.38	W 103 34 12.06
Hold Vertical	8040.58	0.00	86.15	7962.81	-56.82	65.85	979.49	2.00	403821.36	777682.16	N 32 6 28.38	W 103 34 12.06
	8100.00	0.00	86.15	8022.22	-56.82	65.85	979.49	0.00	403821.36	777682.16	N 32 6 28.38	W 103 34 12.06
	8200.00	0.00	86.15	8122.22	-56.82	65.85	979.49	0.00	403821.36	777682.16	N 32 6 28.38	W 103 34 12.06
	8300.00	0.00	86.15	8222.22	-56.82	65.85	979.49	0.00	403821.36	777682.16	N 32 6 28.38	W 103 34 12.06
	8400.00	0.00	86.15	8322.22	-56.82	65.85	979.49	0.00	403821.36	777682.16	N 32 6 28.38	W 103 34 12.06
	8500.00	0.00	86.15	8422.22	-56.82	65.85	979.49	0.00	403821.36	777682.16	N 32 6 28.38	W 103 34 12.06
	8600.00	0.00	86.15	8522.22	-56.82	65.85	979.49	0.00	403821.36	777682.16	N 32 6 28.38	W 103 34 12.06
	8700.00	0.00	86.15	8622.22	-56.82	65.85	979.49	0.00	403821.36	777682.16	N 32 6 28.38	W 103 34 12.06
	8800.00	0.00	86.15	8722.22	-56.82	65.85	979.49	0.00	403821.36	777682.16	N 32 6 28.38	W 103 34 12.06
	8900.00	0.00	86.15	8822.22	-56.82	65.85	979.49	0.00	403821.36	777682.16	N 32 6 28.38	W 103 34 12.06
KOP - Build 12°/100' DLS	8910.31	0.00	86.15	8832.54	-56.82	65.85	979.49	0.00	403821.36	777682.16	N 32 6 28.38	W 103 34 12.06
	9000.00	10.76	179.47	8921.70	-48.42	57.45	979.56	12.00	403812.96	777682.24	N 32 6 28.30	W 103 34 12.06
Bone Spring Lime	*9086.76*	*21.17*	*179.47*	*9005.00*	*-24.58*	*33.61*	*979.78*	*12.00*	*403789.12*	*777682.46*	*N 32 6 28.06*	*W 103 34 12.06*
	9100.00	22.76	179.47	9017.27	-19.63	28.66	979.83	12.00	403784.17	777682.50	N 32 6 28.01	W 103 34 12.06
Leonard Shale	*9164.63*	*30.52*	*179.47*	*9075.00*	*9.33*	*-0.30*	*980.10*	*12.00*	*403755.21*	*777682.77*	*N 32 6 27.73*	*W 103 34 12.06*
	9200.00	34.76	179.47	9104.78	28.40	-19.37	980.27	12.00	403736.14	777682.94	N 32 6 27.54	W 103 34 12.06
	9300.00	46.76	179.47	9180.38	93.57	-84.54	980.87	12.00	403670.98	777683.54	N 32 6 26.89	W 103 34 12.06
	9400.00	58.76	179.47	9240.78	173.04	-164.00	981.61	12.00	403591.51	777684.28	N 32 6 26.11	W 103 34 12.05
	9500.00	70.76	179.47	9283.34	263.33	-254.29	982.44	12.00	403501.23	777685.11	N 32 6 25.21	W 103 34 12.05
	9600.00	82.76	179.47	9306.20	360.50	-351.45	983.33	12.00	403404.07	777686.00	N 32 6 24.25	W 103 34 12.05
Landing Point	9660.31	90.00	179.47	9310.00	420.65	-411.60	983.89	12.00	403343.92	777686.56	N 32 6 23.66	W 103 34 12.05
	9700.00	90.00	179.47	9310.00	460.34	-451.28	984.25	0.00	403304.24	777686.92	N 32 6 23.26	W 103 34 12.05
	9800.00	90.00	179.47	9310.00	560.34	-551.28	985.17	0.00	403204.25	777687.85	N 32 6 22.27	W 103 34 12.04
	9900.00	90.00	179.47	9310.00	660.34	-651.28	986.10	0.00	403104.25	777688.77	N 32 6 21.29	W 103 34 12.04
	10000.00	90.00	179.47	9310.00	760.34	-751.27	987.02	0.00	403004.26	777689.69	N 32 6 20.30	W 103 34 12.04
	10100.00	90.00	179.47	9310.00	860.34	-851.27	987.94	0.00	402904.27	777690.61	N 32 6 19.31	W 103 34 12.04
	10200.00	90.00	179.47	9310.00	960.34	-951.26	988.86	0.00	402804.27	777691.53	N 32 6 18.32	W 103 34 12.03
	10300.00	90.00	179.47	9310.00	1060.34	-1051.26	989.78	0.00	402704.28	777692.45	N 32 6 17.33	W 103 34 12.03
	10400.00	90.00	179.47	9310.00	1160.34	-1151.26	990.70	0.00	402604.29	777693.37	N 32 6 16.34	W 103 34 12.03
	10500.00	90.00	179.47	9310.00	1260.34	-1251.25	991.63	0.00	402504.30	777694.30	N 32 6 15.35	W 103 34 12.03
	10600.00	90.00	179.47	9310.00	1360.34	-1351.25	992.55	0.00	402404.30	777695.22	N 32 6 14.36	W 103 34 12.02
	10700.00	90.00	179.47	9310.00	1460.34	-1451.24	993.47	0.00	402304.31	777696.14	N 32 6 13.37	W 103 34 12.02
	10800.00	90.00	179.47	9310.00	1560.34	-1551.24	994.39	0.00	402204.32	777697.06	N 32 6 12.38	W 103 34 12.02
	10900.00	90.00	179.47	9310.00	1660.34	-1651.23	995.31	0.00	402104.32	777697.98	N 32 6 11.39	W 103 34 12.02
	11000.00	90.00	179.47	9310.00	1760.34	-1751.23	996.23	0.00	402004.33	777698.90	N 32 6 10.40	W 103 34 12.01
	11100.00	90.00	179.47	9310.00	1860.34	-1851.23	997.15	0.00	401904.34	777699.83	N 32 6 9.41	W 103 34 12.01
	11200.00	90.00	179.47	9310.00	1960.34	-1951.22	998.08	0.00	401804.35	777700.75	N 32 6 8.42	W 103 34 12.01
	11300.00	90.00	179.47	9310.00	2060.34	-2051.22	999.00	0.00	401704.35	777701.67	N 32 6 7.43	W 103 34 12.01
	11400.00	90.00	179.47	9310.00	2160.34	-2151.21	999.92	0.00	401604.36	777702.59	N 32 6 6.44	W 103 34 12.00
	11500.00	90.00	179.47	9310.00	2260.34	-2251.21	1000.84	0.00	401504.37	777703.51	N 32 6 5.45	W 103 34 12.00
	11600.00	90.00	179.47	9310.00	2360.34	-2351.20	1001.76	0.00	401404.38	777704.43	N 32 6 4.46	W 103 34 12.00
	11700.00	90.00	179.47	9310.00	2460.34	-2451.20	1002.68	0.00	401304.38	777705.35	N 32 6 3.47	W 103 34 12.00
	11800.00	90.00	179.47	9310.00	2560.34	-2551.20	1003.61	0.00	401204.39	777706.28	N 32 6 2.48	W 103 34 11.99
	11900.00	90.00	179.47	9310.00	2660.34	-2651.19	1004.53	0.00	401104.40	777707.20	N 32 6 1.49	W 103 34 11.99
	12000.00	90.00	179.47	9310.00	2760.34	-2751.19	1005.45	0.00	401004.40	777708.12	N 32 6 0.51	W 103 34 11.99
	12100.00	90.00	179.47	9310.00	2860.34	-2851.18	1006.37	0.00	400904.41	777709.04	N 32 5 59.52	W 103 34 11.99
	12200.00	90.00	179.47	9310.00	2960.34	-2951.18	1007.29	0.00	400804.42	777709.96	N 32 5 58.53	W 103 34 11.98
	12300.00	90.00	179.47	9310.00	3060.34	-3051.17	1008.21	0.00	400704.43	777710.88	N 32 5 57.54	W 103 34 11.98
	12400.00	90.00	179.47	9310.00	3160.34	-3151.17	1009.13	0.00	400604.43	777711.80	N 32 5 56.55	W 103 34 11.98
	12500.00	90.00	179.47	9310.00	3260.34	-3251.17	1010.06	0.00	400504.44	777712.73	N 32 5 55.56	W 103 34 11.98
	12600.00	90.00	179.47	9310.00	3360.34	-3351.16	1010.98	0.00	400404.45	777713.65	N 32 5 54.57	W 103 34 11.98
	12700.00	90.00	179.47	9310.00	3460.34	-3451.16	1011.90	0.00	400304.45	777714.57	N 32 5 53.58	W 103 34 11.97

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 ° ' ")
	12800.00	90.00	179.47	9310.00	3560.34	-3551.15	1012.82	0.00	400204.46	777715.49	N 32 5 52.59	W 103 34 11.97
	12900.00	90.00	179.47	9310.00	3660.34	-3651.15	1013.74	0.00	400104.47	777716.41	N 32 5 51.60	W 103 34 11.97
	13000.00	90.00	179.47	9310.00	3760.34	-3751.14	1014.66	0.00	400004.48	777717.33	N 32 5 50.61	W 103 34 11.97
	13100.00	90.00	179.47	9310.00	3860.34	-3851.14	1015.59	0.00	399904.48	777718.26	N 32 5 49.62	W 103 34 11.96
	13200.00	90.00	179.47	9310.00	3960.34	-3951.14	1016.51	0.00	399804.49	777719.18	N 32 5 48.63	W 103 34 11.96
	13300.00	90.00	179.47	9310.00	4060.34	-4051.13	1017.43	0.00	399704.50	777720.10	N 32 5 47.64	W 103 34 11.96
	13400.00	90.00	179.47	9310.00	4160.34	-4151.13	1018.35	0.00	399604.50	777721.02	N 32 5 46.65	W 103 34 11.96
	13500.00	90.00	179.47	9310.00	4260.34	-4251.12	1019.27	0.00	399504.51	777721.94	N 32 5 45.66	W 103 34 11.95
	13600.00	90.00	179.47	9310.00	4360.34	-4351.12	1020.19	0.00	399404.52	777722.86	N 32 5 44.67	W 103 34 11.95
	13700.00	90.00	179.47	9310.00	4460.34	-4451.11	1021.11	0.00	399304.53	777723.78	N 32 5 43.68	W 103 34 11.95
	13800.00	90.00	179.47	9310.00	4560.34	-4551.11	1022.04	0.00	399204.53	777724.71	N 32 5 42.69	W 103 34 11.95
Cimarex Cascade 28 Federal 85H - PBHL [330' FSL, 380' FEL]	13804.77	90.00	179.47	9310.00	4565.11	-4555.88	1022.08	0.00	399199.76	777724.75	N 32 5 42.65	W 103 34 11.95

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	24.000	1/100.000	30.000	30.000		NAL_MWD_IFR1+MS-Depth Only	Original Borehole / Cimarex Cascade 28 Federal 85H Rev0 RM 9Mar18
	1	24.000	13804.774	1/100.000	30.000	30.000		NAL_MWD_IFR1+MS	Original Borehole / Cimarex Cascade 28 Federal 85H Rev0

Schlumberger

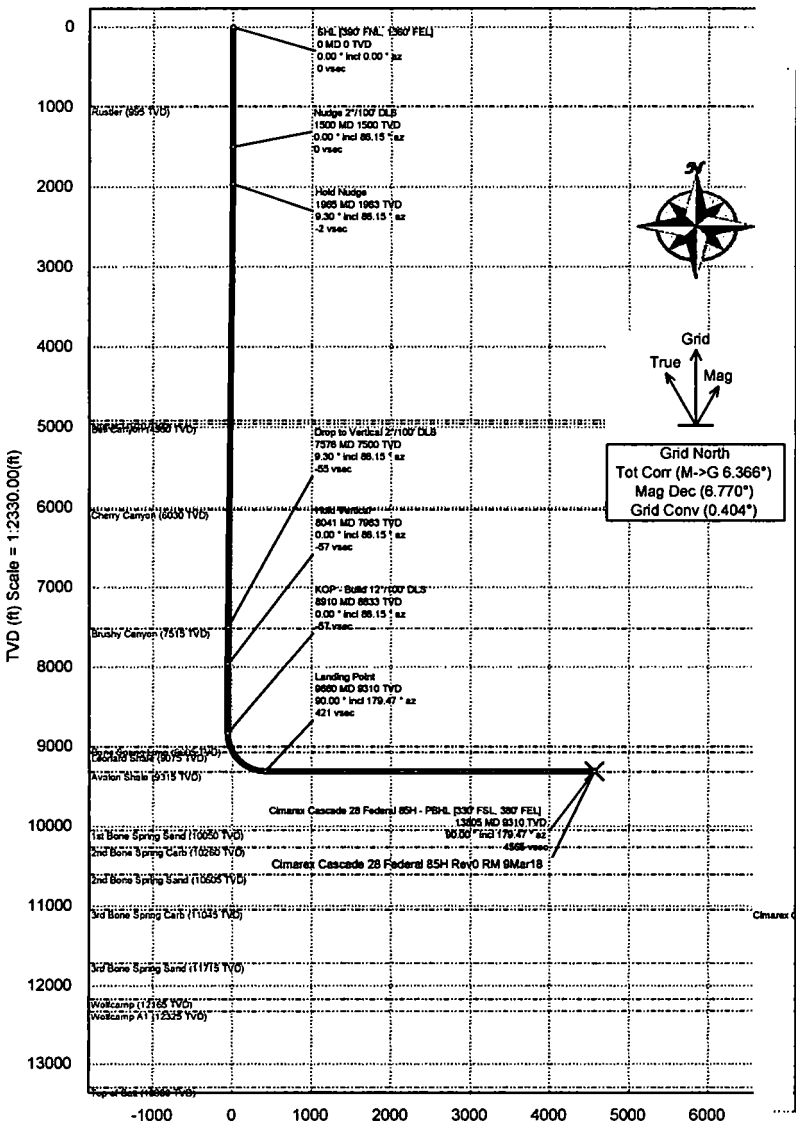
Cimarex Rev 0

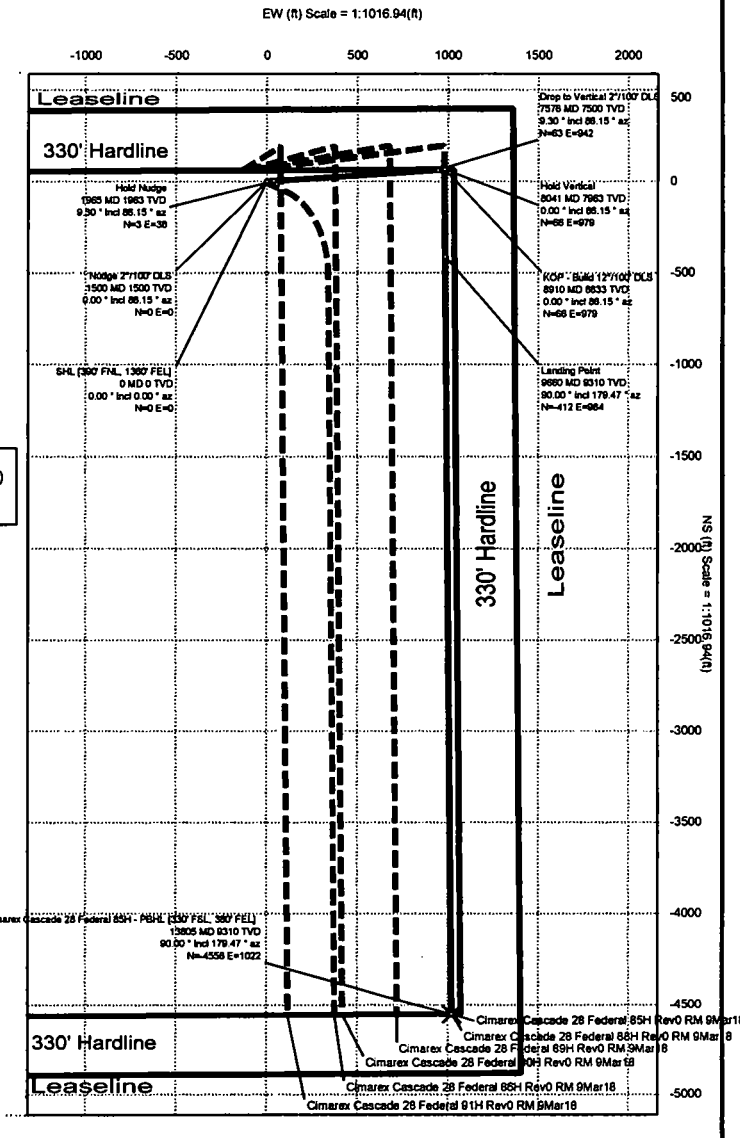
CIMAREX

Borehole:	Well:	Field:	Structure:
Original Borehole	Cimarex Cascade 28 Federal 85H	NM Lea County (NAD 83)	Cimarex Cascade 28 Federal 85H

Gravity & Magnetic Parameters					Surface Location	NAD83 New Mexico State Plane, Eastern Zone, US Feet				Miscellaneous		
Model:	HDGM 2018	Dip: 59.778°	Date:	12-Mar-2018	Lat:	N 32 6 27.80	Northing:	403766.61ftUS	Grid Conv:	0.404°	Slot:	Cimarex Cascade 28 Federal 85H
MagDec:	6.77°	FS: 47903.71nT	Gravity FS:	998.438mgn (9.80665 Based)	Lon:	W 103 34 23.45	Easting:	776702.7ftUS	Scale Fact:	0.99997254	Plan:	Cimarex Cascade 28 Federal 85H Rev0 RM 9Mar18

TVD Ref: RKB(3388ft above MSL)





Vertical Section (ft) Azim = 179.47° Scale = 1:2330.00(ft) Origin = 0N/-S, 0E/-W

Critical Points

Critical Point	MD	INCL	AZIM	TVD	VSEC	N(+)/S(-)	E(+)/W(-)	DLS
SHL [390' FNL, 1360' FEL]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rustler	995.00	0.00	86.15	995.00	0.00	0.00	0.00	0.00
Nudge 2°/100' DLS	1500.00	0.00	86.15	1500.00	0.00	0.00	0.00	0.00
Hold Nudge	1964.84	9.30	86.15	1962.81	-2.18	2.52	37.55	2.00
Lamar	4961.40	9.30	86.15	4920.00	-30.20	34.99	520.55	0.00
Bell Canyon	5001.93	9.30	86.15	4960.00	-30.58	35.43	527.08	0.00
Cherry Canyon	6088.17	9.30	86.15	6030.00	-40.71	47.18	701.85	0.00
Drop to Vertical 2°/100' DLS	7575.74	9.30	86.15	7500.00	-54.64	63.32	941.94	0.00
Brushy Canyon	7590.93	8.99	86.15	7515.00	-54.78	63.49	944.35	2.00
Hold Vertical	8040.58	0.00	86.15	7962.81	-56.82	65.85	979.49	2.00
KOP - Build 12°/100' DLS	8910.31	0.00	86.15	8832.54	-56.82	65.85	979.49	0.00
Bone Spring Lime	9086.76	21.17	179.47	9005.00	-24.58	33.61	979.78	12.00
Leonard Shale	9164.63	30.52	179.47	9075.00	9.33	-0.30	980.10	12.00
Landing Point	9660.31	90.00	179.47	9310.00	420.65	-411.60	983.89	12.00
Cimarex Cascade 28 Federal 85H - PBHL [330' FSL, 380' FEL]	13804.77	90.00	179.47	9310.00	4565.11	-4555.88	1022.08	0.00
Wolfcamp	NaN			12165.00				
3rd Bone Spring Carb	NaN			11045.00				
Top of Salt	NaN			13300.00				
3rd Bone Spring Sand	NaN			11715.00				
2nd Bone Spring Carb	NaN			10260.00				
2nd Bone Spring Sand	NaN			10605.00				
Avalon Shale	NaN			9315.00				
1st Bone Spring Sand	NaN			10050.00				
Wolfcamp A1	NaN			12325.00				

Schlumberger

CIMAREX

Cimarex Cascade 28 Federal 85H Rev0 RM 9Mar18 Anti-Collision Summary Report

Analysis Date-24hr Time:	March 14, 2018 - 13:39	**Analysis Method:**	3D Least Distance
Client:	Cimarex	**Reference Trajectory:**	Cimarex Cascade 28 Federal 85H Rev0 RM 9Mar18 (Non-Def Plan)
Field:	NM Lea County (NAD 83)	**Depth Interval:**	Every 10.00 Measured Depth (ft)
Structure:	Cimarex Cascade 28 Federal 85H	**Rule Set:**	NAL Procedure: D&M AntiCollision Standard S002
Slot:	Cimarex Cascade 28 Federal 85H	**Min Pts:**	All local minima indicated.
Well:	Cimarex Cascade 28 Federal 85H	**Version / Patch:**	2.10.706.0
Borehole:	Original Borehole	**Database \ Project:**	US1153APP452.dir.slb.com\drilling-NM Lea County 2.10
Scan MD Range:	0.00ft ~ 13804.77ft		

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: Restricted within 54815.27 ft

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

Results highlighted: Sep-Factor separation <= 1.50 ft

Cimarex Cascade 28 Federal 85H Rev0 RM 9Mar18 (Non-Def Plan)											Warning Alert
	19.99	16.49	17.49	3.50	N/A	MAS = 5.03 (m)	0.00	0.00	CtCt<=15m<15.00		Enter Alert
	19.99	16.49	17.49	3.50	4920.35	MAS = 5.03 (m)	24.00	24.00			WRP
	19.99	16.49	8.45	3.50	1.93	MAS = 5.03 (m)	1500.00	1500.00			MinPts
	20.01	16.49	8.42	3.52	1.93	MAS = 5.03 (m)	1510.00	1510.00			MINPT-O-EOU
	20.15	16.49	8.46	3.66	1.92	MAS = 5.03 (m)	1530.00	1530.00			MinPt-O-SF
	56.82	18.97	43.34	37.85	4.95	OSF1.50	1960.00	1958.03	OSF>5.00		Exit Alert
	1001.66	74.81	950.95	926.85	20.73	OSF1.50	8630.00	8552.22			MinPts
	645.92	74.07	595.70	571.84	13.48	OSF1.50	9760.00	9310.00			MinPt-CtCt
	645.92	152.24	543.59	493.68	6.45	OSF1.50	13800.00	9310.00			MinPts
	645.93	152.21	543.62	493.72	6.45	OSF1.50	13804.77	9310.00			TD
Cimarex Cascade 28 Federal 88H Rev0 RM 9Mar18 (Non-Def Plan)											Warning Alert
	99.96	32.81	97.46	67.15	N/A	MAS = 10.00 (m)	0.00	0.00			Surface
	99.96	32.81	97.46	67.15	33742.95	MAS = 10.00 (m)	24.00	24.00			WRP
	99.95	32.81	88.27	67.15	10.61	MAS = 10.00 (m)	1540.00	1540.00			MinPts
	100.02	32.81	88.06	67.21	10.31	MAS = 10.00 (m)	1670.00	1669.90			MINPT-O-EOU
	100.07	32.81	88.06	67.27	10.25	MAS = 10.00 (m)	1720.00	1719.78			MINPT-O-EOU
	101.44	32.81	89.01	68.63	9.97	MAS = 10.00 (m)	1950.00	1948.15			MinPt-O-SF
	268.43	67.00	222.93	201.43	6.18	OSF1.50	7575.74	7500.00			MinPt-O-SF
	269.08	67.15	223.48	201.93	6.19	OSF1.50	7600.00	7523.96			MinPt-O-SF
	224.33	69.18	177.38	155.15	4.99	OSF1.50	8260.00	8182.22	OSF<5.00		Enter Alert
	159.52	74.02	109.34	85.50	3.29	OSF1.50	8960.00	8882.13			MinPts
	159.64	74.09	109.41	85.55	3.29	OSF1.50	8970.00	8892.07			MinPt-O-SF
	247.21	75.92	195.77	171.30	5.00	OSF1.50	9250.00	9144.29	OSF>5.00		Exit Alert
	3068.70	152.23	2966.38	2916.47	30.72	OSF1.50	13804.77	9310.00			MinPts

Offset Trajectory	Separation			Allow	Sep.	Controlling	Reference Trajectory		Risk Level			Alert	Status
	Ct-Ct (ft)	MAS (ft)	EOU (ft)	Dev. (ft)	Fact.	Rule	MD (ft)	TVD (ft)	Alert	Minor	Major		
Cimarex Cascade 28 Federal 85H Rev0 RM 9Mar18 (Non-Def Plan)												Pass	
	116.64	32.81	114.14	83.83	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	116.64	32.81	114.13	83.83	25685.19	MAS = 10.00 (m)	24.00	24.00				WRP	
	116.62	32.81	104.94	83.82	12.42	MAS = 10.00 (m)	1540.00	1540.00				MinPts	
	116.67	32.81	104.75	83.86	12.12	MAS = 10.00 (m)	1620.00	1619.98				MINPT-O-EOU	
	118.03	32.81	105.75	85.22	11.81	MAS = 10.00 (m)	1860.00	1859.05				MinPt-O-SF	
	158.70	32.81	143.80	125.89	12.59	MAS = 10.00 (m)	2630.00	2619.23				MinPt-O-SF	
	445.05	66.61	399.80	378.43	10.35	OSF1.50	7575.74	7500.00				MinPt-O-SF	
	350.26	73.40	300.49	276.86	7.36	OSF1.50	9010.00	8931.50				MinPt-CtCt	
	350.27	73.43	300.48	276.84	7.35	OSF1.50	9020.00	8941.26				MinPts	
	350.38	73.46	300.58	276.92	7.35	OSF1.50	9030.00	8950.97				MinPt-O-SF	
	3082.73	155.13	2978.47	2927.60	30.27	OSF1.50	13800.00	9310.00				MinPt-CtCt	
	3082.73	155.25	2978.40	2927.48	30.25	OSF1.50	13804.77	9310.00				MinPts	
Cimarex Cascade 28 Federal 90H Rev0 RM 9Mar18 (Non-Def Plan)												Pass	
	134.13	32.81	131.63	101.33	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	134.13	32.81	131.63	101.33	26929.91	MAS = 10.00 (m)	24.00	24.00				WRP	
	134.13	32.81	122.51	101.32	14.44	MAS = 10.00 (m)	1520.00	1520.00				MinPts	
	134.23	32.81	122.32	101.42	14.00	MAS = 10.00 (m)	1600.00	1599.98				MINPT-O-EOU	
	136.53	32.81	124.25	103.72	13.70	MAS = 10.00 (m)	1820.00	1819.33				MinPt-O-SF	
	584.94	66.21	539.96	518.73	13.71	OSF1.50	7530.00	7454.86				MinPt-O-SF	
	617.35	67.95	571.22	549.41	14.09	OSF1.50	8910.31	8832.54				MINPT-O-EOU	
	617.37	67.97	571.23	549.40	14.09	OSF1.50	8920.00	8842.22				MinPt-O-ADP	
	617.91	68.08	571.69	549.84	14.08	OSF1.50	8960.00	8882.13				MinPt-O-SF	
	3126.48	157.06	3020.95	2969.43	30.32	OSF1.50	13800.00	9310.00				MinPt-CtCt	
	3126.49	157.14	3020.89	2969.34	30.30	OSF1.50	13804.77	9310.00				MinPts	
Cimarex Cascade 28 Federal 91H Rev0 RM 9Mar18 (Non-Def Plan)												Pass	
	152.30	32.81	149.80	119.49	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	152.30	32.81	149.80	119.49	32105.63	MAS = 10.00 (m)	24.00	24.00				WRP	
	152.30	32.81	140.76	119.49	16.57	MAS = 10.00 (m)	1500.00	1500.00				MinPts	
	152.36	32.81	140.65	119.56	16.27	MAS = 10.00 (m)	1540.00	1540.00				MINPT-O-EOU	
	156.12	32.81	143.78	123.31	15.61	MAS = 10.00 (m)	1760.00	1759.64				MinPt-O-SF	
	485.65	43.10	456.08	442.55	17.85	OSF1.50	5010.00	4967.98				MinPt-O-SF	
	913.78	69.51	866.60	844.26	20.40	OSF1.50	8920.00	8842.22				MinPts	
	915.34	69.89	867.92	845.45	20.32	OSF1.50	9010.00	8931.50				MinPt-O-SF	
	3198.28	157.46	3092.48	3040.82	30.94	OSF1.50	13800.00	9310.00				MinPt-CtCt	
	3198.28	157.51	3092.45	3040.78	30.93	OSF1.50	13804.77	9310.00				MinPts	
Cimarex Cascade 28 Federal 71H Rev0 RM 8Mar18 (Non-Def Plan)												Pass	
	599.85	32.81	597.35	567.04	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	599.85	32.81	597.33	567.04	33191.75	MAS = 10.00 (m)	24.00	24.00				WRP	
	597.13	32.81	585.15	564.32	62.76	MAS = 10.00 (m)	1740.00	1739.72				MinPts	
	855.13	40.83	827.07	814.30	33.37	OSF1.50	5070.00	5027.18				MinPt-O-SF	
	1254.46	59.47	1213.98	1194.99	32.96	OSF1.50	7575.74	7500.00				MinPt-O-SF	
	1292.09	63.57	1248.88	1228.52	31.68	OSF1.50	8910.31	8832.54				MinPts	
	1290.85	61.47	1249.04	1229.38	32.77	OSF1.50	9720.00	9310.00				MinPt-CtCt	

Offset Trajectory	Separation			Allow	Sep.	Controlling	Reference Trajectory		Risk Level			Alert	Status
	Ct-Ct (ft)	MAS (ft)	EOU (ft)	Dev. (ft)	Fact.	Rule	MD (ft)	TVD (ft)	Alert	Minor	Major		
	1290.85	151.86	1188.78	1138.99	12.94	OSF1.50	13800.00	9310.00				MinPts	
	1290.86	151.83	1188.81	1139.03	12.94	OSF1.50	13804.77	9310.00				TD	
Cimarex Cascade 28 Federal 72H Rev0 RM 9Mar18 (Non-Def Plan)													Pass
	620.00	32.81	617.50	587.19	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	620.00	32.81	617.48	587.19	31945.12	MAS = 10.00 (m)	24.00	24.00				WRP	
	620.00	32.81	608.50	587.19	68.60	MAS = 10.00 (m)	1490.00	1490.00				MinPts	
	620.01	32.81	608.46	587.20	68.25	MAS = 10.00 (m)	1500.00	1500.00				MINPT-O-EOU	
	624.12	32.81	612.26	591.32	66.37	MAS = 10.00 (m)	1610.00	1609.97				MinPt-O-SF	
	1516.44	41.42	1487.99	1475.01	58.34	OSF1.50	5220.00	5175.21				MinPt-O-SF	
	1899.80	59.45	1859.33	1840.35	49.97	OSF1.50	7575.74	7500.00				MinPt-O-SF	
	1937.41	63.54	1894.22	1873.87	47.55	OSF1.50	8910.31	8832.54				MinPts	
	1936.75	61.41	1894.98	1875.34	49.25	OSF1.50	9720.00	9310.00				MinPt-CtCt	
	1936.77	151.90	1834.67	1784.87	19.42	OSF1.50	13804.77	9310.00				MinPts	
Cimarex Cascade 28 Federal 74H Rev0 9Mar18 (Non-Def Plan)													Pass
	682.60	32.81	680.10	649.79	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	682.60	32.81	680.08	649.79	30919.11	MAS = 10.00 (m)	24.00	24.00				WRP	
	679.40	32.81	667.43	646.60	71.41	MAS = 10.00 (m)	1740.00	1739.72				MinPts	
	1087.23	59.92	1046.45	1027.31	28.34	OSF1.50	7020.00	6951.56				MinPt-O-SF	
	1204.86	64.62	1160.95	1140.24	29.03	OSF1.50	8990.00	8911.86				MINPT-O-EOU	
	1204.87	64.64	1160.95	1140.24	29.03	OSF1.50	9000.00	8921.70				MinPts	
	3288.74	160.28	3181.06	3128.47	31.24	OSF1.50	13790.00	9310.00				MinPt-CtCt	
	3288.75	160.60	3180.85	3128.14	31.18	OSF1.50	13804.77	9310.00				MinPts	
Cimarex Cascade 28 Federal 75H Rev0 RM 9Mar18 (Non-Def Plan)													Pass
	702.44	32.81	699.94	669.63	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	702.44	32.81	699.92	669.63	30885.23	MAS = 10.00 (m)	24.00	24.00				WRP	
	702.25	32.81	690.20	669.44	73.22	MAS = 10.00 (m)	1610.00	1609.97				MinPts	
	702.28	32.81	690.14	669.47	72.59	MAS = 10.00 (m)	1640.00	1639.94				MINPT-O-EOU	
	1070.57	43.52	1040.72	1027.05	39.06	OSF1.50	5000.00	4958.09				MinPt-O-SF	
	1475.78	65.33	1431.40	1410.45	35.17	OSF1.50	7575.74	7500.00				MinPt-O-SF	
	1513.02	71.08	1464.80	1441.94	33.04	OSF1.50	8930.00	8852.22				MinPts	
	1517.76	71.71	1469.11	1446.04	32.84	OSF1.50	9120.00	9035.55				MinPt-O-SF	
	3410.69	160.96	3302.55	3249.73	32.26	OSF1.50	13790.00	9310.00				MinPt-CtCt	
	3410.70	161.25	3302.36	3249.44	32.20	OSF1.50	13804.77	9310.00				MinPts	
Cimarex Cascade 28 Federal 76H Rev0 RM 9Mar18 (Non-Def Plan)													Pass
	722.36	32.81	719.86	689.55	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	722.36	32.81	719.84	689.55	33749.34	MAS = 10.00 (m)	24.00	24.00				WRP	
	722.36	32.81	710.86	689.55	79.95	MAS = 10.00 (m)	1490.00	1490.00				MinPts	
	722.37	32.81	710.81	689.56	79.46	MAS = 10.00 (m)	1500.00	1500.00				MINPT-O-EOU	
	1377.59	44.58	1347.04	1333.01	49.01	OSF1.50	5080.00	5046.91				MinPt-O-SF	
	1386.65	44.86	1355.90	1341.78	49.01	OSF1.50	5140.00	5096.26				MinPt-O-SF	
	1775.66	66.84	1730.27	1708.82	41.34	OSF1.50	7575.74	7500.00				MinPt-O-SF	
	1812.98	72.95	1763.51	1740.03	38.55	OSF1.50	8930.00	8852.22				MINPT-O-EOU	
	1813.01	72.99	1763.52	1740.02	38.52	OSF1.50	8940.00	8862.21				MinPt-O-ADP	
	1820.06	73.78	1770.04	1746.28	38.25	OSF1.50	9180.00	9088.11				MinPt-O-SF	

Offset Trajectory	Separation			Allow	Sep.	Controlling	Reference Trajectory		Risk Level			Alert	Status
	Ct-Ct (ft)	MAS (ft)	EOU (ft)	Dev. (ft)	Fact.	Rule	MD (ft)	TVD (ft)	Alert	Minor	Major		
	3554.44	158.55	3447.91	3395.90	34.14	OSF1.50	13804.77	9310.00				MinPts	
Cimarex Cascade 28 Federal 77H Rev0 RM 9Mar18 (Non-Def Plan)													Pass
	742.36	32.81	739.86	709.55	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	742.38	32.81	739.83	709.55	30272.30	MAS = 10.00 (m)	24.00	24.00				WRP	
	742.36	32.81	730.91	709.55	82.71	MAS = 10.00 (m)	1480.00	1480.00				MinPts	
	742.38	32.81	730.83	709.57	81.75	MAS = 10.00 (m)	1500.00	1500.00				MINPT-O-EOU	
	747.22	32.81	735.34	714.41	79.43	MAS = 10.00 (m)	1620.00	1619.96				MinPt-O-SF	
	2014.82	60.37	1973.74	1954.44	52.16	OSF1.50	7230.00	7158.80				MinPt-O-SF	
	2071.17	62.26	2028.83	2008.91	51.92	OSF1.50	7575.74	7500.00				MinPt-O-SF	
	2108.77	64.53	2064.92	2044.24	50.94	OSF1.50	8990.00	8911.86				MINPT-O-EOU	
	2108.78	64.55	2064.92	2044.23	50.92	OSF1.50	9000.00	8921.70				MinPt-O-ADP	
	2109.01	64.56	2065.14	2044.45	50.92	OSF1.50	9070.00	8989.26				MinPt-O-SF	
	3715.40	154.75	3611.41	3560.66	36.58	OSF1.50	13804.77	9310.00				MinPts	

1. Geological Formations

TVD of target 9,310
MD at TD 13,805

Pilot Hole TD N/A
Deepest expected fresh water

Formation	Depth (TVD) from KB	Water/Mineral Bearing/Target Zone	Hazards
Rustler	995	N/A	
Top of Salt	1330	N/A	
Lamar	4920	N/A	
Bell Canyon	4960	N/A	
Cherry Canyon	6030	N/A	
Brushy Canyon	7515	Hydrocarbons	
Bone Spring Lime	9005	Hydrocarbons	
Leonard Shale	9075	Hydrocarbons	
Avalon Shale	9315	Hydrocarbons	
1st Bone Spring Sand	10050	Hydrocarbons	
2nd Bone Spring Carb	10260	Hydrocarbons	
2nd Bone Spring Sand	10605	Hydrocarbons	
3rd Bone Spring Carb	11045	Hydrocarbons	
3rd Bone Spring Sand	11715	Hydrocarbons	
Wolfcamp	12165	Hydrocarbons	
Wolfcamp A1	12325	Hydrocarbons	

2. Casing Program

Hole Size	Casing Depth From	Casing Depth To	Casing Size	Weight (lb/ft)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
17 1/2	0	1045	13-3/8"	48.00	H-40/J-55 Hybrid	ST&C	1.55	3.62	6.42
12 1/4	0	4940	9-5/8"	40.00	J-55	LT&C	1.56	1.51	2.63
8 3/4	0	8910	5-1/2"	17.00	L-80	LT&C	1.51	1.86	2.14
8 3/4	8910	13805	5-1/2"	17.00	L-80	BT&C	1.44	1.78	58.38
				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	507	13.50	1.72	9.15	15.5	Lead: Class C + Bentonite
	136	14.80	1.34	6.32	9.5	Tail: Class C + LCM
Intermediate	937	12.90	1.88	9.65	12	Lead: 35:65 (Poz:C) + Salt + Bentonite
	289	14.80	1.34	6.32	9.5	Tail: Class C + LCM
Production	359	10.30	3.64	22.18		Lead: Tuned Light + LCM
	1047	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	50
Production	4740	17

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 1045'	FW Spud Mud	8.30 - 8.80	30-32	N/C
1045' to 4940'	Brine Water	9.70 - 10.20	30-32	N/C
4940' to 13805'	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 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	4357 psi
Abnormal Temperature	No

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

8. Other Facets of Operation

9. Wellhead

A multi-bowl wellhead system will be utilized.

After running the 13-3/8" surface casing, a 13 5/8" BOP/BOPE system with a minimum working pressure of 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.

Exhibit F – Co-Flex Hose
Cascade 28 Federal 85H
Cimarex Energy Co.
28-25S-33E
Lea Co., NM

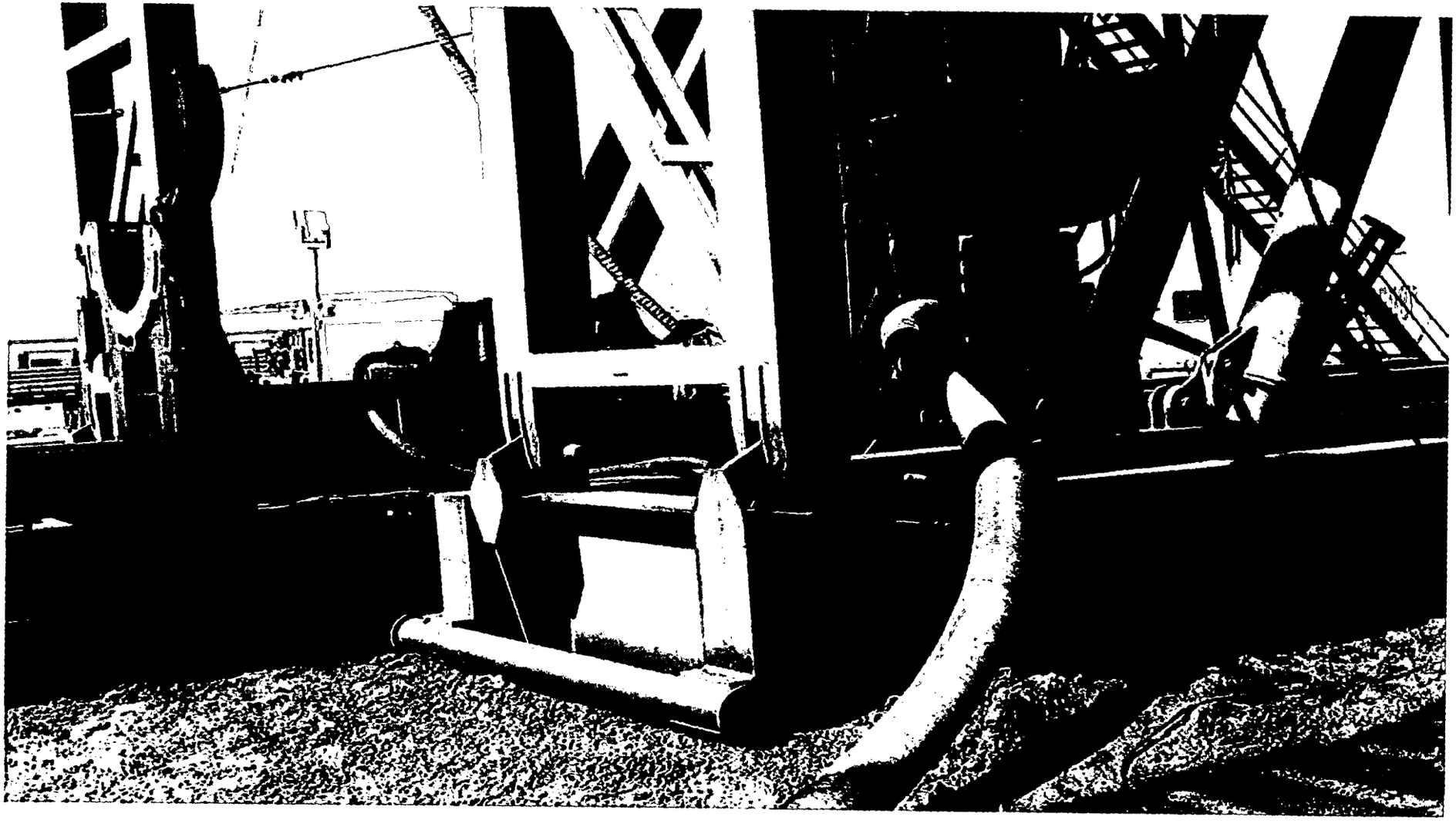


Exhibit F-1 – Co-Flex Hose Hydrostatic Test
Cascade 28 Federal 85H
Cimarex Energy Co.
28-25S-33E
Lea Co., NM

Midwest Hose
& Specialty, Inc.

INTERNAL HYDROSTATIC TEST REPORT

Customer: Oderco Inc	**P.O. Number:** 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.

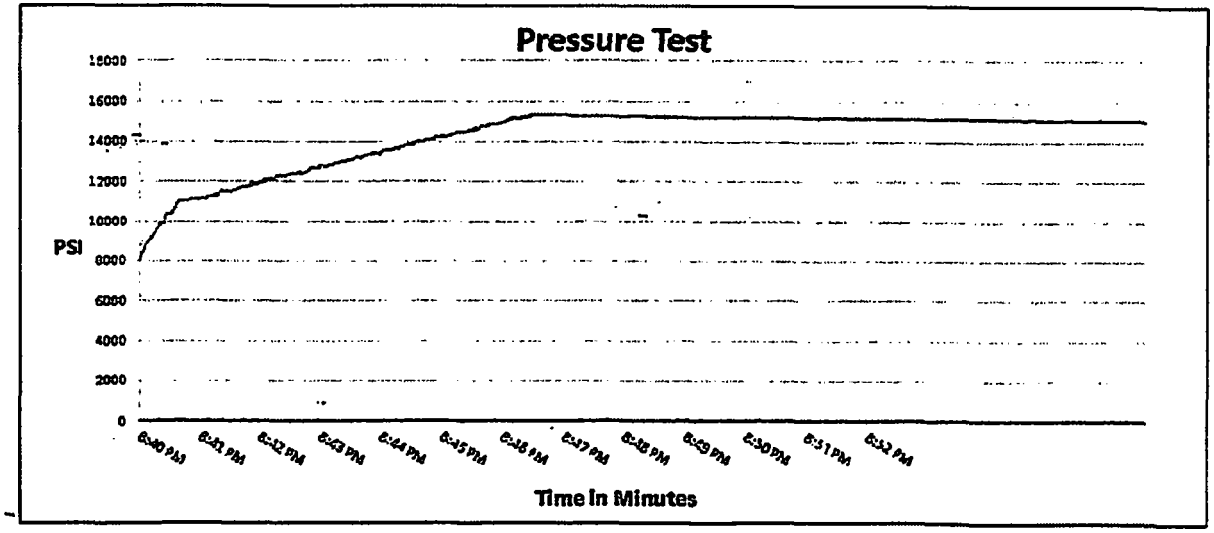
Internal Hydrostatic Test Graph

March 3, 2011

Customer: Houston

Pick Ticket #: 94260

Hose Specifications		Verification	
Hose Type	**Length**	**Type of Fitting**	**Coupling Method**
C & K	45'	4 1/16 10K	Swage
I.D.	**O.D.**	**Die Size**	**Final O.D.**
4"	6.09"	6.38"	6.25"
Working Pressure	**Burst Pressure**	**Hose Serial #**	**Hose Assembly Serial #**
10000 PSI	Standard Safety Multiplier Applies	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
Cascade 28 Federal 85H
Cimarex Energy Co.
28-25S-33E
Lea Co., NM

Exhibit F-2 – Co-Flex Hose
Cascade 28 Federal 85H
Cimarex Energy Co.
28-25S-33E
Lea Co., 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
Cascade 28 Federal 85H
Cimarex Energy Co.
28-25S-33E
Lea Co., 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: 10400028333 **Submission Date:** 03/15/2018

Operator Name: CIMAREX ENERGY COMPANY

Well Name: CASCADE 28 FEDERAL **Well Number:** 85H

Well Type: OIL WELL **Well Work Type:** Drill

[redacted]

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:

Cascade_28_Federal_Road_Route_20180315072927.pdf

[redacted]

ACOE Permit Number(s):

[redacted]

New road access plan attachment:

[redacted]

Access road engineering design attachment:

[redacted]

Operator Name: CIMAREX ENERGY COMPANY

Well Name: CASCADE 28 FEDERAL **Well Number:** 85H

Access surfacing type description:

[redacted]

Offsite topsoil source description:

[redacted]

Access other construction information:

Access miscellaneous information:

Number of access turnouts: **Access turnout map:**

Drainage Control

[redacted]

Road Drainage Control Structures (DCS) attachment:

Access Additional Attachments

Additional Attachment(s):

Section 2 - New or Reconstructed Access Roads

Will new roads be needed? YES

New Road Map:

Cascade_28_Federal_Road_Route_20180315072927.pdf

[redacted]

ACOE Permit Number(s):

[redacted]

Operator Name: CIMAREX ENERGY COMPANY

Well Name: CASCADE 28 FEDERAL **Well Number:** 85H

[redacted]

New road access plan attachment:

[redacted]

Access road engineering design attachment:

[redacted]

Access surfacing type description:

[redacted]

Offsite topsoil source description:

[redacted]

Access other construction information:

Access miscellaneous information:

Number of access turnouts: **Access turnout map:**

Drainage Control

[redacted]

Road Drainage Control Structures (DCS) attachment:

Access Additional Attachments

Additional Attachment(s):

Section 2 - New or Reconstructed Access Roads

Will new roads be needed? YES

New Road Map:

Cascade_28_Federal_Road_Route_20180315072927.pdf

[redacted]

ACOE Permit Number(s):

[redacted]

Operator Name: CIMAREX ENERGY COMPANY

Well Name: CASCADE 28 FEDERAL **Well Number:** 85H

[redacted]

New road access plan attachment:

[redacted]

Access road engineering design attachment:

[redacted]

Access surfacing type description:

[redacted]

Offsite topsoil source description:

[redacted]

Access other construction information:

Access miscellaneous information:

Number of access turnouts: **Access turnout map:**

Drainage Control

[redacted]

Road Drainage Control Structures (DCS) attachment:

Access Additional Attachments

Additional Attachment(s):

Section 3 - Location of Existing Wells

Existing Wells Map? YES

Attach Well map:

Cascade_28_Fed_W2E2_85H_Pad_Mile_Radius_Existing_Wells_20180315072945.pdf

Existing Wells description:

Section 4 - Location of Existing and/or Proposed Production Facilities

Submit or defer a Proposed Production Facilities plan? SUBMIT

Production Facilities description:

Production Facilities map:

Operator Name: CIMAREX ENERGY COMPANY

Well Name: CASCADE 28 FEDERAL **Well Number:** 85H

Cascade_28_Federal_BS3_CTB_Battery_Layout_20180315073005.pdf
Cascade_28_Federal_WC4_CTB_Battery_Layout_20180315073013.pdf

Section 5 - Location and Types of Water Supply

Water Source Table

Water source use type: INTERMEDIATE/PRODUCTION CASING, SURFACE CASING

Water source type: MUNICIPAL

Describe type:

Source latitude:

Source longitude:

Source datum:

Water source permit type: WATER RIGHT,WATER RIGHT

Permit Number:

Source land ownership: STATE

Water source transport method: PIPELINE,PIPELINE,TRUCKING,TRUCKING

Source transportation land ownership: STATE

Water source volume (barrels): 5000

Source volume (acre-feet): 0.6444655

Source volume (gal): 210000

Water source and transportation map:

Cascade_28_Fed_W2E2_85H_Pad_Drilling_Water_Routes_20180315073210.pdf

Water source comments:

New water well? NO

New Water Well Info

Well latitude: **Well Longitude:** **Well datum:**

Well target aquifer:

Est. depth to top of aquifer(ft): **Est thickness of aquifer:**

Aquifer comments:

Aquifer documentation:

Well depth (ft): **Well casing type:**

Well casing outside diameter (in.): **Well casing inside diameter (in.):**

New water well casing? **Used casing source:**

Drilling method: **Drill material:**

Grout material: **Grout depth:**

Casing length (ft.): **Casing top depth (ft.):**

Operator Name: CIMAREX ENERGY COMPANY

Well Name: CASCADE 28 FEDERAL **Well Number:** 85H

Well Production type: **Completion Method:**

Water well additional information:

State appropriation permit:

Additional information attachment:

Section 6 - Construction Materials

Construction Materials source location attachment:

Section 7 - Methods for Handling Waste

Waste type: DRILLING

Waste content description: Drilling Fluids, drill cuttings, water and other waste produced from the well during drilling operations.

Amount of waste: 15000 barrels

Waste disposal frequency : Weekly

Safe containment description: n/a

Safe containmant attachment:

Waste disposal type: HAUL TO COMMERCIAL FACILITY **Disposal location ownership:** COMMERCIAL

Disposal type description:

Disposal location description: Haul to R360 commercial Disposal

Waste type: GARBAGE

Waste content description: Garbage and trash produced during drilling and completion operations

Amount of waste: 32500 pounds

Waste disposal frequency : Weekly

Safe containment description: n/a

Safe containmant attachment:

Waste disposal type: HAUL TO COMMERCIAL FACILITY **Disposal location ownership:** COMMERCIAL

Disposal type description:

Disposal location description: Windmill Spraying Service hauls trash to Lea County Landfill

Reserve Pit

Reserve Pit being used? NO

Temporary disposal of produced water into reserve pit?

Operator Name: CIMAREX ENERGY COMPANY

Well Name: CASCADE 28 FEDERAL **Well Number:** 85H

Reserve pit length (ft.) **Reserve pit width (ft.)**

Reserve pit depth (ft.) **Reserve pit volume (cu. yd.)**

Is at least 50% of the reserve pit in cut?

Reserve pit liner

Reserve pit liner specifications and installation description

Cuttings Area

Cuttings Area being used? NO

Are you storing cuttings on location? NO

Description of cuttings location

Cuttings area length (ft.) **Cuttings area width (ft.)**

Cuttings area depth (ft.) **Cuttings area volume (cu. yd.)**

Is at least 50% of the cuttings area in cut?

WCuttings area liner

Cuttings area liner specifications and installation description

Section 8 - Ancillary Facilities

Are you requesting any Ancillary Facilities?: NO

Ancillary Facilities attachment:

Comments:

Section 9 - Well Site Layout

Well Site Layout Diagram:

Cascade_28_Fed_85H_Wellsite_Layout_20180315073332.pdf

Comments:

Operator Name: CIMAREX ENERGY COMPANY

Well Name: CASCADE 28 FEDERAL **Well Number:** 85H

Section 10 - Plans for Surface Reclamation

Type of disturbance: New Surface Disturbance **Multiple Well Pad Name:** CASCADE 28 FEDERAL W2E2

Multiple Well Pad Number: 85H PAD

Recontouring attachment:

Cascade_28_Fed_W2E2_85H_Pad_Interim_Reclaim_20180315073348.pdf

Drainage/Erosion control construction: To control and prevent potentially contaminated precipitation from leaving the pad site, a perimeter berm and settlement pond will be installed. Contaminated water will be removed from pond, stored in waste tanks, and disposed of at a state approved facility. Standing water or puddles will not be allowed. Drainage ditches would be established and maintained on the pad and along access roads to divert water away from operations. Natural drainage areas disturbed during construction would be re-contoured to near original condition prior to construction. Erosion Control Best Management Practices would be used where necessary and consist of seeding, fiber rolls, water bars, silt fences, and temporary diversion dikes. Areas disturbed during construction that are no longer needed for operations would be obliterated, re-contoured to near original condition prior to construction. Erosion Control Best Management Practices would be used where necessary and consist of seeding, fiber rolls, water bars, silt fences, and temporary diversion dikes. Areas disturbed during construction that are no longer needed for operations would be obliterated, re-contoured, and reclaimed to near original condition to re-establish natural drainage.

Drainage/Erosion control reclamation: All disturbed and re-contoured areas would be reseeded according to specifications. Approved seed mixtures would be certified weed free and consist of grasses, forbs, or shrubs similar to the surrounding area. Compacted soil areas may need to be obliterated and reclaimed to near natural conditions by re-contouring all slopes to facilitate and re-establish natural drainage.

Well pad proposed disturbance (acres): 6.889
Road proposed disturbance (acres): 6.877
Powerline proposed disturbance (acres): 6.102
Pipeline proposed disturbance (acres): 12.345
Other proposed disturbance (acres): 10.181
Total proposed disturbance: 42.394

Well pad interim reclamation (acres): 3.577
Road interim reclamation (acres): 0
Powerline interim reclamation (acres): 0
Pipeline interim reclamation (acres): 0
Other interim reclamation (acres): 0
Total interim reclamation: 3.577

Well pad long term disturbance (acres): 4.22
Road long term disturbance (acres): 6.877
Powerline long term disturbance (acres): 6.102
Pipeline long term disturbance (acres): 12.345
Other long term disturbance (acres): 10.181
Total long term disturbance: 39.725

Disturbance Comments: Flowline: 850', Gas lift: 850', Power: 8858', SWD: 6358', Sales: 11951', Road: 9986' Temp fresh water line: 7620'

Reconstruction method: After well plugging, all disturbed areas would be returned to the original contour or a contour that blends with the surrounding landform including roads unless the surface owner requests that they be left intact. In consultation with the surface owners it will be determined if any gravel or similar materials used to reinforce an area are to be removed, buried, or left in place during final reclamation. Salvaged topsoil, if any, would be re-spread evenly over the surfaces to be re-vegetated. As necessary, the soil surface would be prepared to provide a seedbed for re-establishment of desirable vegetation. Site preparation may include gouging, scarifying, dozer track-walking, mulching, or fertilizing. Reclamation, Re-vegetation, and Drainage: All disturbed and re-contoured areas would be reseeded using techniques outlined under Phase I and II of this plan or as specified by the land owner. Approved seed mixtures would be certified weed free and consist of grasses, forbs, or shrubs similar to the surrounding area. Compacted soil areas may need to be obliterated and reclaimed to near natural conditions by re-contouring all slopes to facilitate and re-establish natural drainage.

Topsoil redistribution: Salvaged topsoil, if any, would be re-spread evenly over the surfaces to be re-vegetated.

Soil treatment: As necessary, the soil surface would be prepared to provide a seedbed for re-establishment of desirable vegetation. Site preparation may include gouging, scarifying, dozer track-walking, mulching or fertilizing.

Existing Vegetation at the well pad:

Operator Name: CIMAREX ENERGY COMPANY

Well Name: CASCADE 28 FEDERAL **Well Number:** 85H

Existing Vegetation at the well pad attachment:

Existing Vegetation Community at the road:

Existing Vegetation Community at the road attachment:

Existing Vegetation Community at the pipeline:

Existing Vegetation Community at the pipeline attachment:

Existing Vegetation Community at other disturbances:

Existing Vegetation Community at other disturbances attachment:

Non native seed used?

Non native seed description:

Seedling transplant description:

Will seedlings be transplanted for this project?

Seedling transplant description attachment:

Will seed be harvested for use in site reclamation?

Seed harvest description:

Seed harvest description attachment:

Seed Management

Seed Table

Seed type: **Seed source:**

Seed name:

Source name: **Source address:**

Source phone:

Seed cultivar:

Seed use location:

PLS pounds per acre: **Proposed seeding season:**

Total pounds/Acre:

Seed Summary	
Seed Type	**Pounds/Acre**

Operator Name: CIMAREX ENERGY COMPANY

Well Name: CASCADE 28 FEDERAL **Well Number:** 85H

Seed reclamation attachment:

Operator Contact/Responsible Official Contact Info

First Name: **Last Name:**

Phone: **Email:**

Seedbed prep:

Seed BMP:

Seed method:

Existing invasive species? NO

Existing invasive species treatment description:

Existing invasive species treatment attachment:

Weed treatment plan description: N/A

Weed treatment plan attachment:

Monitoring plan description: N/A

Monitoring plan attachment:

Success standards: N/A

Pit closure description: N/A

Pit closure attachment:

Section 11 - Surface Ownership

Disturbance type: WELL PAD

Describe:

Surface Owner: BUREAU OF LAND MANAGEMENT

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office:

Military Local Office:

USFWS Local Office:

Operator Name: CIMAREX ENERGY COMPANY

Well Name: CASCADE 28 FEDERAL **Well Number:** 85H

Other Local Office:

USFS Region:

USFS Forest/Grassland: **USFS Ranger District:**

Section 12 - Other Information

Right of Way needed? YES **Use APD as ROW?** YES

ROW Type(s): 281001 ROW - ROADS,285003 ROW – POWER TRANS,288100 ROW – O&G Pipeline,288101 ROW – O&G Facility Sites,288103 ROW – Salt Water Disposal Pipeline/Facility,288104 ROW – Salt Water Disposal Apln/Fac-FLPMA,289001 ROW- O&G Well Pad,FLPMA (Powerline),Other

ROW Applications

SUPO Additional Information: The surface disturbance for the SWD, Road, Sales, & Power routes are the same for all Cascade wells in section 28.
Use a previously conducted onsite? YES

Previous Onsite information: Onsite January 18, 2018 with BLM (Jeff Robertson) and Cimarex (Barry Hunt)

Other SUPO Attachment

Cascade_28_Fed_W2E2_85H_Pad_Flow_and_Gas_Lift_Route_to_BS3_CTB_and_WC4_CTB_20180315073429.pdf
Cascade_28_Fed_W2E2_85H_Pad_Road_Description_20180315073434.pdf
Cascade_28_Fed_W2E2_85H_Pad_Public_Access_20180315073432.pdf
Cascade_28_Federal_Power_Route_20180315073437.pdf
Cascade_28_Federal_Sales_Route_20180315073439.pdf
Cascade_28_Federal_SWD_Route_20180315073441.pdf
Cascade_28_Federal_Temp_Water_Route_20180315073442.pdf
Cascade_28_Fed_86H_SUPO_20180315082626.pdf

AFMSS

U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT

PWD Data Report
03/25/2019

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:

Decribe 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:

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 surface owner: **PWD disturbance (acres):**

Unlined pit PWD on or off channel:

Unlined pit PWD discharge volume (bbl/day):

Unlined pit specifications:

Precipitated solids disposal:

Decribe 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?

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):

Other PWD type description:

Other PWD type attachment:

Have other regulatory requirements been met?

Other regulatory requirements attachment:

AFMSS

U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT

Bond Info Data Report

03/25/2019

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: