Form 3160-5
(June 2015)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

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

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.

SUBMIT IN TRIPLICATE - Other instructions on page 2

5. Lease Serial No.
NMNM0106040A

6. If Indian, Allottee or Tribe Name

7. If Unit or CA/Agreement, Name and/or No.

1. Type of Well
☐ Oil Well ☒ Gas Well ☐ Other

8. Well Name and No.
RED HILLS 32-5 FEDERAL COM 157H

2. Name of Operator
CIMAREX ENERGY COMPANY OF CO

Contact: AMITHY E CRAWFORD
E-Mail: acrawford@cimarex.com

9. API Well No.
30-025-46326-00-X1

3a. Address
600 N MARIENFELD STE 600
MIDLAND, TX 79703

3b. Phone No. (include area code)
Ph: 432-620-1909

10. Field and Pool or Exploratory Area
WOLFCAMP

4. Location of Well *(Footage, Sec., T., R., M., or Survey Description)*

Sec 32 T25S R33E NENW 390FNL 2345FWL
32.093246 N Lat, 103.595284 W Lon

11. County or Parish, State

LEA COUNTY, NM

12. CHECK THE APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
☒ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
☐ Subsequent Report	☐ Alter Casing	☐ Hydraulic Fracturing	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☒ Other Change to Original APD
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	

13. Describe Proposed or Completed Operation: Clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports must be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 must be filed once testing has been completed. Final Abandonment Notices must be filed only after all requirements, including reclamation, have been completed and the operator has determined that the site is ready for final inspection.

Cimarex respectfully requests to change the BHL and Formation thereby changing the drilling plan.
No new surface disturbance.

Proposed Formation-
Bone Spring

Proposed BHL-
100' FSL 1907' FWL Section 5 26S 33E

Cimarex Respectfully requests to update the dedicated acres of the C102 to 1280. A 1280 Com has been verbally approved by the BLM (Lewis Tromp, David Chase, James Glover) and State land Office

14. I hereby certify that the foregoing is true and correct.

Electronic Submission #498123 verified by the BLM Well Information System
For CIMAREX ENERGY COMPANY OF CO, sent to the Hobbs
Committed to AFMSS for processing by PRISCILLA PEREZ on 01/13/2020 (20PP0901SE)

Name *(Printed/Typed)* AMITHY E CRAWFORD — Title REGULATORY ANALYST

Signature (Electronic Submission) — Date 01/07/2020

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By JEROMY PORTER — Title PETROLEUM ENGINEER — Date 01/17/2020

Conditions of approval, if any, are attached. Approval of this notice 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.

Office Hobbs

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.

(Instructions on page 2)

**** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ****

Additional data for EC transaction #498123 that would not fit on the form

32. Additional remarks, continued

(Niranjan Khalsa).

Please see attached wellsite layout, Updated C102, Updated Drilling Plan, Updated Directional plan, casing Specs, and BOP diagrams.

Revisions to Operator-Submitted EC Data for Sundry Notice #498123

	Operator Submitted	BLM Revised (AFMSS)
Sundry Type:	APDCH NOI	APDCH NOI
Lease:	NMNM0106040A	NMNM0106040A
Agreement:		
Operator:	CIMAREX ENERGY CO OF COLORADO 600 N. MARIENFELD, SUITE 600 MIDLAND, TX 79701 Ph: 432-620-1909	CIMAREX ENERGY COMPANY OF CO 600 N MARIENFELD STE 600 MIDLAND, TX 79703 Ph: 432.620.1938
Admin Contact:	AMITHY E CRAWFORD REGULATORY ANALYST E-Mail: acrawford@cimarex.com Ph: 432-620-1909	AMITHY E CRAWFORD REGULATORY ANALYST E-Mail: acrawford@cimarex.com Ph: 432-620-1909
Tech Contact:	AMITHY E CRAWFORD REGULATORY ANALYST E-Mail: acrawford@cimarex.com Ph: 432-620-1909	AMITHY E CRAWFORD REGULATORY ANALYST E-Mail: acrawford@cimarex.com Ph: 432-620-1909
Location: State: County:	 NM LEA	 NM LEA
Field/Pool:	BONE SPRING	WOLFCAMP
Well/Facility:	RED HILLS 32-5 FEDERAL COM 157H Sec 32 T25S R33E 390FNL 2345FWL	RED HILLS 32-5 FEDERAL COM 157H Sec 32 T25S R33E NENW 390FNL 2345FWL 32.093246 N Lat, 103.595284 W Lon

PECOS DISTRICT
DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	**CIMAREX ENERGY COMPANY**
LEASE NO.:	**NMNM0106040A**
WELL NAME & NO.:	**RED HILLS 32-5 FEDERAL COM 157H**
SURFACE HOLE FOOTAGE:	**390'/N & 2345'/W**
BOTTOM HOLE FOOTAGE	**100'/S & 1907'/W**
LOCATION:	**Section 32, T.25 S., R.33 E., NMPM**
COUNTY:	**Lea County, New Mexico**

COA

H2S	○ Yes	◉ No	
Potash	◉ None	○ Secretary	○ R-111-P
Cave/Karst Potential	◉ Low	○ Medium	○ High
Cave/Karst Potential	○ Critical		
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 **1050** feet (a minimum of **25 feet (Lea County)** 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.

Intermediate casing must be kept fluid filled to meet BLM minimum collapse requirement.

2. The minimum required fill of cement behind the **9-5/8** inch intermediate casing is:

   - Cement to surface. If cement does not circulate, contact the appropriate BLM office.
     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 **2000 (2M)** 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 **5000 (5M)** psi.

   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. 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.

e. 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)

☒ 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. The casing intergrity test can be done (prior to the cement setting up) immediately after bumping the plug.

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. The casing intergrity test can be done (prior to the cement setting up) immediately after bumping the plug.

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: The flex line must meet the requirements of API 16C. 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, except the casing pressure test can be initiated immediately after bumping the plug (only applies to single stage cement jobs).

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.

JJP01172020

District I
1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720
District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-102
Revised August 1, 2011
Submit one copy to appropriate District Office

[X] AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

[1] API Number	[2] Pool Code	[3] Pool Name
30-025-46326	97903	WC-025 G08 S253235G; LWR Bone Spring

[4] Property Code	[5] Property Name	[6] Well Number
326032	RED HILLS 32-5 FED COM	157H

[7] OGRID No.	[8] Operator Name	[9] Elevation
162683	CIMAREX ENERGY CO. of Colorado	3409.6'

[10] Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
C	32	25S	33E		390	NORTH	2345	WEST	LEA

[11] Bottom Hole Location If Different From Surface

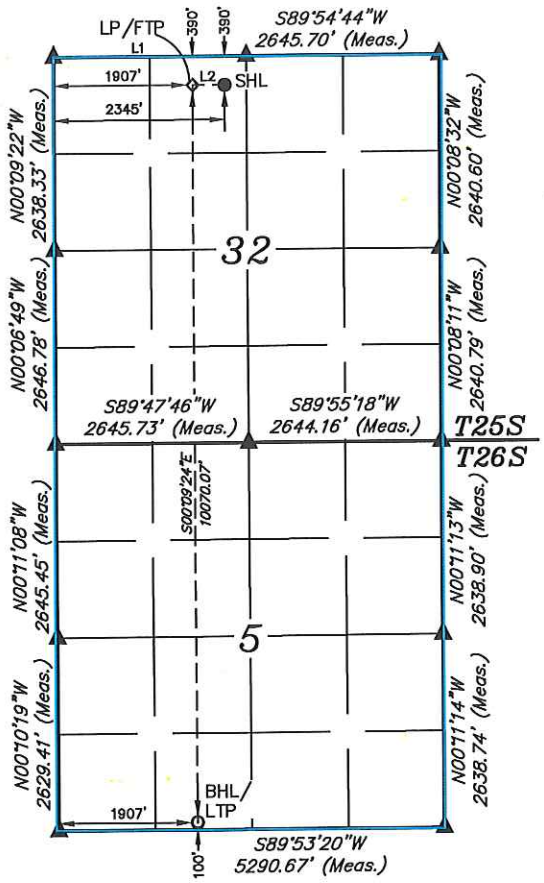
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
N	5	26S	33E		100	SOUTH	1907	WEST	LEA

[12] Dedicated Acres	[13] Joint or Infill	[14] Consolidation Code	[15] Order No.
1280			

No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.

[16]

LINE TABLE		
LINE	DIRECTION	LENGTH
L1	S89°53'08"W	2643.77'
L2	S89°53'08"W	438.00'



NAD 83 (SURFACE HOLE LOCATION)
LATITUDE = 32°05'35.68" (32.093245°)
LONGITUDE = 103°35'43.02" (103.595284°)
NAD 27 (SURFACE HOLE LOCATION)
LATITUDE = 32°05'35.23" (32.093120°)
LONGITUDE = 103°35'41.33" (103.594813°)
STATE PLANE NAD 83 (N.M. EAST)
N: 398441.35' E: 769894.85'
STATE PLANE NAD 27 (N.M. EAST)
N: 398383.72' E: 728708.41'

NAD 83 (LP/FTP)
LATITUDE = 32°05'35.68" (32.093245°)
LONGITUDE = 103°35'48.11" (103.596698°)
NAD 27 (LP/FTP)
LATITUDE = 32°05'35.23" (32.093121°)
LONGITUDE = 103°35'46.42" (103.596227°)
STATE PLANE NAD 83 (N.M. EAST)
N: 398438.65' E: 769456.93'
STATE PLANE NAD 27 (N.M. EAST)
N: 398381.01' E: 728270.49'

NAD 83 (BHL/LTP)
LATITUDE = 32°03'56.05" (32.065570°)
LONGITUDE = 103°35'48.10" (103.596696°)
NAD 27 (BHL/LTP)
LATITUDE = 32°03'55.60" (32.065445°)
LONGITUDE = 103°35'46.42" (103.596226°)
STATE PLANE NAD 83 (N.M. EAST)
N: 388370.56' E: 769526.45'
STATE PLANE NAD 27 (N.M. EAST)
N: 388313.18' E: 728339.54'

NOTE:
- Distances referenced on plat to section lines are perpendicular.
- Basis of Bearing is a Transverse Mercator Projection with a Central Meridian of W103°53'00"

● = SURFACE HOLE LOCATION
◇ = LANDING POINT/FIRST TAKE POINT
O = BOTTOM HOLE LOCATION /LAST TAKE POINT
▲ = SECTION CORNER LOCATED

2000' 1000' 0' 2000'
SCALE

DRAWN BY: J.N. 05-03-18
REV: 5 T.B.S. 11-25-19 (SHL CHANGE)

[17] OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Signature 12/3/19 Date

Amithy Crawford
Printed Name

acrawford@cimarex.com
E-mail Address

[18] SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

May 01, 2018
Date of Survey

Signature and Seal of Professional Surveyor:

PAUL BUCHELE NEW MEXICO 23782 PROFESSIONAL SURVEYOR 11-25-19

Certificate Number:

1. Geological Formations

TVD of target 10,300
MD at TD 20,247

Pilot Hole TD N/A
Deepest expected fresh water

Formation	Depth (TVD) from KB	Water/Mineral Bearing/Target Zone	Hazards
Rustler	1000	N/A	
Top of Salt	1340	N/A	
Base of Salt	4630	N/A	
Lamar	4892	N/A	
Bell Canyon	4908	N/A	
Cherry Canyon	5980	N/A	
Brushy Canyon	7516	Hydrocarbons	
Bone Spring	9025	Hydrocarbons	
1st Bone Spring Sand	10010	Hydrocarbons	
2nd Bone Spring Carb	10210	Hydrocarbons	
2nd Bone Spring Sand	10565	Hydrocarbons	
3rd Bone Spring Carb	11035	N/A	
3rd Bone Spring Sand	11690	Hydrocarbons	
Wolfcamp	12145	Hydrocarbons	

2. Casing Program

Hole Size	Casing Depth From	Casing Depth To	Setting Depth TVD	Casing Size	Weight (lb/ft)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
17 1/2	0	1050	1050	13-3/8"	48.00	H-40/J-55 Hybrid	ST&C	1.54	3.60	6.39
12 1/4	0	4870	4870	9-5/8"	36.00	J-55	ST&C	1.13	1.39	2.25
8 3/4	0	9748	9748	5-1/2"	20.00	L-80	LT&C	1.94	2.01	2.02
8 3/4	11903	20190	10300	5-1/2"	20.00	L-80	LT&C	1.83	1.91	37.68
						BLM Minimum Safety Factor		1.125	1	1.6 Dry 1.8 Wet

TVD was used on all calculations.
All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h

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

3. Cementing Program

Casing	# Sks	Wt. lb/gal	Yld ft3/sack	H2O gal/sk	500# Comp. Strength (hours)	Slurry Description
Surface	509	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	922	12.90	1.88	9.65	12	Lead: 35:65 (Poz:C) + Salt + Bentonite
	285	14.80	1.34	6.32	9.5	Tail: Class C + LCM
Production	447	10.30	3.64	22.18		Lead: Tuned Light + LCM
	2513	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	4670	25

Cimarex request the ability to perform casing integrity tests after plug bump of cement job.

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	5M	Annular	X	50% of working pressure
			Blind Ram		5M
			Pipe Ram	X	
			Double Ram	X	
			Other		

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

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

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

5. Mud Program

Depth	Type	Weight (ppg)	Viscosity	Water Loss
0' to 1050'	FW Spud Mud	8.30 - 8.80	30-32	N/C
1050' to 4870'	Brine Water	9.50 - 10.00	30-32	N/C
4870' to 20190'	Oil Based Mud	8.50 - 9.00	50-70	N/C

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

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

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	4820 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 5000 psi will be installed on the wellhead system and will be pressure tested to 250 psi low followed by a 5000 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 5000 psi.

All casing strings will be tested as per Onshore Order No.2 to atleast 0.22 psi/ft or 1,500 whichever is greater and not to exceed 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.

Schlumberger

Cimarex Red Hills 32-5 Fed Com #157H Rev3 RM 04Dec19 Proposal
Geodetic Report
(Def Plan)

CIMAREX

Report Date:	December 04, 2019 - 04:41 PM	**Survey / DLS Computation:**	Minimum Curvature / Lubinski
Client:	Cimarex Energy	**Vertical Section Azimuth:**	179.604 ° (Grid North)
Field:	NM Lea County (NAD 83)	**Vertical Section Origin:**	0.000 ft, 0.000 ft
Structure / Slot:	Cimarex Red Hills 32-5 Fed Com #157H / New Slot	**TVD Reference Datum:**	RKB
Well:	Red Hills 32-5 Fed Com #157H	**TVD Reference Elevation:**	3435.600 ft above MSL
Borehole:	Red Hills 32-5 Fed Com #157H	**Seabed / Ground Elevation:**	3409.600 ft above MSL
UWI / API#:	Unknown / Unknown	**Magnetic Declination:**	6.595 °
Survey Name:	Cimarex Red Hills 32-5 Fed Com #157H Rev3 RM 04Dec19	**Total Gravity Field Strength:**	998.4285mgn (9.80665 Based)
Survey Date:	December 04, 2019	**Gravity Model:**	GARM
Tort / AHD / DDI / ERD Ratio:	104.272 ° / 10506.673 ft / 6.332 / 1.020	**Total Magnetic Field Strength:**	47701.123 nT
Coordinate Reference System:	NAD83 New Mexico State Plane, Eastern Zone, US Feet	**Magnetic Dip Angle:**	59.680 °
Location Lat / Long:	N 32° 5' 35.68082", W 103° 35' 43.02321"	**Declination Date:**	December 04, 2019
Location Grid N/E Y/X:	N 398441.350 ftUS, E 769894.850 ftUS	**Magnetic Declination Model:**	HDGM 2019
CRS Grid Convergence Angle:	0.3921 °	**North Reference:**	Grid North
Grid Scale Factor:	0.99996892	**Grid Convergence Used:**	0.3921 °
Version / Patch:	2.10.787.0	**Total Corr Mag North->Grid North:**	6.2033 °
		Local Coord Referenced To:	Well Head

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
SHL [390' FNL, 2345' FWL]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	398441.35	769894.85	N 32 5 35.68	W 103 35 43.02
	100.00	0.00	269.65	100.00	0.00	0.00	0.00	0.00	398441.35	769894.85	N 32 5 35.68	W 103 35 43.02
	200.00	0.00	269.65	200.00	0.00	0.00	0.00	0.00	398441.35	769894.85	N 32 5 35.68	W 103 35 43.02
	300.00	0.00	269.65	300.00	0.00	0.00	0.00	0.00	398441.35	769894.85	N 32 5 35.68	W 103 35 43.02
	400.00	0.00	269.65	400.00	0.00	0.00	0.00	0.00	398441.35	769894.85	N 32 5 35.68	W 103 35 43.02
	500.00	0.00	269.65	500.00	0.00	0.00	0.00	0.00	398441.35	769894.85	N 32 5 35.68	W 103 35 43.02
	600.00	0.00	269.65	600.00	0.00	0.00	0.00	0.00	398441.35	769894.85	N 32 5 35.68	W 103 35 43.02
	700.00	0.00	269.65	700.00	0.00	0.00	0.00	0.00	398441.35	769894.85	N 32 5 35.68	W 103 35 43.02
	800.00	0.00	269.65	800.00	0.00	0.00	0.00	0.00	398441.35	769894.85	N 32 5 35.68	W 103 35 43.02
	900.00	0.00	269.65	900.00	0.00	0.00	0.00	0.00	398441.35	769894.85	N 32 5 35.68	W 103 35 43.02
Rustler	*934.00*	*0.00*	*269.65*	*934.00*	*0.00*	*0.00*	*0.00*	*0.00*	*398441.35*	*769894.85*	*N 32 5 35.68*	*W 103 35 43.02*
	1000.00	0.00	269.65	1000.00	0.00	0.00	0.00	0.00	398441.35	769894.85	N 32 5 35.68	W 103 35 43.02
	1100.00	0.00	269.65	1100.00	0.00	0.00	0.00	0.00	398441.35	769894.85	N 32 5 35.68	W 103 35 43.02
	1200.00	0.00	269.65	1200.00	0.00	0.00	0.00	0.00	398441.35	769894.85	N 32 5 35.68	W 103 35 43.02
	1300.00	0.00	269.65	1300.00	0.00	0.00	0.00	0.00	398441.35	769894.85	N 32 5 35.68	W 103 35 43.02
Top of Salt	*1349.00*	*0.00*	*269.65*	*1349.00*	*0.00*	*0.00*	*0.00*	*0.00*	*398441.35*	*769894.85*	*N 32 5 35.68*	*W 103 35 43.02*
	1400.00	0.00	269.65	1400.00	0.00	0.00	0.00	0.00	398441.35	769894.85	N 32 5 35.68	W 103 35 43.02
	1500.00	0.00	269.65	1500.00	0.00	0.00	0.00	0.00	398441.35	769894.85	N 32 5 35.68	W 103 35 43.02
	1600.00	0.00	269.65	1600.00	0.00	0.00	0.00	0.00	398441.35	769894.85	N 32 5 35.68	W 103 35 43.02
	1700.00	0.00	269.65	1700.00	0.00	0.00	0.00	0.00	398441.35	769894.85	N 32 5 35.68	W 103 35 43.02
	1800.00	0.00	269.65	1800.00	0.00	0.00	0.00	0.00	398441.35	769894.85	N 32 5 35.68	W 103 35 43.02
	1900.00	0.00	269.65	1900.00	0.00	0.00	0.00	0.00	398441.35	769894.85	N 32 5 35.68	W 103 35 43.02
	2000.00	0.00	269.65	2000.00	0.00	0.00	0.00	0.00	398441.35	769894.85	N 32 5 35.68	W 103 35 43.02
	2100.00	0.00	269.65	2100.00	0.00	0.00	0.00	0.00	398441.35	769894.85	N 32 5 35.68	W 103 35 43.02
	2200.00	0.00	269.65	2200.00	0.00	0.00	0.00	0.00	398441.35	769894.85	N 32 5 35.68	W 103 35 43.02
	2300.00	0.00	269.65	2300.00	0.00	0.00	0.00	0.00	398441.35	769894.85	N 32 5 35.68	W 103 35 43.02
	2400.00	0.00	269.65	2400.00	0.00	0.00	0.00	0.00	398441.35	769894.85	N 32 5 35.68	W 103 35 43.02
Nudge 2°/100' DLS	2500.00	0.00	269.65	2500.00	0.00	0.00	0.00	0.00	398441.35	769894.85	N 32 5 35.68	W 103 35 43.02
	2600.00	2.00	269.65	2599.98	0.00	-0.01	-1.75	2.00	398441.34	769893.10	N 32 5 35.68	W 103 35 43.04
	2700.00	4.00	269.65	2699.84	-0.01	-0.04	-6.98	2.00	398441.31	769887.87	N 32 5 35.68	W 103 35 43.10
	2800.00	6.00	269.65	2799.45	-0.01	-0.10	-15.69	2.00	398441.25	769879.16	N 32 5 35.68	W 103 35 43.21
Hold Nudge	2856.80	7.14	269.65	2855.88	-0.02	-0.14	-22.19	2.00	398441.21	769872.66	N 32 5 35.68	W 103 35 43.28
	2900.00	7.14	269.65	2898.74	-0.02	-0.17	-27.56	0.00	398441.18	769867.29	N 32 5 35.68	W 103 35 43.34
	3000.00	7.14	269.65	2997.97	-0.03	-0.25	-39.98	0.00	398441.10	769854.87	N 32 5 35.68	W 103 35 43.49
	3100.00	7.14	269.65	3097.19	-0.04	-0.32	-52.40	0.00	398441.03	769842.45	N 32 5 35.68	W 103 35 43.63
	3200.00	7.14	269.65	3196.42	-0.05	-0.40	-64.82	0.00	398440.95	769830.03	N 32 5 35.68	W 103 35 43.78
	3300.00	7.14	269.65	3295.65	-0.06	-0.48	-77.25	0.00	398440.87	769817.61	N 32 5 35.68	W 103 35 43.92
	3400.00	7.14	269.65	3394.87	-0.07	-0.55	-89.67	0.00	398440.80	769805.19	N 32 5 35.68	W 103 35 44.07
	3500.00	7.14	269.65	3494.10	-0.08	-0.63	-102.09	0.00	398440.72	769792.76	N 32 5 35.68	W 103 35 44.21
	3600.00	7.14	269.65	3593.32	-0.09	-0.71	-114.51	0.00	398440.64	769780.34	N 32 5 35.68	W 103 35 44.35
	3700.00	7.14	269.65	3692.55	-0.10	-0.78	-126.93	0.00	398440.57	769767.92	N 32 5 35.68	W 103 35 44.50
	3800.00	7.14	269.65	3791.77	-0.10	-0.86	-139.36	0.00	398440.49	769755.50	N 32 5 35.68	W 103 35 44.64
	3900.00	7.14	269.65	3891.00	-0.11	-0.94	-151.78	0.00	398440.41	769743.08	N 32 5 35.68	W 103 35 44.79
	4000.00	7.14	269.65	3990.22	-0.12	-1.01	-164.20	0.00	398440.34	769730.65	N 32 5 35.68	W 103 35 44.93
	4100.00	7.14	269.65	4089.45	-0.13	-1.09	-176.62	0.00	398440.26	769718.23	N 32 5 35.68	W 103 35 45.08
	4200.00	7.14	269.65	4188.67	-0.14	-1.16	-189.05	0.00	398440.19	769705.81	N 32 5 35.68	W 103 35 45.22
	4300.00	7.14	269.65	4287.90	-0.15	-1.24	-201.47	0.00	398440.11	769693.39	N 32 5 35.68	W 103 35 45.37
	4400.00	7.14	269.65	4387.12	-0.16	-1.32	-213.89	0.00	398440.03	769680.97	N 32 5 35.68	W 103 35 45.51
	4500.00	7.14	269.65	4486.35	-0.17	-1.39	-226.31	0.00	398439.96	769668.54	N 32 5 35.68	W 103 35 45.65
	4600.00	7.14	269.65	4585.58	-0.18	-1.47	-238.73	0.00	398439.88	769656.12	N 32 5 35.68	W 103 35 45.80
Base of Salt	*4665.94*	*7.14*	*269.65*	*4651.00*	*-0.19*	*-1.52*	*-246.93*	*0.00*	*398439.83*	*769647.93*	*N 32 5 35.68*	*W 103 35 45.89*
	4700.00	7.14	269.65	4684.80	-0.19	-1.55	-251.16	0.00	398439.80	769643.70	N 32 5 35.68	W 103 35 45.94
	4800.00	7.14	269.65	4784.03	-0.20	-1.62	-263.58	0.00	398439.73	769631.28	N 32 5 35.68	W 103 35 46.09
	4900.00	7.14	269.65	4883.25	-0.21	-1.70	-276.00	0.00	398439.65	769618.86	N 32 5 35.68	W 103 35 46.23
Lamar	*4908.82*	*7.14*	*269.65*	*4892.00*	*-0.21*	*-1.71*	*-277.10*	*0.00*	*398439.64*	*769617.76*	*N 32 5 35.68*	*W 103 35 46.24*
Bell Canyon	*4946.11*	*7.14*	*269.65*	*4929.00*	*-0.21*	*-1.74*	*-281.73*	*0.00*	*398439.61*	*769613.13*	*N 32 5 35.68*	*W 103 35 46.30*
	5000.00	7.14	269.65	4982.48	-0.22	-1.78	-288.42	0.00	398439.57	769606.44	N 32 5 35.68	W 103 35 46.38
	5100.00	7.14	269.65	5081.70	-0.23	-1.85	-300.85	0.00	398439.50	769594.01	N 32 5 35.68	W 103 35 46.52
	5200.00	7.14	269.65	5180.93	-0.24	-1.93	-313.27	0.00	398439.42	769581.59	N 32 5 35.68	W 103 35 46.66
	5300.00	7.14	269.65	5280.15	-0.24	-2.01	-325.69	0.00	398439.34	769569.17	N 32 5 35.68	W 103 35 46.81
	5400.00	7.14	269.65	5379.38	-0.25	-2.08	-338.11	0.00	398439.27	769556.75	N 32 5 35.68	W 103 35 46.95
	5500.00	7.14	269.65	5478.60	-0.26	-2.16	-350.54	0.00	398439.19	769544.33	N 32 5 35.68	W 103 35 47.10
	5600.00	7.14	269.65	5577.83	-0.27	-2.24	-362.96	0.00	398439.11	769531.90	N 32 5 35.68	W 103 35 47.24
	5700.00	7.14	269.65	5677.06	-0.28	-2.31	-375.38	0.00	398439.04	769519.48	N 32 5 35.68	W 103 35 47.39
	5800.00	7.14	269.65	5776.28	-0.29	-2.39	-387.80	0.00	398438.96	769507.06	N 32 5 35.68	W 103 35 47.53
	5900.00	7.14	269.65	5875.51	-0.30	-2.47	-400.22	0.00	398438.88	769494.64	N 32 5 35.68	W 103 35 47.68
	6000.00	7.14	269.65	5974.73	-0.31	-2.54	-412.65	0.00	398438.81	769482.22	N 32 5 35.68	W 103 35 47.82
Drop to Vertical 2°/100' DLS	6025.47	7.14	269.65	6000.00	-0.31	-2.56	-415.81	0.00	398438.79	769479.05	N 32 5 35.68	W 103 35 47.86
Cherry Canyon	*6026.47*	*7.12*	*269.65*	*6001.00*	*-0.31*	*-2.56*	*-415.93*	*2.00*	*398438.79*	*769478.93*	*N 32 5 35.68*	*W 103 35 47.86*
	6100.00	5.65	269.65	6074.07	-0.32	-2.61	-424.11	2.00	398438.74	769470.76	N 32 5 35.68	W 103 35 47.95
	6200.00	3.65	269.65	6173.74	-0.32	-2.66	-432.20	2.00	398438.69	769462.66	N 32 5 35.68	W 103 35 48.05
	6300.00	1.65	269.65	6273.62	-0.33	-2.69	-436.82	2.00	398438.66	769458.05	N 32 5 35.68	W 103 35 48.10
Hold Vertical	6382.27	0.00	269.65	6355.88	-0.33	-2.70	-438.00	2.00	398438.65	769456.86	N 32 5 35.68	W 103 35 48.11
	6400.00	0.00	269.65	6373.61	-0.33	-2.70	-438.00	0.00	398438.65	769456.86	N 32 5 35.68	W 103 35 48.11
	6500.00	0.00	269.65	6473.61	-0.33	-2.70	-438.00	0.00	398438.65	769456.86	N 32 5 35.68	W 103 35 48.11

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 ° ' ")
	6600.00	0.00	269.65	6573.61	-0.33	-2.70	-438.00	0.00	398438.65	769456.86	N 32 5 35.68	W 103 35 48.11
	6700.00	0.00	269.65	6673.61	-0.33	-2.70	-438.00	0.00	398438.65	769456.86	N 32 5 35.68	W 103 35 48.11
	6800.00	0.00	269.65	6773.61	-0.33	-2.70	-438.00	0.00	398438.65	769456.86	N 32 5 35.68	W 103 35 48.11
	6900.00	0.00	269.65	6873.61	-0.33	-2.70	-438.00	0.00	398438.65	769456.86	N 32 5 35.68	W 103 35 48.11
	7000.00	0.00	269.65	6973.61	-0.33	-2.70	-438.00	0.00	398438.65	769456.86	N 32 5 35.68	W 103 35 48.11
	7100.00	0.00	269.65	7073.61	-0.33	-2.70	-438.00	0.00	398438.65	769456.86	N 32 5 35.68	W 103 35 48.11
	7200.00	0.00	269.65	7173.61	-0.33	-2.70	-438.00	0.00	398438.65	769456.86	N 32 5 35.68	W 103 35 48.11
	7300.00	0.00	269.65	7273.61	-0.33	-2.70	-438.00	0.00	398438.65	769456.86	N 32 5 35.68	W 103 35 48.11
	7400.00	0.00	269.65	7373.61	-0.33	-2.70	-438.00	0.00	398438.65	769456.86	N 32 5 35.68	W 103 35 48.11
	7500.00	0.00	269.65	7473.61	-0.33	-2.70	-438.00	0.00	398438.65	769456.86	N 32 5 35.68	W 103 35 48.11
Brusy Canyon	*7563.39*	*0.00*	*269.65*	*7537.00*	*-0.33*	*-2.70*	*-438.00*	*0.00*	*398438.65*	*769456.86*	*N 32 5 35.68*	*W 103 35 48.11*
	7600.00	0.00	269.65	7573.61	-0.33	-2.70	-438.00	0.00	398438.65	769456.86	N 32 5 35.68	W 103 35 48.11
	7700.00	0.00	269.65	7673.61	-0.33	-2.70	-438.00	0.00	398438.65	769456.86	N 32 5 35.68	W 103 35 48.11
	7800.00	0.00	269.65	7773.61	-0.33	-2.70	-438.00	0.00	398438.65	769456.86	N 32 5 35.68	W 103 35 48.11
	7900.00	0.00	269.65	7873.61	-0.33	-2.70	-438.00	0.00	398438.65	769456.86	N 32 5 35.68	W 103 35 48.11
	8000.00	0.00	269.65	7973.61	-0.33	-2.70	-438.00	0.00	398438.65	769456.86	N 32 5 35.68	W 103 35 48.11
	8100.00	0.00	269.65	8073.61	-0.33	-2.70	-438.00	0.00	398438.65	769456.86	N 32 5 35.68	W 103 35 48.11
	8200.00	0.00	269.65	8173.61	-0.33	-2.70	-438.00	0.00	398438.65	769456.86	N 32 5 35.68	W 103 35 48.11
	8300.00	0.00	269.65	8273.61	-0.33	-2.70	-438.00	0.00	398438.65	769456.86	N 32 5 35.68	W 103 35 48.11
	8400.00	0.00	269.65	8373.61	-0.33	-2.70	-438.00	0.00	398438.65	769456.86	N 32 5 35.68	W 103 35 48.11
	8500.00	0.00	269.65	8473.61	-0.33	-2.70	-438.00	0.00	398438.65	769456.86	N 32 5 35.68	W 103 35 48.11
	8600.00	0.00	269.65	8573.61	-0.33	-2.70	-438.00	0.00	398438.65	769456.86	N 32 5 35.68	W 103 35 48.11
	8700.00	0.00	269.65	8673.61	-0.33	-2.70	-438.00	0.00	398438.65	769456.86	N 32 5 35.68	W 103 35 48.11
	8800.00	0.00	269.65	8773.61	-0.33	-2.70	-438.00	0.00	398438.65	769456.86	N 32 5 35.68	W 103 35 48.11
	8900.00	0.00	269.65	8873.61	-0.33	-2.70	-438.00	0.00	398438.65	769456.86	N 32 5 35.68	W 103 35 48.11
	9000.00	0.00	269.65	8973.61	-0.33	-2.70	-438.00	0.00	398438.65	769456.86	N 32 5 35.68	W 103 35 48.11
Bone Spring	*9065.39*	*0.00*	*269.65*	*9039.00*	*-0.33*	*-2.70*	*-438.00*	*0.00*	*398438.65*	*769456.86*	*N 32 5 35.68*	*W 103 35 48.11*
	9100.00	0.00	269.65	9073.61	-0.33	-2.70	-438.00	0.00	398438.65	769456.86	N 32 5 35.68	W 103 35 48.11
Leonard Shale	*9120.39*	*0.00*	*269.65*	*9094.00*	*-0.33*	*-2.70*	*-438.00*	*0.00*	*398438.65*	*769456.86*	*N 32 5 35.68*	*W 103 35 48.11*
	9200.00	0.00	269.65	9173.61	-0.33	-2.70	-438.00	0.00	398438.65	769456.86	N 32 5 35.68	W 103 35 48.11
	9300.00	0.00	269.65	9273.61	-0.33	-2.70	-438.00	0.00	398438.65	769456.86	N 32 5 35.68	W 103 35 48.11
Avalon Shale	*9382.39*	*0.00*	*269.65*	*9356.00*	*-0.33*	*-2.70*	*-438.00*	*0.00*	*398438.65*	*769456.86*	*N 32 5 35.68*	*W 103 35 48.11*
	9400.00	0.00	269.65	9373.61	-0.33	-2.70	-438.00	0.00	398438.65	769456.86	N 32 5 35.68	W 103 35 48.11
	9500.00	0.00	269.65	9473.61	-0.33	-2.70	-438.00	0.00	398438.65	769456.86	N 32 5 35.68	W 103 35 48.11
	9600.00	0.00	269.65	9573.61	-0.33	-2.70	-438.00	0.00	398438.65	769456.86	N 32 5 35.68	W 103 35 48.11
	9700.00	0.00	269.65	9673.61	-0.33	-2.70	-438.00	0.00	398438.65	769456.86	N 32 5 35.68	W 103 35 48.11
Lower Avalon Shale	*9757.39*	*0.00*	*269.65*	*9731.00*	*-0.33*	*-2.70*	*-438.00*	*0.00*	*398438.65*	*769456.86*	*N 32 5 35.68*	*W 103 35 48.11*
	9800.00	0.00	269.65	9773.61	-0.33	-2.70	-438.00	0.00	398438.65	769456.86	N 32 5 35.68	W 103 35 48.11
KOP - Build 12°/100' DLS	9848.92	0.00	269.65	9822.54	-0.33	-2.70	-438.00	0.00	398438.65	769456.86	N 32 5 35.68	W 103 35 48.11
	9900.00	6.13	179.60	9873.51	2.40	-5.43	-437.98	12.00	398435.92	769456.88	N 32 5 35.66	W 103 35 48.11
	10000.00	18.13	179.60	9971.10	23.37	-26.40	-437.84	12.00	398414.95	769457.03	N 32 5 35.45	W 103 35 48.11
1st Bone Spring Sand	*10070.23*	*26.56*	*179.60*	*10036.00*	*50.05*	*-53.07*	*-437.65*	*12.00*	*398388.28*	*769457.21*	*N 32 5 35.19*	*W 103 35 48.11*
	10100.00	30.13	179.60	10062.20	64.18	-67.20	-437.55	12.00	398374.15	769457.31	N 32 5 35.05	W 103 35 48.11
	10200.00	42.13	179.60	10142.82	123.03	-126.06	-437.15	12.00	398315.30	769457.72	N 32 5 34.46	W 103 35 48.11
	10300.00	54.13	179.60	10209.44	197.36	-200.38	-436.63	12.00	398240.97	769458.23	N 32 5 33.73	W 103 35 48.11
2nd Bone Spring Carb	*10323.98*	*57.01*	*179.60*	*10223.00*	*217.13*	*-220.16*	*-436.50*	*12.00*	*398221.20*	*769458.37*	*N 32 5 33.53*	*W 103 35 48.11*
	10400.00	66.13	179.60	10259.16	283.92	-286.94	-436.04	12.00	398154.42	769458.83	N 32 5 32.87	W 103 35 48.11
	10500.00	78.13	179.60	10289.79	378.92	-381.94	-435.38	12.00	398059.42	769459.49	N 32 5 31.93	W 103 35 48.11
Landing Point	10598.92	90.00	179.60	10300.00	477.14	-480.15	-434.70	12.00	397961.21	769460.16	N 32 5 30.96	W 103 35 48.11
	10600.00	90.00	179.60	10300.00	478.21	-481.23	-434.69	0.00	397960.14	769460.17	N 32 5 30.95	W 103 35 48.11
	10700.00	90.00	179.60	10300.00	578.21	-581.23	-434.00	0.00	397860.14	769460.86	N 32 5 29.96	W 103 35 48.11
	10800.00	90.00	179.60	10300.00	678.21	-681.22	-433.31	0.00	397760.15	769461.55	N 32 5 28.97	W 103 35 48.11
	10900.00	90.00	179.60	10300.00	778.21	-781.22	-432.62	0.00	397660.15	769462.25	N 32 5 27.98	W 103 35 48.11
	11000.00	90.00	179.60	10300.00	878.21	-881.22	-431.93	0.00	397560.16	769462.94	N 32 5 26.99	W 103 35 48.11
	11100.00	90.00	179.60	10300.00	978.21	-981.22	-431.24	0.00	397460.17	769463.63	N 32 5 26.00	W 103 35 48.11
	11200.00	90.00	179.60	10300.00	1078.21	-1081.21	-430.55	0.00	397360.17	769464.32	N 32 5 25.01	W 103 35 48.11
	11300.00	90.00	179.60	10300.00	1178.21	-1181.21	-429.85	0.00	397260.18	769465.01	N 32 5 24.02	W 103 35 48.11
	11400.00	90.00	179.60	10300.00	1278.21	-1281.21	-429.16	0.00	397160.18	769465.70	N 32 5 23.03	W 103 35 48.11
	11500.00	90.00	179.60	10300.00	1378.21	-1381.21	-428.47	0.00	397060.19	769466.39	N 32 5 22.04	W 103 35 48.11
	11600.00	90.00	179.60	10300.00	1478.21	-1481.21	-427.78	0.00	396960.19	769467.08	N 32 5 21.05	W 103 35 48.11
	11700.00	90.00	179.60	10300.00	1578.21	-1581.20	-427.09	0.00	396860.20	769467.77	N 32 5 20.06	W 103 35 48.11
	11800.00	90.00	179.60	10300.00	1678.21	-1681.20	-426.40	0.00	396760.21	769468.47	N 32 5 19.07	W 103 35 48.11
	11900.00	90.00	179.60	10300.00	1778.21	-1781.20	-425.71	0.00	396660.21	769469.16	N 32 5 18.08	W 103 35 48.11
	12000.00	90.00	179.60	10300.00	1878.21	-1881.20	-425.02	0.00	396560.22	769469.85	N 32 5 17.09	W 103 35 48.11
	12100.00	90.00	179.60	10300.00	1978.21	-1981.19	-424.33	0.00	396460.22	769470.54	N 32 5 16.11	W 103 35 48.11
	12200.00	90.00	179.60	10300.00	2078.21	-2081.19	-423.63	0.00	396360.23	769471.23	N 32 5 15.12	W 103 35 48.11
	12300.00	90.00	179.60	10300.00	2178.21	-2181.19	-422.94	0.00	396260.23	769471.92	N 32 5 14.13	W 103 35 48.11
	12400.00	90.00	179.60	10300.00	2278.21	-2281.19	-422.25	0.00	396160.24	769472.61	N 32 5 13.14	W 103 35 48.11
	12500.00	90.00	179.60	10300.00	2378.21	-2381.18	-421.56	0.00	396060.25	769473.30	N 32 5 12.15	W 103 35 48.11
	12600.00	90.00	179.60	10300.00	2478.21	-2481.18	-420.87	0.00	395960.25	769473.99	N 32 5 11.16	W 103 35 48.11
	12700.00	90.00	179.60	10300.00	2578.21	-2581.18	-420.18	0.00	395860.26	769474.69	N 32 5 10.17	W 103 35 48.11
	12800.00	90.00	179.60	10300.00	2678.21	-2681.18	-419.49	0.00	395760.26	769475.38	N 32 5 9.18	W 103 35 48.11
	12900.00	90.00	179.60	10300.00	2778.21	-2781.17	-418.80	0.00	395660.27	769476.07	N 32 5 8.19	W 103 35 48.11
	13000.00	90.00	179.60	10300.00	2878.21	-2881.17	-418.11	0.00	395560.27	769476.76	N 32 5 7.20	W 103 35 48.11
	13100.00	90.00	179.60	10300.00	2978.21	-2981.17	-417.41	0.00	395460.28	769477.45	N 32 5 6.21	W 103 35 48.11
	13200.00	90.00	179.60	10300.00	3078.21	-3081.17	-416.72	0.00	395360.28	769478.14	N 32 5 5.22	W 103 35 48.11
	13300.00	90.00	179.60	10300.00	3178.21	-3181.16	-416.03	0.00	395260.29	769478.83	N 32 5 4.23	W 103 35 48.11
	13400.00	90.00	179.60	10300.00	3278.21	-3281.16	-415.34	0.00	395160.30	769479.52	N 32 5 3.24	W 103 35 48.11
	13500.00	90.00	179.60	10300.00	3378.21	-3381.16	-414.65	0.00	395060.30	769480.21	N 32 5 2.25	W 103 35 48.11
	13600.00	90.00	179.60	10300.00	3478.21	-3481.16	-413.96	0.00	394960.31	769480.91	N 32 5 1.26	W 103 35 48.11
	13700.00	90.00	179.60	10300.00	3578.21	-3581.16	-413.27	0.00	394860.31	769481.60	N 32 5 0.27	W 103 35 48.11
	13800.00	90.00	179.60	10300.00	3678.21	-3681.15	-412.58	0.00	394760.32	769482.29	N 32 4 59.28	W 103 35 48.11
	13900.00	90.00	179.60	10300.00	3778.21	-3781.15	-411.89	0.00	394660.32	769482.98	N 32 4 58.29	W 103 35 48.11
	14000.00	90.00	179.60	10300.00	3878.21	-3881.15	-411.19	0.00	394560.33	769483.67	N 32 4 57.30	W 103 35 48.11
	14100.00	90.00	179.60	10300.00	3978.21	-3981.15	-410.50	0.00	394460.34	769484.36	N 32 4 56.31	W 103 35 48.11
	14200.00	90.00	179.60	10300.00	4078.21	-4081.14	-409.81	0.00	394360.34	769485.05	N 32 4 55.33	W 103 35 48.11
	14300.00	90.00	179.60	10300.00	4178.21	-4181.14	-409.12	0.00	394260.35	769485.74	N 32 4 54.34	W 103 35 48.11
	14400.00	90.00	179.60	10300.00	4278.21	-4281.14	-408.43	0.00	394160.35	769486.43	N 32 4 53.35	W 103 35 48.11
	14500.00	90.00	179.60	10300.00	4378.21	-4381.14	-407.74	0.00	394060.36	769487.13	N 32 4 52.36	W 103 35 48.11
	14600.00	90.00	179.60	10300.00	4478.21	-4481.13	-407.05	0.00	393960.36	769487.82	N 32 4 51.37	W 103 35 48.11
	14700.00	90.00	179.60	10300.00	4578.21	-4581.13	-406.36	0.00	393860.37	769488.51	N 32 4 50.38	W 103 35 48.11
	14800.00	90.00	179.60	10300.00	4678.21	-4681.13	-405.67	0.00	393760.38	769489.20	N 32 4 49.39	W 103 35 48.11
	14900.00	90.00	179.60	10300.00	4778.21	-4781.13	-404.97	0.00	393660.38	769489.89	N 32 4 48.40	W 103 35 48.11
	15000.00	90.00	179.60	10300.00	4878.21	-4881.12	-404.28	0.00	393560.39	769490.58	N 32 4 47.41	W 103 35 48.11
Private Leaseline Crossing	*15012.89*	*90.00*	*179.60*	*10300.00*	*4891.10*	*-4894.01*	*-404.19*	*0.00*	*393547.50*	*769490.67*	*N 32 4 47.28*	*W 103 35 48.11*
	15100.00	90.00	179.60	10300.00	4978.21	-4981.12	-403.59	0.00	393460.39	769491.27	N 32 4 46.42	W 103 35 48.11
	15200.00	90.00	179.60	10300.00	5078.21	-5081.12	-402.90	0.00	393360.40	769491.96	N 32 4 45.43	W 103 35 48.11
	15300.00	90.00	179.60	10300.00	5178.21	-5181.12	-402.21	0.00	393260.40	769492.65	N 32 4 44.44	W 103 35 48.11
	15400.00	90.00	179.60	10300.00	5278.21	-5281.11	-401.52	0.00	393160.41	769493.35	N 32 4 43.45	W 103 35 48.11
	15500.00	90.00	179.60	10300.00	5378.21	-5381.11	-400.83	0.00	393060.42	769494.04	N 32 4 42.46	W 103 35 48.11
	15600.00	90.00	179.60	10300.00	5478.21	-5481.11	-400.14	0.00	392960.42	769494.73	N 32 4 41.47	W 103 35 48.11
	15700.00	90.00	179.60	10300.00	5578.21	-5581.11	-399.44	0.00	392860.43	769495.42	N 32 4 40.48	W 103 35 48.11
	15800.00	90.00	179.60	10300.00	5678.21	-5681.10	-398.75	0.00	392760.43	769496.11	N 32 4 39.49	W 103 35 48.11

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 ° ' ")
	15900.00	90.00	179.60	10300.00	5778.21	-5781.10	-398.06	0.00	392660.44	769496.80	N 32 4 38.50	W 103 35 48.11
	16000.00	90.00	179.60	10300.00	5878.21	-5881.10	-397.37	0.00	392560.44	769497.49	N 32 4 37.51	W 103 35 48.11
	16100.00	90.00	179.60	10300.00	5978.21	-5981.10	-396.68	0.00	392460.45	769498.18	N 32 4 36.52	W 103 35 48.11
	16200.00	90.00	179.60	10300.00	6078.21	-6081.10	-395.99	0.00	392360.46	769498.87	N 32 4 35.53	W 103 35 48.11
	16300.00	90.00	179.60	10300.00	6178.21	-6181.09	-395.30	0.00	392260.46	769499.57	N 32 4 34.54	W 103 35 48.11
Private - NMNM0106040 4 Crossing	*16335.30*	*90.00*	*179.60*	*10300.00*	*6213.51*	*-6216.39*	*-395.05*	*0.00*	*392225.16*	*769499.81*	*N 32 4 34.20*	*W 103 35 48.11*
	16400.00	90.00	179.60	10300.00	6278.21	-6281.09	-394.61	0.00	392160.47	769500.26	N 32 4 33.56	W 103 35 48.11
	16500.00	90.00	179.60	10300.00	6378.21	-6381.09	-393.92	0.00	392060.47	769500.95	N 32 4 32.57	W 103 35 48.11
	16600.00	90.00	179.60	10300.00	6478.21	-6481.09	-393.22	0.00	391960.48	769501.64	N 32 4 31.58	W 103 35 48.11
	16700.00	90.00	179.60	10300.00	6578.21	-6581.08	-392.53	0.00	391860.48	769502.33	N 32 4 30.59	W 103 35 48.11
	16800.00	90.00	179.60	10300.00	6678.21	-6681.08	-391.84	0.00	391760.49	769503.02	N 32 4 29.60	W 103 35 48.11
	16900.00	90.00	179.60	10300.00	6778.21	-6781.08	-391.15	0.00	391660.50	769503.71	N 32 4 28.61	W 103 35 48.11
	17000.00	90.00	179.60	10300.00	6878.21	-6881.08	-390.46	0.00	391560.50	769504.40	N 32 4 27.62	W 103 35 48.11
	17100.00	90.00	179.60	10300.00	6978.21	-6981.07	-389.77	0.00	391460.51	769505.09	N 32 4 26.63	W 103 35 48.11
	17200.00	90.00	179.60	10300.00	7078.21	-7081.07	-389.08	0.00	391360.51	769505.78	N 32 4 25.64	W 103 35 48.11
	17300.00	90.00	179.60	10300.00	7178.21	-7181.07	-388.39	0.00	391260.52	769506.48	N 32 4 24.65	W 103 35 48.11
	17400.00	90.00	179.60	10300.00	7278.21	-7281.07	-387.70	0.00	391160.52	769507.17	N 32 4 23.66	W 103 35 48.11
	17500.00	90.00	179.60	10300.00	7378.21	-7381.06	-387.00	0.00	391060.53	769507.86	N 32 4 22.67	W 103 35 48.11
	17600.00	90.00	179.60	10300.00	7478.21	-7481.06	-386.31	0.00	390960.54	769508.55	N 32 4 21.68	W 103 35 48.11
NMNM0106040 4 - NMNM0160973 Crossing	*17657.71*	*90.00*	*179.60*	*10300.00*	*7535.92*	*-7538.77*	*-385.91*	*0.00*	*390902.83*	*769508.95*	*N 32 4 21.11*	*W 103 35 48.11*
	17700.00	90.00	179.60	10300.00	7578.21	-7581.06	-385.62	0.00	390860.54	769509.24	N 32 4 20.69	W 103 35 48.11
	17800.00	90.00	179.60	10300.00	7678.21	-7681.06	-384.93	0.00	390760.55	769509.93	N 32 4 19.70	W 103 35 48.11
	17900.00	90.00	179.60	10300.00	7778.21	-7781.05	-384.24	0.00	390660.55	769510.62	N 32 4 18.71	W 103 35 48.11
	18000.00	90.00	179.60	10300.00	7878.21	-7881.05	-383.55	0.00	390560.56	769511.31	N 32 4 17.72	W 103 35 48.11
	18100.00	90.00	179.60	10300.00	7978.21	-7981.05	-382.86	0.00	390460.56	769512.00	N 32 4 16.73	W 103 35 48.11
	18200.00	90.00	179.60	10300.00	8078.21	-8081.05	-382.17	0.00	390360.57	769512.70	N 32 4 15.74	W 103 35 48.11
	18300.00	90.00	179.60	10300.00	8178.21	-8181.05	-381.48	0.00	390260.58	769513.39	N 32 4 14.75	W 103 35 48.11
	18400.00	90.00	179.60	10300.00	8278.21	-8281.04	-380.78	0.00	390160.58	769514.08	N 32 4 13.76	W 103 35 48.11
	18500.00	90.00	179.60	10300.00	8378.21	-8381.04	-380.09	0.00	390060.59	769514.77	N 32 4 12.77	W 103 35 48.11
	18600.00	90.00	179.60	10300.00	8478.21	-8481.04	-379.40	0.00	389960.59	769515.46	N 32 4 11.79	W 103 35 48.11
	18700.00	90.00	179.60	10300.00	8578.21	-8581.04	-378.71	0.00	389860.60	769516.15	N 32 4 10.80	W 103 35 48.11
	18800.00	90.00	179.60	10300.00	8678.21	-8681.03	-378.02	0.00	389760.60	769516.84	N 32 4 9.81	W 103 35 48.11
	18900.00	90.00	179.60	10300.00	8778.21	-8781.03	-377.33	0.00	389660.61	769517.53	N 32 4 8.82	W 103 35 48.11
	19000.00	90.00	179.60	10300.00	8878.21	-8881.03	-376.64	0.00	389560.62	769518.22	N 32 4 7.83	W 103 35 48.11
	19100.00	90.00	179.60	10300.00	8978.21	-8981.03	-375.95	0.00	389460.62	769518.92	N 32 4 6.84	W 103 35 48.11
	19200.00	90.00	179.60	10300.00	9078.21	-9081.02	-375.26	0.00	389360.63	769519.61	N 32 4 5.85	W 103 35 48.11
	19300.00	90.00	179.60	10300.00	9178.21	-9181.02	-374.56	0.00	389260.63	769520.30	N 32 4 4.86	W 103 35 48.11
	19400.00	90.00	179.60	10300.00	9278.21	-9281.02	-373.87	0.00	389160.64	769520.99	N 32 4 3.87	W 103 35 48.11
	19500.00	90.00	179.60	10300.00	9378.21	-9381.02	-373.18	0.00	389060.64	769521.68	N 32 4 2.88	W 103 35 48.11
	19600.00	90.00	179.60	10300.00	9478.21	-9481.01	-372.49	0.00	388960.65	769522.37	N 32 4 1.89	W 103 35 48.11
	19700.00	90.00	179.60	10300.00	9578.21	-9581.01	-371.80	0.00	388860.66	769523.06	N 32 4 0.90	W 103 35 48.11
	19800.00	90.00	179.60	10300.00	9678.21	-9681.01	-371.11	0.00	388760.66	769523.75	N 32 3 59.91	W 103 35 48.11
	19900.00	90.00	179.60	10300.00	9778.21	-9781.01	-370.42	0.00	388660.67	769524.44	N 32 3 58.92	W 103 35 48.11
	20000.00	90.00	179.60	10300.00	9878.21	-9881.00	-369.73	0.00	388560.67	769525.14	N 32 3 57.93	W 103 35 48.11
	20100.00	90.00	179.60	10300.00	9978.21	-9981.00	-369.04	0.00	388460.68	769525.83	N 32 3 56.94	W 103 35 48.11
Cimarex Red Hills 32-5 Fed Com #157H - PBHL [100' FSL, 1907' FWL]	20190.12	90.00	179.60	10300.00	10068.34	-10071.12	-368.41	0.00	388370.56	769526.45	N 32 3 56.05	W 103 35 48.10

Survey Type: Def Plan

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

Description	Part	MD From (ft)	MD To (ft)	EOU Freq (ft)	Hole Size (in)	Casing Diameter (in)	Expected Max Inclination (deg)	Survey Tool Type	Borehole / Survey
	1	0.000	26.000	1/100.000	17.500	13.375		NAL_MWD_IFR1+MS-Depth Only	Red Hills 32-5 Fed Com #157H / Cimarex Red Hills 32-5 Fed Com #157H Rev3 RM 04Dec19
	1	26.000	20190.123	1/100.000	17.500	13.375		NAL_MWD_IFR1+MS	Red Hills 32-5 Fed Com #157H / Cimarex Red Hills 32-5 Fed Com

Schlumberger

Cimarex Red Hills 32-5 Fed Com #157H Rev3 RM 04Dec19 Proposal
Geodetic Report
(Def Plan)

CIMAREX

Report Date:	December 04, 2019 - 04:41 PM	**Survey / DLS Computation:**	Minimum Curvature / Lubinski
Client:	Cimarex Energy	**Vertical Section Azimuth:**	179.604 ° (Grid North)
Field:	NM Lea County (NAD 83)	**Vertical Section Origin:**	0.000 ft, 0.000 ft
Structure / Slot:	Cimarex Red Hills 32-5 Fed Com #157H / New Slot	**TVD Reference Datum:**	RKB
Well:	Red Hills 32-5 Fed Com #157H	**TVD Reference Elevation:**	3435.600 ft above MSL
Borehole:	Red Hills 32-5 Fed Com #157H	**Seabed / Ground Elevation:**	3409.600 ft above MSL
UWI / API#:	Unknown / Unknown	**Magnetic Declination:**	6.595 °
Survey Name:	Cimarex Red Hills 32-5 Fed Com #157H Rev3 RM 04Dec19	**Total Gravity Field Strength:**	998.4285mgn (9.80665 Based)
Survey Date:	December 04, 2019	**Gravity Model:**	GARM
Tort / AHD / DDI / ERD Ratio:	104.272 ° / 10506.673 ft / 6.332 / 1.020	**Total Magnetic Field Strength:**	47701.123 nT
Coordinate Reference System:	NAD83 New Mexico State Plane, Eastern Zone, US Feet	**Magnetic Dip Angle:**	59.680 °
Location Lat / Long:	N 32° 5' 35.68082", W 103° 35' 43.02321"	**Declination Date:**	December 04, 2019
Location Grid N/E Y/X:	N 398441.350 ftUS, E 769894.850 ftUS	**Magnetic Declination Model:**	HDGM 2019
CRS Grid Convergence Angle:	0.3921 °	**North Reference:**	Grid North
Grid Scale Factor:	0.99996892	**Grid Convergence Used:**	0.3921 °
Version / Patch:	2.10.787.0	**Total Corr Mag North->Grid North:**	6.2033 °
		Local Coord Referenced To:	Well Head

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
SHL [390' FNL, 2345' FWL]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	398441.35	769894.85	N 32 5 35.68	W 103 35 43.02
Nudge 2°/100' DLS	2500.00	0.00	269.65	2500.00	0.00	0.00	0.00	0.00	398441.35	769894.85	N 32 5 35.68	W 103 35 43.02
Hold Nudge	2856.80	7.14	269.65	2855.88	-0.02	-0.14	-22.19	2.00	398441.21	769872.66	N 32 5 35.68	W 103 35 43.28
Drop to Vertical 2°/100' DLS	6025.47	7.14	269.65	6000.00	-0.31	-2.56	-415.81	0.00	398438.79	769479.05	N 32 5 35.68	W 103 35 47.86
Hold Vertical	6382.27	0.00	269.65	6355.88	-0.33	-2.70	-438.00	2.00	398438.65	769456.86	N 32 5 35.68	W 103 35 48.11
KOP - Build 12°/100' DLS	9848.92	0.00	269.65	9822.54	-0.33	-2.70	-438.00	0.00	398438.65	769456.86	N 32 5 35.68	W 103 35 48.11
Landing Point	10598.92	90.00	179.60	10300.00	477.14	-480.15	-434.70	12.00	397961.21	769460.16	N 32 5 30.96	W 103 35 48.11
Cimarex Red Hills 32-5 Fed Com #157H - PBHL [100' FSL, 1907' FWL]	20190.12	90.00	179.60	10300.00	10068.34	-10071.12	-368.41	0.00	388370.56	769526.45	N 32 3 56.05	W 103 35 48.10

Survey Type: Def Plan

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

Survey Program:

Description	Part	MD From (ft)	MD To (ft)	EOU Freq (ft)	Hole Size (in)	Casing Diameter (in)	Expected Max Inclination (deg)	Survey Tool Type	Borehole / Survey
	1	0.000	26.000	1/100.000	17.500	13.375		NAL_MWD_IFR1+MS-Depth Only	Red Hills 32-5 Fed Com #157H / Cimarex Red Hills 32-5 Fed Com #157H Rev3 RM 04Dec19
	1	26.000	20190.123	1/100.000	17.500	13.375		NAL_MWD_IFR1+MS	Red Hills 32-5 Fed Com #157H / Cimarex Red Hills 32-5 Fed Com

Schlumberger CIMAREX

Cimarex Red Hills 32-5 Fed Com #157H Rev3 RM 04Dec19 Anti-Collision Summary Report

Analysis Date-24hr Time:	December 04, 2019 - 16:42	**Analysis Method:**	3D Least Distance
Client:	Cimarex Energy	**Reference Trajectory:**	Cimarex Red Hills 32-5 Fed Com #157H Rev3 RM 04Dec19 (Def Plan)
Field:	NM Lea County (NAD 83)	**Depth Interval:**	Every 10.00 Measured Depth (ft)
Structure:	Cimarex Red Hills 32-5 Fed Com #157H	**Rule Set:**	NAL Procedure: D&M AntiCollision Standard S002
Slot:	New Slot	**Min Pts:**	All local minima indicated.
Well:	Red Hills 32-5 Fed Com #157H	**Version / Patch:**	2.10.787.0
Borehole:	Red Hills 32-5 Fed Com #157H	**Database \ Project:**	US1153APP452.dir.slb.com\drilling-NM Lea County 2.10
Scan MD Range:	0.00ft ~ 20190.12ft		

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

Offset Trajectories Summary

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

Offset Trajectory	Separation			Allow	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 Red Hills Unit #3H (Offset) Gas Inc Only 0ft-17597ft (Def Survey)													Fail Major
	8176.22	32.81	8174.24	8143.41	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	8176.09	32.81	8174.10	8143.28	553443.48	MAS = 10.00 (m)	26.00	26.00				WRP	
	8176.05	32.81	8172.38	8143.24	4828.27	MAS = 10.00 (m)	180.00	180.00				MinPts	
	8173.64	43.37	8144.06	8130.27	296.11	OSF1.50	880.00	880.00				MinPt-CtCt	
	8174.49	45.97	8143.19	8128.52	278.70	OSF1.50	1020.00	1020.00				MINPT-O-EOU	
	8175.55	47.26	8143.38	8128.28	270.75	OSF1.50	1090.00	1090.00				MinPt-O-ADP	
	8168.24	85.22	8110.77	8083.02	147.16	OSF1.50	1650.00	1650.00				MinPt-CtCt	
	8168.62	86.41	8110.35	8082.21	145.10	OSF1.50	1740.00	1740.00				MINPT-O-EOU	
	8169.15	87.07	8110.45	8082.09	143.98	OSF1.50	1790.00	1790.00				MinPt-O-ADP	
	8170.20	143.09	8074.15	8027.11	86.83	OSF1.50	2850.00	2849.13				MinPt-CtCt	
	8173.79	153.85	8070.57	8019.95	80.71	OSF1.50	3220.00	3216.26				MINPT-O-EOU	
	8169.42	199.77	8035.58	7969.65	61.94	OSF1.50	3940.00	3930.69				MinPt-CtCt	
	8174.58	215.21	8030.45	7959.37	57.49	OSF1.50	4410.00	4397.05				MINPT-O-EOU	
	8167.12	266.16	7989.02	7900.96	46.36	OSF1.50	5200.00	5180.93				MinPt-CtCt	
	8169.70	273.82	7986.50	7895.88	45.07	OSF1.50	5490.00	5468.68				MINPT-O-EOU	
	8173.00	277.80	7987.13	7895.19	44.44	OSF1.50	5640.00	5617.52				MinPt-O-ADP	
	8168.87	359.72	7928.39	7809.15	34.24	OSF1.50	7030.00	7003.61				MinPt-CtCt	
	8172.23	370.04	7924.88	7802.19	33.30	OSF1.50	7390.00	7363.61				MINPT-O-EOU	
	8165.93	449.79	7865.41	7716.14	27.35	OSF1.50	8750.00	8723.61				MinPt-CtCt	
	8167.18	454.60	7863.45	7712.58	27.06	OSF1.50	8960.00	8933.61				MINPT-O-EOU	
	8168.65	456.36	7863.75	7712.29	26.96	OSF1.50	9050.00	9023.61				MinPt-O-ADP	
	1777.69	541.49	1413.04	1236.20	5.00	OSF1.50	16530.00	10300.00	OSF<5.00			Enter Alert	
	545.95	549.30	176.07	-3.35	1.49	OSF1.50	17820.00	10300.00		OSF<1.50		Enter Minor	
	370.62	556.10	-3.03	-185.48	0.99	OSF1.50	18050.00	10300.00			OSF<1.00	Enter Major	
	287.14	559.02	-86.19	-271.87	0.77	OSF1.50	18280.00	10300.00				MinPts	
	365.16	547.17	-0.28	-182.01	1.00	OSF1.50	18510.00	10300.00			OSF>1.00	Exit Major	
	530.12	538.12	170.71	-8.00	1.48	OSF1.50	18730.00	10300.00		OSF>1.50		Exit Minor	
	1759.21	531.14	1404.46	1228.08	4.98	OSF1.50	20020.00	10300.00	OSF>5.00			Exit Alert	
	1927.25	531.02	1572.58	1396.23	5.46	OSF1.50	20190.12	10300.00				TD	
Cimarex Red Hills Unit #4 (Offset) Gas Blind 0ft-17675ft (Def Survey)													Fail Major
	4495.27	32.81	4493.29	4462.46	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	4495.06	32.81	4493.06	4462.25	196851.96	MAS = 10.00 (m)	26.00	26.00				MinPt-O-SF	
	4461.94	1340.93	3567.31	3121.00	5.00	OSF1.50	4370.00	4357.36	OSF<5.00			Enter Alert	
	3204.67	3210.86	1062.74	-6.19	1.50	OSF1.50	11360.00	10300.00		OSF<1.50		Enter Minor	
	2135.83	3212.33	-7.57	-1076.50	1.00	OSF1.50	12440.00	10300.00			OSF<1.00	Enter Major	
	375.00	3210.57	-1766.23	-2835.57	0.17	OSF1.50	14540.00	10300.00				MinPts	
	2130.60	3209.01	-9.40	-1078.41	1.00	OSF1.50	16640.00	10300.00			OSF>1.00	Exit Major	
	3199.40	3208.96	1059.43	-9.56	1.50	OSF1.50	17720.00	10300.00		OSF>1.50		Exit Minor	
	5659.90	3208.93	3519.96	2450.97	2.65	OSF1.50	20190.12	10300.00				TD	
Cimarex Red Hills 32-5 Fed Com #156H Rev3 RM 14Nov19 (Def Plan)													Fail Minor
	20.00	16.26	18.71	3.74	N/A	MAS = 4.96 (m)	0.00	0.00	CtCt<=15m<15.00			Enter Alert	
	20.00	16.26	18.71	3.74	84230.33	MAS = 4.96 (m)	26.00	26.00				WRP	
	20.00	20.02	6.23	-0.02	1.50	OSF1.50	2050.00	2050.00		OSF<1.50		Enter Minor	
	20.00	24.26	3.40	-4.26	1.22	OSF1.50	2500.00	2500.00				MinPt-CtCt	
	20.05	24.78	3.10	-4.73	1.20	OSF1.50	2600.00	2599.98				MinPts	
	20.07	24.80	3.11	-4.73	1.20	OSF1.50	2610.00	2609.97				MinPt-O-ADP	
	25.90	26.04	8.11	-0.14	1.49	OSF1.50	3130.00	3126.96		OSF>1.50		Exit Minor	
	125.77	69.86	78.77	55.91	2.72	OSF1.50	9850.00	9823.61				MinPts	
	229.72	70.41	182.35	159.31	4.96	OSF1.50	10170.00	10119.95	OSF>5.00			Exit Alert	
	599.90	181.12	478.73	418.78	4.99	OSF1.50	15870.00	10300.00	OSF<5.00			Enter Alert	
	599.90	313.39	390.54	286.51	2.88	OSF1.50	20190.12	10300.00				MinPts	
Cimarex Red Hills 32-5 Fed Com #155H Rev3 RM 14Nov19 (Def Plan)													Warning Alert
	39.99	32.25	38.71	7.74	N/A	MAS = 9.83 (m)	0.00	0.00	CtCt<=15m<15.00			Enter Alert	
	39.99	32.25	38.71	7.74	87103.00	MAS = 9.83 (m)	26.00	26.00				WRP	
	39.99	32.25	23.39	7.74	2.53	MAS = 9.83 (m)	2500.00	2500.00				MinPts	
	40.01	32.25	23.36	7.76	2.52	MAS = 9.83 (m)	2510.00	2510.00				MINPT-O-EOU	
	40.15	32.25	23.41	7.90	2.51	MAS = 9.83 (m)	2530.00	2530.00				MinPt-O-SF	
	88.67	32.25	69.88	56.42	4.99	MAS = 9.83 (m)	3070.00	3067.43	OSF>5.00			Exit Alert	
	230.56	42.62	201.72	187.94	8.32	OSF1.50	6025.47	6000.00				MinPt-O-SF	
	231.83	42.88	202.81	188.95	8.31	OSF1.50	6100.00	6074.07				MinPt-O-SF	
	174.64	53.34	138.65	121.30	5.00	OSF1.50	8180.00	8153.61	OSF<5.00			Enter Alert	
	174.64	66.62	129.80	108.02	3.98	OSF1.50	9860.00	9833.61				MinPt-CtCt	
	174.66	66.78	129.71	107.87	3.97	OSF1.50	9900.00	9873.51				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		
	217.72	67.07	172.58	150.66	4.94	OSF1.50	10210.00	10150.17	OSF>5.00			Exit Alert	
	1950.49	311.62	1742.32	1638.87	9.42	OSF1.50	20190.12	10300.00				MinPts	
Cimarex Red Hills 32-5 Fed Com #158H Rev1 RM 14Oct19 (Def Plan)													Warning Alert
	72.10	32.81	70.81	39.29	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	72.10	32.81	70.81	39.29	N/A	MAS = 10.00 (m)	26.00	26.00				WRP	
	72.10	32.81	56.63	39.29	4.99	MAS = 10.00 (m)	2320.00	2320.00	OSF<5.00			Enter Alert	
	60.04	32.81	41.81	27.23	3.47	MAS = 10.00 (m)	3160.00	3156.73				MinPts	
	60.09	32.81	41.74	27.28	3.45	MAS = 10.00 (m)	3240.00	3236.11				MINPT-O-EOU	
	61.22	32.81	42.42	28.42	3.42	MAS = 10.00 (m)	3480.00	3474.25				MinPt-O-SF	
	61.46	32.81	42.58	28.65	3.42	MAS = 10.00 (m)	3510.00	3504.02				MinPt-O-SF	
	144.18	44.34	114.19	99.84	4.98	OSF1.50	6310.00	6283.62	OSF>5.00			Exit Alert	
	340.32	64.89	296.63	275.43	8.00	OSF1.50	9850.00	9823.61				MINPT-O-EOU	
	340.34	64.92	296.64	275.42	7.99	OSF1.50	9860.00	9833.61				MinPt-O-ADP	
	340.81	65.06	297.02	275.76	7.99	OSF1.50	9900.00	9873.51				MinPt-O-SF	
	1979.05	309.47	1772.31	1669.58	9.63	OSF1.50	20190.12	10300.00				MinPts	
Cimarex Red Hills 32-5 Fed Com #159H Rev2 RM 19Nov19 (Def Plan)													Warning Alert
	84.85	32.81	83.56	52.04	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	84.84	32.81	83.56	52.03	N/A	MAS = 10.00 (m)	26.00	26.00				WRP	
	81.36	32.81	64.05	48.55	5.00	MAS = 10.00 (m)	2670.00	2669.90	OSF<5.00			Enter Alert	
	63.96	32.81	45.74	31.16	3.70	MAS = 10.00 (m)	3160.00	3156.73				MinPts	
	63.97	32.81	45.73	31.16	3.70	MAS = 10.00 (m)	3170.00	3166.65				MINPT-O-EOU	
	64.10	32.81	45.81	31.29	3.70	MAS = 10.00 (m)	3210.00	3206.34				MinPt-O-SF	
	103.59	32.81	81.84	70.78	5.00	MAS = 10.00 (m)	4440.00	4426.81	OSF>5.00			Exit Alert	
	639.78	66.81	594.81	572.97	14.62	OSF1.50	9860.00	9833.61				MinPts	
	640.03	66.91	595.00	573.12	14.60	OSF1.50	9900.00	9873.51				MinPt-O-SF	
	704.65	54.52	667.88	650.13	19.82	OSF1.50	10570.00	10299.12				MinPt-O-SF	
	704.28	54.43	667.56	649.85	19.84	OSF1.50	10598.92	10300.00				MinPts	
	704.28	212.43	562.22	491.84	4.99	OSF1.50	17150.00	10300.00	OSF<5.00			Enter Alert	
	704.28	307.76	498.67	396.52	3.44	OSF1.50	20180.00	10300.00				MinPt-CtCt	
	704.28	308.09	498.45	396.18	3.44	OSF1.50	20190.12	10300.00				MinPts	
Cimarex Red Hills Unit #1 (Offset) Gas Inc Only 0ft-21321ft (Def Survey)													Warning Alert
	4595.17	32.81	4593.19	4562.37	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	4595.14	32.81	4593.16	4562.33	N/A	MAS = 10.00 (m)	10.00	10.00				MinPt-O-SF	
	4595.13	32.81	4593.15	4562.32	N/A	MAS = 10.00 (m)	20.00	20.00				MinPts	
	4595.13	32.81	4593.15	4562.32	N/A	MAS = 10.00 (m)	26.00	26.00				WRP	
	4594.94	32.81	4579.87	4562.13	350.76	MAS = 10.00 (m)	450.00	450.00				MinPts	
	4595.23	32.81	4579.17	4562.42	326.06	MAS = 10.00 (m)	520.00	520.00				MINPT-O-EOU	
	4594.06	34.16	4570.63	4559.90	214.07	OSF1.50	690.00	690.00				MinPt-CtCt	
	4594.13	41.07	4566.09	4553.06	176.20	OSF1.50	820.00	820.00				MinPt-CtCt	
	4595.40	44.32	4565.20	4551.08	162.73	OSF1.50	960.00	960.00				MINPT-O-EOU	
	4594.96	56.03	4556.94	4538.93	127.46	OSF1.50	1110.00	1110.00				MinPt-CtCt	
	4595.92	58.78	4556.08	4537.15	121.32	OSF1.50	1230.00	1230.00				MINPT-O-EOU	
	4595.29	70.31	4547.75	4524.98	100.83	OSF1.50	1380.00	1380.00				MinPt-CtCt	
	4595.10	91.68	4533.32	4503.42	76.81	OSF1.50	1790.00	1790.00				MinPt-CtCt	
	4594.80	117.72	4515.66	4477.08	59.52	OSF1.50	2290.00	2290.00				MinPt-CtCt	
	4595.39	140.76	4500.89	4454.63	49.65	OSF1.50	2690.00	2689.86				MinPt-CtCt	
	4598.02	148.28	4498.51	4449.74	47.12	OSF1.50	2900.00	2898.74				MINPT-O-EOU	
	4603.80	164.99	4493.14	4438.80	42.34	OSF1.50	3190.00	3186.50				MINPT-O-EOU	
	4604.97	166.43	4493.36	4438.54	41.98	OSF1.50	3250.00	3246.03				MinPt-O-ADP	
	4607.62	174.71	4490.49	4432.91	40.00	OSF1.50	3360.00	3355.18				MINPT-O-EOU	
	4608.23	175.42	4490.63	4432.81	39.84	OSF1.50	3400.00	3394.87				MinPt-O-ADP	
	4612.27	179.66	4491.83	4432.61	38.92	OSF1.50	3550.00	3543.71				MinPt-O-ADP	
	4616.77	194.10	4486.71	4422.67	36.03	OSF1.50	3730.00	3722.31				MINPT-O-EOU	
	4617.37	194.83	4486.82	4422.54	35.90	OSF1.50	3770.00	3762.00				MinPt-O-ADP	
	4620.88	206.29	4482.70	4414.60	33.91	OSF1.50	3910.00	3900.92				MinPt-CtCt	
	4621.09	206.96	4482.45	4414.12	33.80	OSF1.50	3960.00	3950.53				MINPT-O-EOU	
	4621.41	207.36	4482.51	4414.04	33.74	OSF1.50	3990.00	3980.30				MinPt-O-ADP	
	4627.60	221.77	4479.10	4405.83	31.57	OSF1.50	4270.00	4258.13				MINPT-O-EOU	
	4628.48	222.79	4479.29	4405.69	31.43	OSF1.50	4320.00	4307.74				MinPt-O-ADP	
	4633.98	240.32	4473.11	4393.66	29.15	OSF1.50	4560.00	4545.89				MinPt-CtCt	
	4634.45	241.70	4472.66	4392.75	28.99	OSF1.50	4640.00	4625.27				MINPT-O-EOU	
	4634.87	242.20	4472.74	4392.66	28.93	OSF1.50	4670.00	4655.03				MinPt-O-ADP	
	4675.21	332.52	4452.87	4342.68	21.21	OSF1.50	6460.00	6433.61				MinPt-CtCt	
	4673.89	376.69	4422.11	4297.20	18.70	OSF1.50	7310.00	7283.61				MinPt-CtCt	
	4674.85	455.28	4370.67	4219.57	15.46	OSF1.50	8820.00	8793.61				MinPt-CtCt	
	1775.02	538.21	1414.45	1236.81	4.98	OSF1.50	13280.00	10300.00	OSF<5.00			Enter Alert	
	1109.57	540.98	748.26	568.59	3.08	OSF1.50	14670.00	10300.00				MinPts	
	1782.02	537.63	1422.95	1244.40	4.98	OSF1.50	16060.00	10300.00	OSF>5.00			Exit Alert	
	5634.76	536.59	5276.37	5098.17	15.80	OSF1.50	20190.12	10300.00				TD	
Cimarex Red Hills Unit #2H (Offset) Gas Inc Only 0ft-15005ft (Def Survey)													Warning Alert
	6016.93	32.81	6014.95	5984.12	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	6016.73	32.81	6014.73	5983.92	243334.06	MAS = 10.00 (m)	26.00	26.00				MinPt-O-SF	
	6016.64	32.81	6014.58	5983.83	76557.45	MAS = 10.00 (m)	60.00	60.00				MinPts	
	6016.81	32.81	5998.45	5984.00	367.34	MAS = 10.00 (m)	600.00	600.00				MinPts	
	6016.27	36.83	5991.05	5979.44	258.82	OSF1.50	800.00	800.00				MinPt-CtCt	
	6012.35	66.73	5967.21	5945.63	139.25	OSF1.50	1350.00	1350.00				MinPt-CtCt	
	6010.27	110.73	5935.79	5899.54	82.88	OSF1.50	2190.00	2190.00				MinPt-CtCt	
	6012.70	117.47	5933.73	5895.24	78.07	OSF1.50	2430.00	2430.00				MINPT-O-EOU	
	6014.77	120.05	5934.08	5894.72	76.39	OSF1.50	2520.00	2520.00				MinPt-O-ADP	
	6015.45	142.90	5919.52	5872.55	64.01	OSF1.50	2720.00	2719.78				MinPt-CtCt	
	6016.84	147.17	5918.07	5869.67	62.14	OSF1.50	2856.80	2855.88				MINPT-O-EOU	
	6020.31	151.31	5918.78	5869.00	60.45	OSF1.50	2990.00	2988.05				MinPt-O-ADP	
	6029.17	168.07	5916.46	5861.10	54.43	OSF1.50	3210.00	3206.34				MinPts	
	6036.93	180.10	5916.20	5856.83	50.82	OSF1.50	3470.00	3464.33				MinPts	
	6052.67	204.73	5915.52	5847.93	44.76	OSF1.50	3880.00	3871.15				MINPT-O-EOU	
	6052.86	204.94	5915.57	5847.92	44.72	OSF1.50	3900.00	3891.00				MinPt-O-ADP	
	6064.61	223.32	5915.06	5841.28	41.09	OSF1.50	4300.00	4287.90				MINPT-O-EOU	
	6066.89	226.03	5915.55	5840.87	40.60	OSF1.50	4400.00	4387.12				MinPt-O-ADP	
	6078.91	244.83	5915.02	5834.07	37.53	OSF1.50	4700.00	4684.80				MinPts	
	6084.23	254.60	5913.83	5829.63	36.11	OSF1.50	4880.00	4863.41				MinPts	
	6088.26	264.73	5911.11	5823.53	34.75	OSF1.50	5030.00	5012.24				MinPts	
	6096.22	278.33	5910.01	5817.89	33.08	OSF1.50	5340.00	5319.84				MINPT-O-EOU	

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		
	6098.17	280.64	5910.42	5817.53	32.81	OSF1.50	5430.00	5409.15				MinPt-O-ADP	
	6107.32	288.34	5914.43	5818.98	31.98	OSF1.50	5680.00	5657.21				MinPt-O-ADP	
	6125.49	358.62	5885.75	5766.87	25.75	OSF1.50	7000.00	6973.61				MinPt-CtCt	
	6133.85	383.52	5877.51	5750.33	24.11	OSF1.50	7620.00	7593.61				MINPT-O-EOU	
	6125.51	431.19	5837.40	5694.33	21.40	OSF1.50	8390.00	8363.61				MinPt-CtCt	
	6129.16	442.34	5833.61	5686.82	20.87	OSF1.50	8720.00	8693.61				MINPT-O-EOU	
	6133.48	447.55	5834.45	5685.93	20.64	OSF1.50	8880.00	8853.61				MinPt-O-ADP	
	6129.95	471.70	5814.82	5658.24	19.57	OSF1.50	9160.00	9133.61				MinPt-CtCt	
	6130.41	473.13	5814.33	5657.28	19.51	OSF1.50	9250.00	9223.61				MINPT-O-EOU	
	6131.79	474.86	5814.56	5656.93	19.44	OSF1.50	9340.00	9313.61				MinPt-O-ADP	
	1805.26	543.65	1441.92	1261.62	5.00	OSF1.50	15700.00	10300.00	OSF<5.00			Enter Alert	
	1780.93	544.48	1417.28	1236.45	4.92	OSF1.50	16000.00	10300.00				MinPts	
	1781.09	544.57	1417.39	1236.52	4.92	OSF1.50	16020.00	10300.00				MinPt-O-SF	
	1812.05	545.42	1447.78	1266.64	5.00	OSF1.50	16330.00	10300.00	OSF>5.00			Exit Alert	
	4556.29	540.97	4194.98	4015.31	12.67	OSF1.50	20190.12	10300.00				TD	
Neil H Wills Continental State #1 (Offset) Plugged Blind 0ft-5020ft (Def Survey)													Warning Alert
	3709.60	32.81	3707.62	3676.79	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	3709.36	32.81	3707.36	3676.55	147051.04	MAS = 10.00 (m)	26.00	26.00				MinPt-O-SF	
	3709.31	757.78	3203.46	2951.52	7.36	OSF1.50	2500.00	2500.00				MinPt-CtCt	
	3791.37	1138.81	3031.50	2652.56	5.00	OSF1.50	3720.00	3712.39	OSF<5.00			Enter Alert	
	3904.02	1567.62	2858.28	2336.40	3.74	OSF1.50	5100.00	5081.70				MinPts	
	4565.98	1372.69	3650.19	3193.28	4.99	OSF1.50	7310.00	7283.61	OSF>5.00			Exit Alert	
	5902.66	733.53	5412.98	5169.13	12.10	OSF1.50	13020.00	10300.00				MinPt-CtCt	
	5902.66	733.55	5412.97	5169.11	12.10	OSF1.50	13030.00	10300.00				MINPT-O-EOU	
	5902.68	733.57	5412.97	5169.11	12.10	OSF1.50	13040.00	10300.00				MinPt-O-ADP	
	7378.24	1114.77	6634.40	6263.47	9.94	OSF1.50	17450.00	10300.00				MinPt-O-SF	
	9284.77	1303.77	8414.93	7981.00	10.70	OSF1.50	20190.12	10300.00				TD	
Cimarex Red Hills 32-5 Fed Com #160H Rev2 RM 19Nov19 (Def Plan)													Pass
	99.98	32.81	98.70	67.17	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	99.98	32.81	98.69	67.17	N/A	MAS = 10.00 (m)	26.00	26.00				WRP	
	99.98	32.81	87.78	67.17	9.04	MAS = 10.00 (m)	1800.00	1800.00				MinPts	
	100.03	32.81	87.74	67.22	8.97	MAS = 10.00 (m)	1820.00	1820.00				MINPT-O-EOU	
	101.65	32.81	88.94	68.84	8.78	MAS = 10.00 (m)	1910.00	1910.00				MinPt-O-SF	
	615.68	47.84	583.36	567.84	19.79	OSF1.50	6025.47	6000.00				MinPt-O-SF	
	1472.65	76.38	1421.30	1396.27	29.39	OSF1.50	9848.92	9822.54				MinPts	
	1497.48	69.15	1450.95	1428.33	33.07	OSF1.50	10570.00	10299.12				MinPt-O-SF	
	1497.30	69.12	1450.79	1428.18	33.08	OSF1.50	10598.92	10300.00				MinPts	
	1497.30	316.61	1285.80	1180.69	7.12	OSF1.50	20180.00	10300.00				MinPt-CtCt	
	1497.30	316.94	1285.58	1180.36	7.11	OSF1.50	20190.12	10300.00				MinPts	
Cimarex Red Hills 32-5 Fed Com #127H Rev2 RM 14Nov19 (Def Plan)													Pass
	1834.79	32.81	1833.50	1801.98	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	1834.75	32.81	1833.46	1801.94	688069.00	MAS = 10.00 (m)	10.00	10.00				MinPts	
	1834.75	32.81	1833.46	1801.94	N/A	MAS = 10.00 (m)	26.00	26.00				WRP	
	490.92	68.39	444.25	422.53	11.22	OSF1.50	9848.92	9822.54				MinPt-CtCt	
	490.93	68.51	444.19	422.42	11.20	OSF1.50	9900.00	9873.51				MinPts	
	2266.60	315.65	2055.74	1950.95	10.81	OSF1.50	20190.12	10300.00				MinPts	
Cimarex Red Hills 32-5 Fed Com #171H Rev0 RM 04Sept19 (Non-Def Plan)													Pass
	659.28	32.81	657.30	626.47	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	659.28	32.81	657.30	626.47	N/A	MAS = 10.00 (m)	26.00	26.00				WRP	
	659.28	32.81	641.99	626.47	42.92	MAS = 10.00 (m)	2500.00	2500.00				MinPts	
	659.30	32.81	641.96	626.49	42.79	MAS = 10.00 (m)	2510.00	2510.00				MINPT-O-EOU	
	1083.40	51.82	1048.19	1031.57	32.54	OSF1.50	6100.00	6074.07				MinPt-O-SF	
	1097.29	81.57	1042.25	1015.72	20.64	OSF1.50	9880.00	9853.59				MinPt-CtCt	
	1097.32	81.76	1042.15	1015.56	20.59	OSF1.50	9940.00	9913.06				MINPT-O-EOU	
	1097.33	81.78	1042.16	1015.56	20.59	OSF1.50	9950.00	9922.86				MinPt-O-ADP	
	1098.61	82.01	1043.28	1016.60	20.55	OSF1.50	10080.00	10044.70				MinPt-O-SF	
	2173.33	316.09	1961.94	1857.24	10.37	OSF1.50	20190.12	10300.00				MinPts	
Cimarex Red Hills 32-5 Fed Com #170H Rev0 RM 04Sept19 (Non-Def Plan)													Pass
	679.28	32.81	678.00	646.48	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	679.28	32.81	678.00	646.48	N/A	MAS = 10.00 (m)	26.00	26.00				WRP	
	679.28	32.81	662.68	646.48	44.27	MAS = 10.00 (m)	2500.00	2500.00				MinPts	
	679.30	32.81	662.65	646.49	44.13	MAS = 10.00 (m)	2510.00	2510.00				MINPT-O-EOU	
	694.98	32.81	677.22	662.17	42.11	MAS = 10.00 (m)	2800.00	2799.45				MinPt-O-SF	
	1260.62	37.84	1234.97	1222.78	51.68	OSF1.50	5490.00	5468.68				MinPt-O-SF	
	1338.52	41.40	1310.49	1297.12	50.01	OSF1.50	6100.00	6074.07				MinPt-O-SF	
	1352.41	68.60	1306.25	1283.81	30.11	OSF1.50	9880.00	9853.59				MinPt-CtCt	
	1352.42	68.70	1306.19	1283.72	30.06	OSF1.50	9920.00	9893.35				MINPT-O-EOU	
	1352.42	68.71	1306.19	1283.72	30.06	OSF1.50	9930.00	9903.22				MinPt-O-ADP	
	1352.80	68.76	1306.54	1284.05	30.05	OSF1.50	10030.00	9999.30				MinPt-O-SF	
	2385.85	313.46	2176.45	2072.39	11.46	OSF1.50	20190.12	10300.00				MinPts	
Cimarex Red Hills 32-5 Fed Com #169H Rev0 RM 04Sept19 (Non-Def Plan)													Pass
	699.28	32.81	697.99	666.47	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	699.28	32.81	697.99	666.47	N/A	MAS = 10.00 (m)	26.00	26.00				WRP	
	699.28	32.81	683.36	666.47	47.73	MAS = 10.00 (m)	2390.00	2390.00				MinPts	
	699.33	32.81	683.27	666.52	47.24	MAS = 10.00 (m)	2420.00	2420.00				MINPT-O-EOU	
	704.20	32.81	687.64	671.39	46.05	MAS = 10.00 (m)	2570.00	2569.99				MinPt-O-SF	
	1540.14	42.34	1511.49	1497.81	56.23	OSF1.50	6025.47	6000.00				MinPt-O-SF	
	1770.75	52.85	1735.08	1717.89	51.47	OSF1.50	7670.00	7643.61				MinPt-O-SF	
	1777.34	65.19	1733.45	1712.15	41.69	OSF1.50	9890.00	9863.56				MinPt-CtCt	
	1777.34	65.22	1733.43	1712.12	41.67	OSF1.50	9900.00	9873.51				MinPts	
	2650.05	311.63	2441.87	2338.42	12.80	OSF1.50	20190.12	10300.00				MinPts	
Cimarex Red Hills 32-5 Fed Com #130H Rev2 RM 14Nov19 (Def Plan)													Pass
	1854.78	32.81	1853.50	1821.97	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	1854.74	32.81	1853.45	1821.93	635103.64	MAS = 10.00 (m)	10.00	10.00				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		
	1854.74	32.81	1853.45	1821.93	N/A	MAS = 10.00 (m)	26.00	26.00				WRP	
	1033.85	66.54	988.72	967.31	24.09	OSF1.50	9848.92	9822.54				MinPt-CtCt	
	1033.86	66.73	988.60	967.13	24.02	OSF1.50	9900.00	9873.51				MinPts	
	2218.70	312.53	2009.91	1906.16	10.69	OSF1.50	20190.12	10300.00				MinPts	
Cimarex Red Hills 32-5 Fed Com #129H Rev2 RM 15Nov19 (Def Plan)													Pass
	1935.71	32.81	1934.42	1902.90	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	1935.66	32.81	1934.37	1902.86	612695.86	MAS = 10.00 (m)	10.00	10.00				MinPt-O-SF	
	1935.66	32.81	1934.37	1902.85	N/A	MAS = 10.00 (m)	26.00	26.00				WRP	
	1497.92	80.97	1443.34	1416.95	28.35	OSF1.50	9830.00	9803.61				MinPts	
	1466.92	76.40	1415.35	1390.51	29.49	OSF1.50	10390.00	10255.02				MinPt-O-ADP	
	1466.88	76.36	1415.35	1390.52	29.50	OSF1.50	10400.00	10259.16				MINPT-O-EOU	
	1466.86	76.27	1415.39	1390.59	29.54	OSF1.50	10420.00	10266.87				MinPt-CtCt	
	1466.86	75.54	1415.88	1391.32	29.83	OSF1.50	10590.00	10299.92				MinPt-CtCt	
	1466.92	307.86	1261.06	1159.06	7.18	OSF1.50	19950.00	10300.00				MinPt-CtCt	
	1467.07	308.58	1260.72	1158.48	7.17	OSF1.50	19980.00	10300.00				MINPT-O-EOU	
	1467.25	308.78	1260.77	1158.47	7.16	OSF1.50	19990.00	10300.00				MinPt-O-ADP	
	1469.15	309.53	1262.17	1159.62	7.15	OSF1.50	20040.00	10300.00				MinPt-O-SF	
	1485.02	309.80	1277.87	1175.22	7.22	OSF1.50	20190.12	10300.00				TD	
Cimarex Red Hills 32-5 Fed Com #128H Rev3 RM 19Nov19 (Def Plan)													Pass
	1915.72	32.81	1914.43	1882.91	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	1915.67	32.81	1914.38	1882.86	617751.38	MAS = 10.00 (m)	10.00	10.00				MinPts	
	1915.67	32.81	1914.38	1882.86	N/A	MAS = 10.00 (m)	26.00	26.00				WRP	
	1735.88	34.36	1712.50	1701.52	79.04	OSF1.50	4130.00	4119.22				MinPt-O-SF	
	1480.41	78.57	1427.44	1401.85	28.89	OSF1.50	9848.92	9822.54				MinPt-CtCt	
	1480.43	78.62	1427.42	1401.81	28.87	OSF1.50	9860.00	9833.61				MINPT-O-EOU	
	1480.47	78.68	1427.43	1401.80	28.85	OSF1.50	9870.00	9843.61				MinPt-O-ADP	
	1482.20	78.94	1428.98	1403.26	28.78	OSF1.50	9960.00	9932.61				MinPt-O-SF	
	1589.95	304.51	1386.51	1285.43	7.86	OSF1.50	19950.00	10300.00				MinPt-CtCt	
	1590.08	305.14	1386.23	1284.94	7.84	OSF1.50	19980.00	10300.00				MinPts	
	1592.01	305.87	1387.67	1286.14	7.83	OSF1.50	20040.00	10300.00				MinPt-O-SF	
	1606.66	305.95	1402.26	1300.71	7.90	OSF1.50	20190.12	10300.00				TD	
Cimarex Red Hills 32-5 Fed Com #131H Rev1 RM 11Oct19 (Def Plan)													Pass
	1874.78	32.81	1873.50	1841.98	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	1874.74	32.81	1873.45	1841.93	628602.52	MAS = 10.00 (m)	10.00	10.00				MinPts	
	1874.74	32.81	1873.45	1841.93	N/A	MAS = 10.00 (m)	26.00	26.00				WRP	
	1764.19	32.81	1742.24	1731.38	85.75	MAS = 10.00 (m)	4690.00	4674.88				MinPt-O-SF	
	1576.78	70.43	1529.27	1506.35	34.36	OSF1.50	9848.92	9822.54				MinPt-CtCt	
	1576.79	70.69	1529.11	1506.10	34.23	OSF1.50	9920.00	9893.35				MINPT-O-EOU	
	1576.80	70.70	1529.11	1506.10	34.23	OSF1.50	9930.00	9903.22				MinPt-O-ADP	
	1577.61	70.80	1529.86	1506.81	34.19	OSF1.50	10070.00	10035.80				MinPt-O-SF	
	2717.44	305.18	2513.56	2412.26	13.41	OSF1.50	20190.12	10300.00				MinPts	
Cimarex Red Hills 32-5 Fed Com #199H Rev0 RM 04Sept19 (Non-Def Plan)													Pass
	2535.28	32.81	2533.30	2502.47	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	2535.22	32.81	2533.23	2502.41	364176.98	MAS = 10.00 (m)	10.00	10.00				MinPt-O-SF	
	2535.20	32.81	2533.22	2502.39	N/A	MAS = 10.00 (m)	20.00	20.00				MINPT-O-EOU	
	2535.20	32.81	2533.22	2502.39	N/A	MAS = 10.00 (m)	26.00	26.00				WRP	
	2535.20	32.81	2517.97	2502.39	166.09	MAS = 10.00 (m)	2500.00	2500.00				MinPts	
	2535.22	32.81	2517.94	2502.41	165.58	MAS = 10.00 (m)	2510.00	2510.00				MINPT-O-EOU	
	2203.65	67.09	2158.07	2136.57	51.19	OSF1.50	9900.00	9873.51				MinPt-O-SF	
	2202.30	66.71	2156.97	2135.59	51.45	OSF1.50	10120.00	10079.28				MinPts	
	2202.30	66.69	2156.97	2135.60	51.47	OSF1.50	10130.00	10087.66				MinPt-CtCt	
	2965.70	328.11	2746.30	2637.59	13.63	OSF1.50	20190.12	10300.00				MinPts	
Cimarex Red Hills 32-5 Fed Com #198H Rev0 RM 04Sept19 (Non-Def Plan)													Pass
	2555.27	32.81	2553.29	2522.46	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	2555.21	32.81	2553.22	2522.40	377418.74	MAS = 10.00 (m)	10.00	10.00				MinPt-O-SF	
	2555.19	32.81	2553.21	2522.38	N/A	MAS = 10.00 (m)	26.00	26.00				WRP	
	2555.19	32.81	2537.96	2522.38	167.40	MAS = 10.00 (m)	2500.00	2500.00				MinPts	
	2555.21	32.81	2537.93	2522.40	166.88	MAS = 10.00 (m)	2510.00	2510.00				MINPT-O-EOU	
	2574.02	32.81	2555.41	2541.21	154.69	MAS = 10.00 (m)	2830.00	2829.27				MinPt-O-SF	
	2617.10	43.28	2587.58	2573.82	94.97	OSF1.50	6025.47	6000.00				MinPt-O-SF	
	2627.57	67.06	2582.21	2560.51	60.52	OSF1.50	10040.00	10008.55				MinPt-O-SF	
	2627.23	67.04	2581.88	2560.19	60.53	OSF1.50	10130.00	10087.66				MinPts	
	3293.58	321.80	3078.39	2971.78	15.44	OSF1.50	20190.12	10300.00				MinPts	
Cimarex Red Hills 32-5 Fed Com #197H Rev0 RM 04Sept19 (Non-Def Plan)													Pass
	2575.24	32.81	2573.26	2542.43	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	2575.19	32.81	2573.20	2542.38	446484.77	MAS = 10.00 (m)	10.00	10.00				MinPt-O-SF	
	2575.17	32.81	2573.19	2542.36	N/A	MAS = 10.00 (m)	26.00	26.00				WRP	
	2575.17	32.81	2557.94	2542.36	168.66	MAS = 10.00 (m)	2500.00	2500.00				MinPts	
	2575.19	32.81	2557.91	2542.38	168.14	MAS = 10.00 (m)	2510.00	2510.00				MINPT-O-EOU	
	3011.93	81.99	2956.61	2929.94	56.43	OSF1.50	10130.00	10087.66				MinPt-CtCt	
	3011.93	82.00	2956.61	2929.93	56.42	OSF1.50	10140.00	10095.91				MinPts	
	3013.63	82.15	2958.20	2931.48	56.35	OSF1.50	10280.00	10197.39				MinPt-O-SF	
	3014.53	82.17	2959.09	2932.36	56.35	OSF1.50	10310.00	10215.22				MinPt-O-SF	
	3640.94	316.32	3429.39	3324.61	17.36	OSF1.50	20190.12	10300.00				MinPts	
Cimarex Red Hills SWD #1 (Offset) Inc Only 0ft-19000ft (Def Survey)													Pass
	6870.13	32.81	6868.16	6837.33	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	6869.90	32.81	6867.89	6837.09	211241.42	MAS = 10.00 (m)	26.00	26.00				MinPt-O-SF	
	6869.72	32.81	6867.60	6836.92	48597.99	MAS = 10.00 (m)	80.00	80.00				MinPts	
	6872.98	87.21	6814.18	6785.77	120.93	OSF1.50	1750.00	1750.00				MinPt-CtCt	
	6888.61	156.57	6783.57	6732.04	66.82	OSF1.50	2930.00	2928.51				MINPT-O-EOU	
	6893.05	161.70	6784.60	6731.36	64.72	OSF1.50	3090.00	3087.27				MinPt-O-ADP	
	6954.65	254.67	6784.21	6699.98	41.27	OSF1.50	4620.00	4605.42				MinPt-CtCt	
	6955.86	258.43	6782.91	6697.43	40.67	OSF1.50	4780.00	4764.18				MINPT-O-EOU	
	6957.56	260.46	6783.26	6697.10	40.36	OSF1.50	4870.00	4853.48				MinPt-O-ADP	
	7026.20	309.19	6819.42	6717.02	34.30	OSF1.50	5980.00	5954.89				MINPT-O-EOU	

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		
	7030.73	346.85	6798.84	6683.88	30.57	OSF1.50	6770.00	6743.61				MinPt-CtCt	
	7034.31	431.93	6745.70	6602.38	24.53	OSF1.50	8420.00	8393.61				MinPt-CtCt	
	2957.13	545.91	2592.53	2411.23	8.15	OSF1.50	16510.00	10300.00				MinPts	
	2957.17	545.95	2592.54	2411.21	8.15	OSF1.50	16520.00	10300.00				MinPt-O-ADP	
	2958.08	546.25	2593.25	2411.83	8.15	OSF1.50	16580.00	10300.00				MinPt-O-SF	
	4724.68	546.62	4359.60	4178.06	13.01	OSF1.50	20190.12	10300.00				TD	
Rector Oil Maechtel Permit #1 (Offset) Plugged Oil Blind 0ft-5006ft (Def Survey)													Pass
	10020.45	32.81	10019.16	9987.64	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	10020.11	32.81	10018.77	9987.31	191293.53	MAS = 10.00 (m)	26.00	26.00				MinPt-O-SF	
	9961.40	1559.37	8921.38	8402.03	9.59	OSF1.50	5270.00	5250.39				MinPt-O-SF	
	9960.89	1559.20	8920.98	8401.69	9.59	OSF1.50	5350.00	5329.77				MinPts	
	9960.86	1559.14	8920.99	8401.72	9.59	OSF1.50	5370.00	5349.61				MinPt-CtCt	
	7244.96	1099.63	6511.44	6145.33	9.89	OSF1.50	15090.00	10300.00				MinPt-O-SF	
	5379.87	499.75	5046.28	4880.12	16.19	OSF1.50	19940.00	10300.00				MinPt-CtCt	
	5380.43	501.03	5045.98	4879.40	16.15	OSF1.50	20020.00	10300.00				MINPT-O-EOU	
	5385.57	506.93	5047.18	4878.63	15.97	OSF1.50	20190.12	10300.00				MinPts	

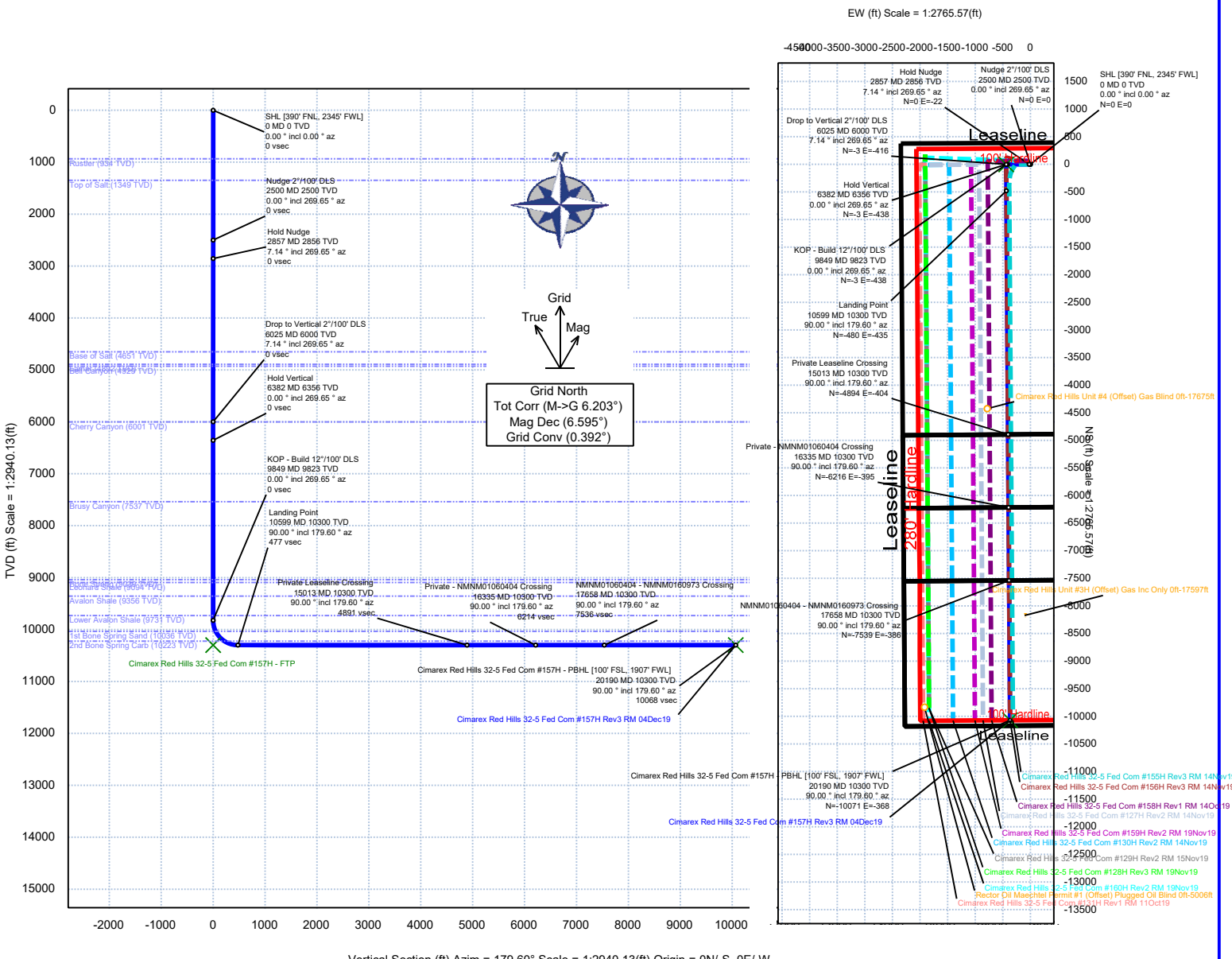
Schlumberger

Cimarex Energy Rev 3

CIMAREX

Borehole:	Well:	Field:	Structure:
Red Hills 32-5 Fed Com #157H	Red Hills 32-5 Fed Com #157H	NM Lea County (NAD 83)	Cimarex Red Hills 32-5 Fed Com #157H

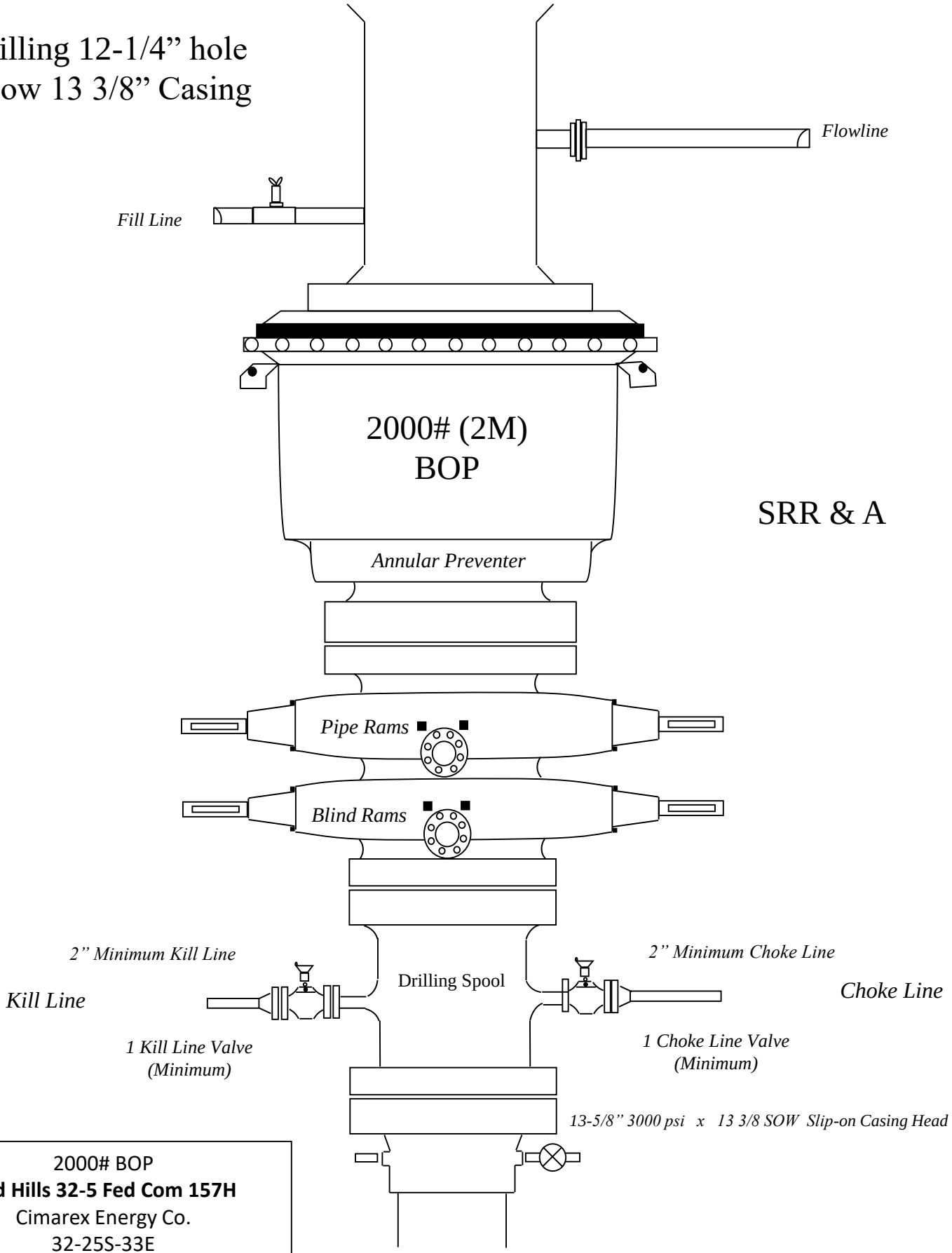
Gravity & Magnetic Parameters						Surface Location	NAD83 New Mexico State Plane, Eastern Zone, US Feet					Miscellaneous				
Model:	HDGM 2019	Dip:	59.68°	Date:	04-Dec-2019	Lat:	N 32 5 35.68	Northing:	398441.35ftUS	Grid Conv:	0.3921°	Slot:	New Slot	TVD Ref:	RKB(3435.6ft above MSL)	
MagDec:	6.595°	FS:	47701.123nT	Gravity FS:	998.429mgn (9.80665 Based)	Lon:	W 103 35 43.02	Easting:	769894.85ftUS	Scale Fact:	0.99996892	Plan:	Cimarex Red Hills 32-5 Fed Com #157H Rev3 RM 04Dec19			



Critical Points

Critical Point	MD	INCL	AZIM	TVD	VSEC	N(+)/S(-)	E(+)/W(-)	DLS
SHL [390' FNL, 2345' FWL]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rustler	934.00	0.00	269.65	934.00	0.00	0.00	0.00	0.00
Top of Salt	1349.00	0.00	269.65	1349.00	0.00	0.00	0.00	0.00
Nudge 2°/100' DLS	2500.00	0.00	269.65	2500.00	0.00	0.00	0.00	0.00
Hold Nudge	2856.80	7.14	269.65	2855.88	-0.02	-0.14	-22.19	2.00
Base of Salt	4665.94	7.14	269.65	4651.00	-0.19	-1.52	-246.93	0.00
Lamar	4908.82	7.14	269.65	4892.00	-0.21	-1.71	-277.10	0.00
Bell Canyon	4946.11	7.14	269.65	4929.00	-0.21	-1.74	-281.73	0.00
Drop to Vertical 2°/100' DLS	6025.47	7.14	269.65	6000.00	-0.31	-2.56	-415.81	0.00
Cherry Canyon	6026.47	7.12	269.65	6001.00	-0.31	-2.56	-415.93	2.00
Hold Vertical	6382.27	0.00	269.65	6355.88	-0.33	-2.70	-438.00	2.00
Brusy Canyon	7563.39	0.00	269.65	7537.00	-0.33	-2.70	-438.00	0.00
Bone Spring	9065.39	0.00	269.65	9039.00	-0.33	-2.70	-438.00	0.00
Leonard Shale	9120.39	0.00	269.65	9094.00	-0.33	-2.70	-438.00	0.00
Avalon Shale	9382.39	0.00	269.65	9356.00	-0.33	-2.70	-438.00	0.00
Lower Avalon Shale	9757.39	0.00	269.65	9731.00	-0.33	-2.70	-438.00	0.00
KOP - Build 12°/100' DLS	9848.92	0.00	269.65	9822.54	-0.33	-2.70	-438.00	0.00
1st Bone Spring Sand	10070.23	26.56	179.60	10036.00	50.05	-53.07	-437.65	12.00
2nd Bone Spring Carb	10323.98	57.01	179.60	10223.00	217.13	-220.16	-436.50	12.00
Landing Point	10598.92	90.00	179.60	10300.00	477.14	-480.15	-434.70	12.00
Private Leaseline Crossing	15012.89	90.00	179.60	10300.00	4891.10	-4894.01	-404.19	0.00
Private - NMNM01060404 Crossing	16335.30	90.00	179.60	10300.00	6213.51	-6216.39	-395.05	0.00
NMNM01060404 - NMNM0160973 Crossing	17657.71	90.00	179.60	10300.00	7535.92	-7538.77	-385.91	0.00
Cimarex Red Hills 32-5 Fed Com #157H - PBHL [100' FSL, 1907' FWL]	20190.12	90.00	179.60	10300.00	10068.34	-10071.12	-368.41	0.00
2nd Bone Spring Sand	NaN			10564.00				
3rd Bone Spring Carb	NaN			11017.00				
3rd Bone Spring Sand	NaN			11682.00				
Wolfcamp	NaN			12125.00				
Wolfcamp Y Sand	NaN			12255.00				
Wolfcamp A1	NaN			12301.00				
Wolfcamp A2	NaN			12848.00				

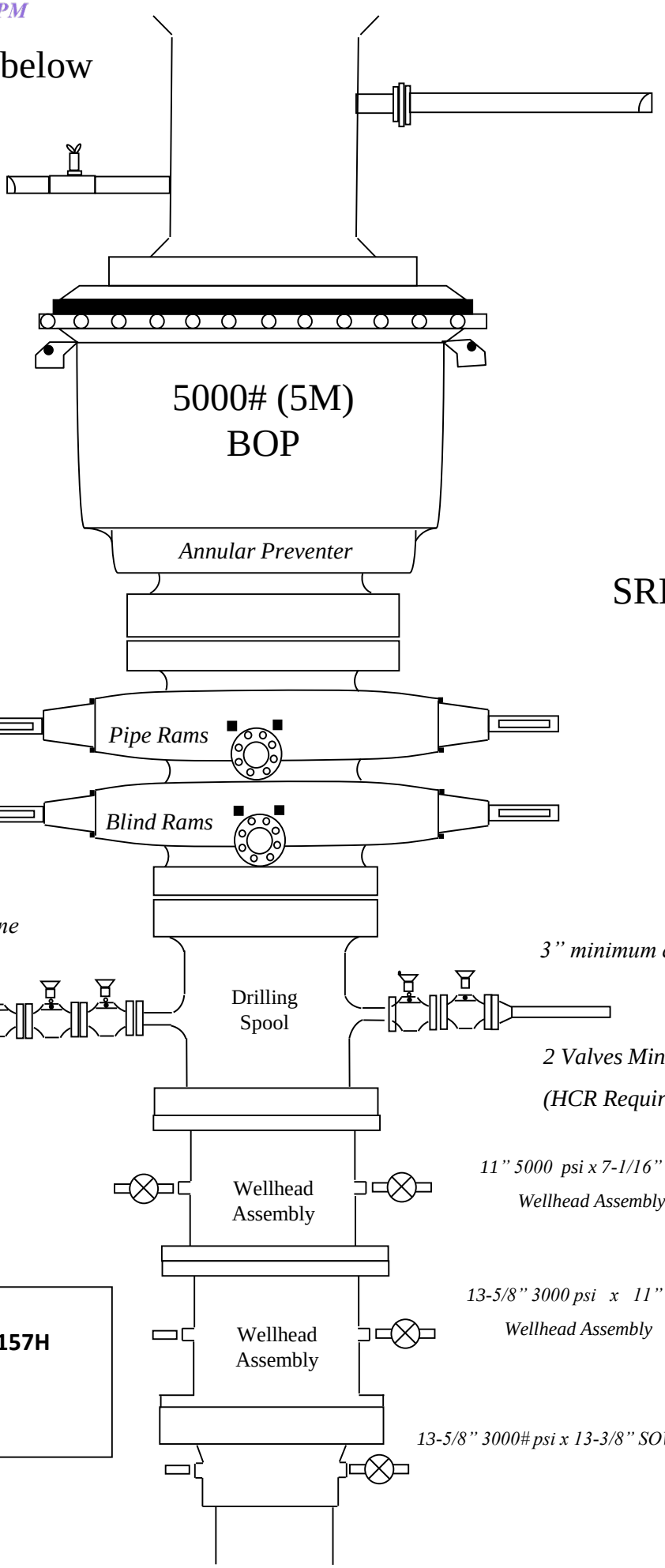
Drilling 12-1/4” hole
below 13 3/8” Casing



2000# BOP
Red Hills 32-5 Fed Com 157H
Cimarex Energy Co.
32-25S-33E
Lea Co., NM

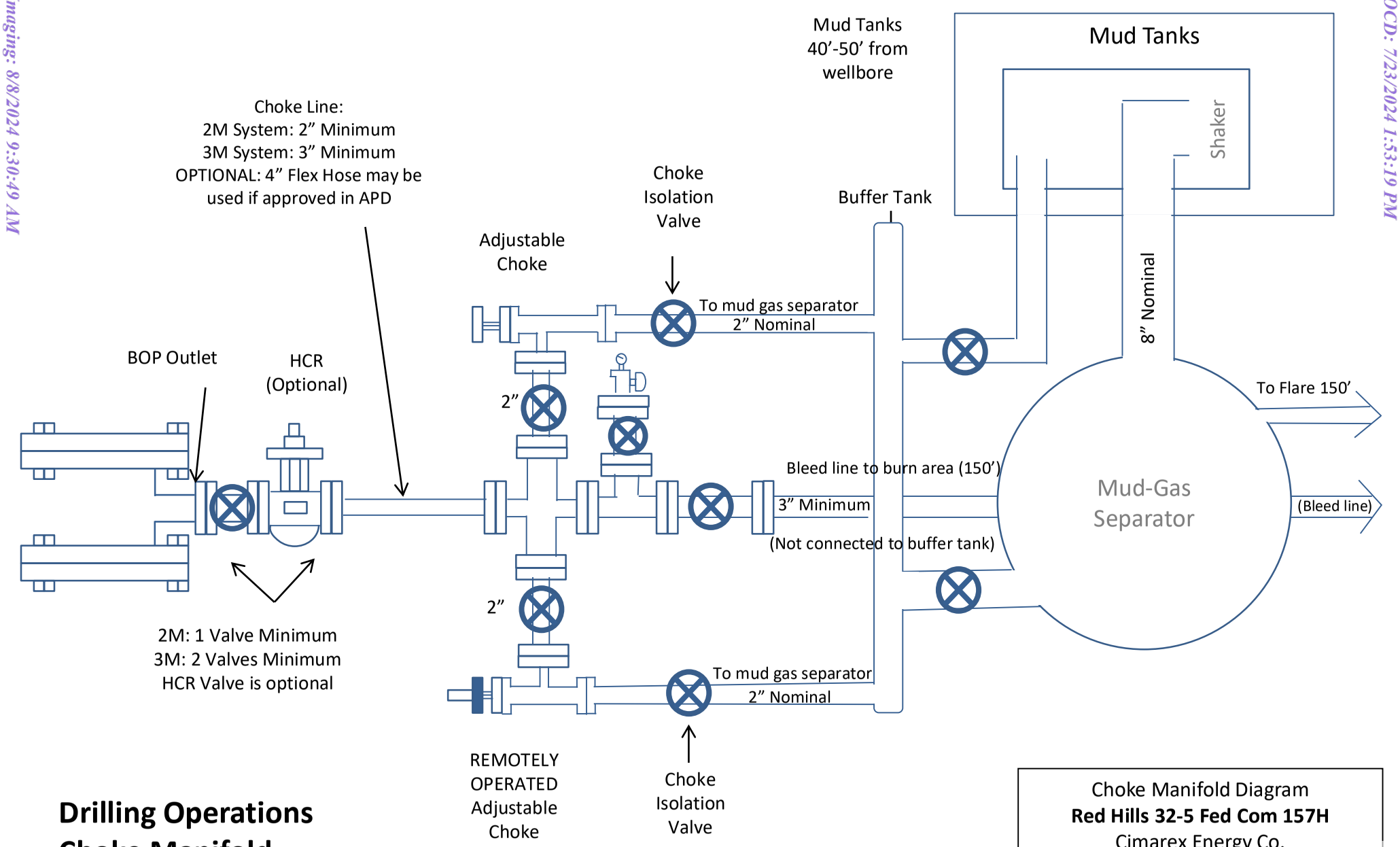
Drilling 8 3/4" hole below

9 5/8" Casing



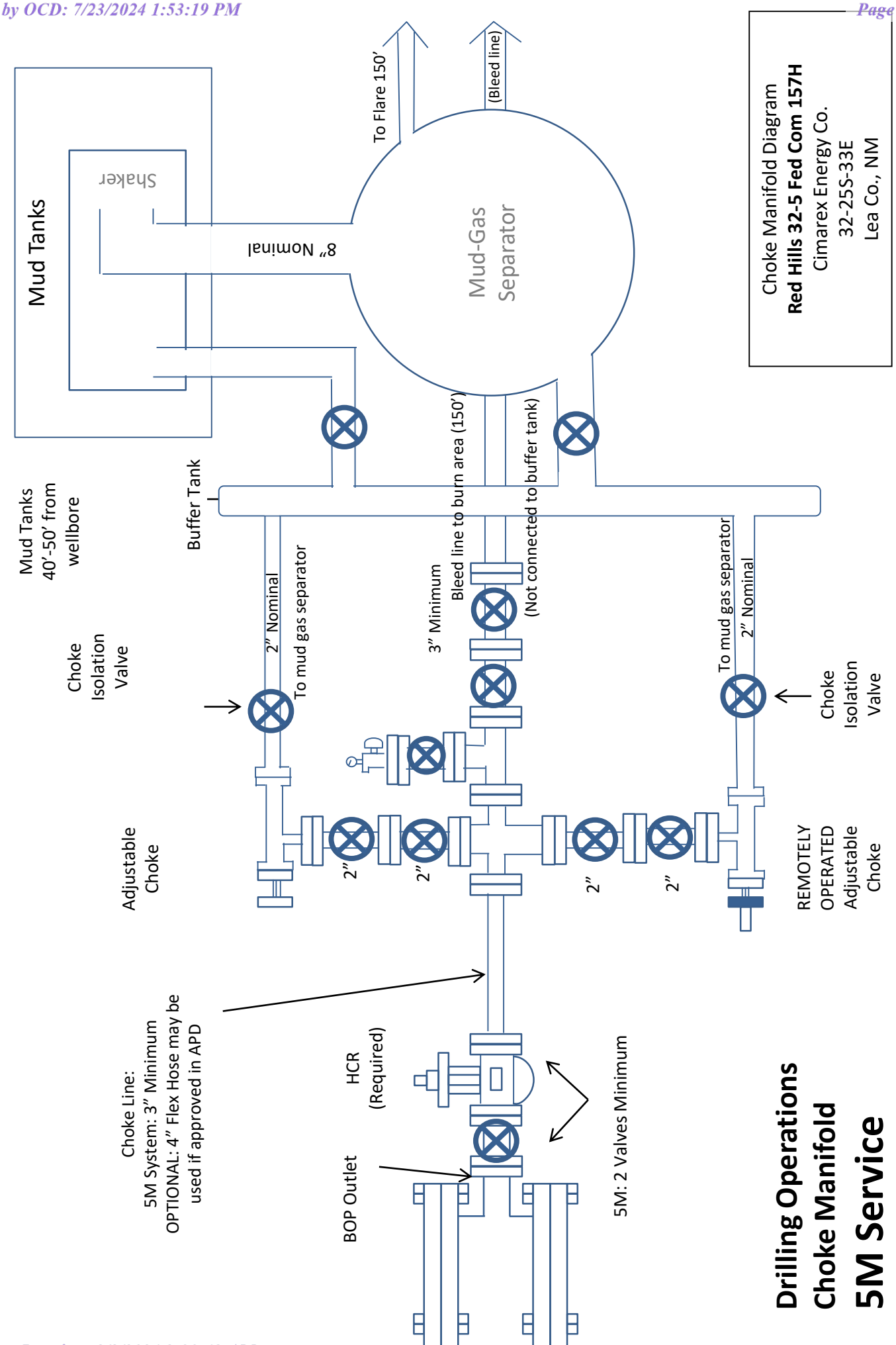
SRR & A

5000# BOP
Red Hills 32-5 Fed Com 157H
Cimarex Energy Co.
32-25S-33E
Lea Co., NM

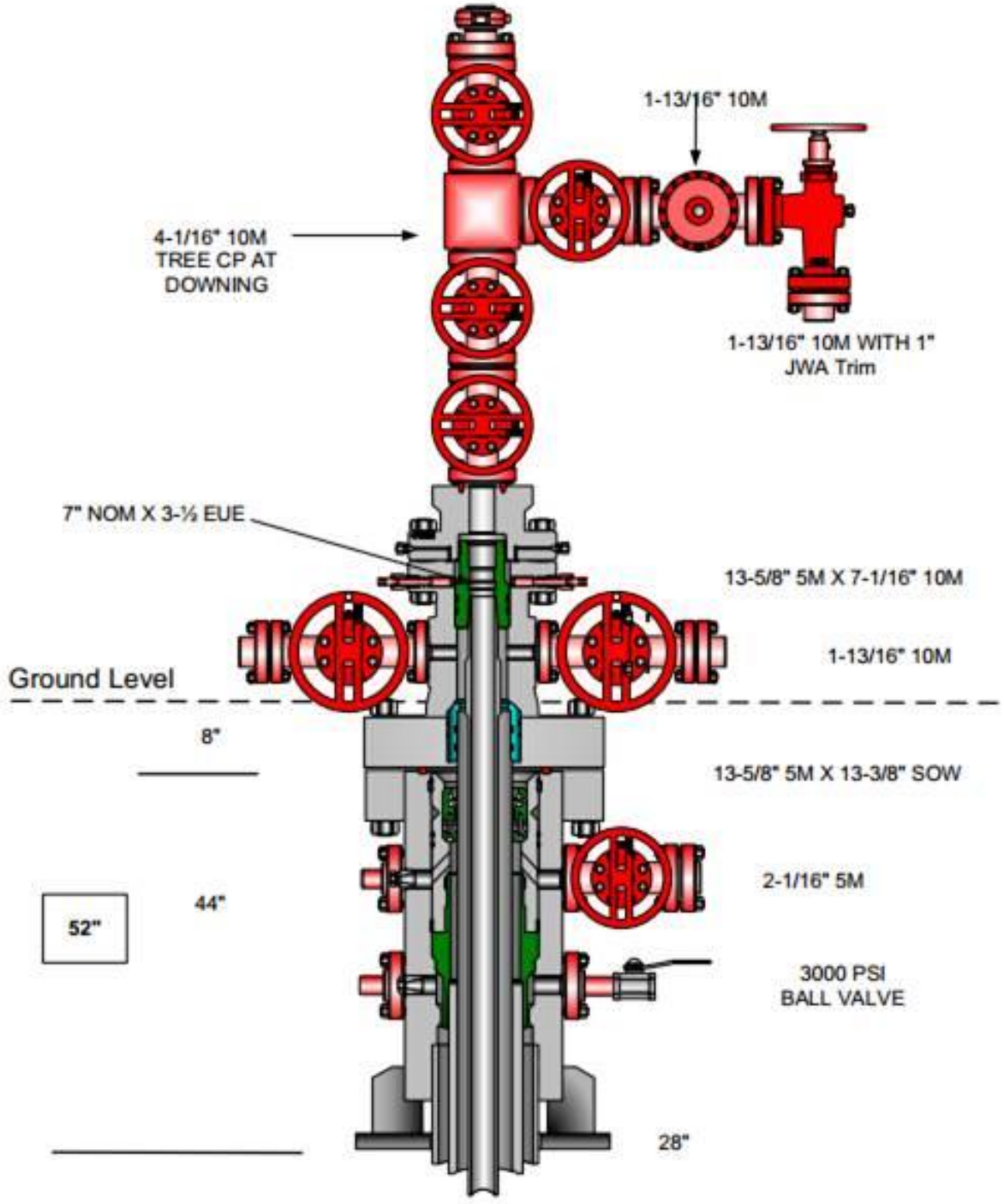


Drilling Operations
Choke Manifold
2M/3M Service

Choke Manifold Diagram
Red Hills 32-5 Fed Com 157H
Cimarex Energy Co.
32-25S-33E
Lea Co., NM

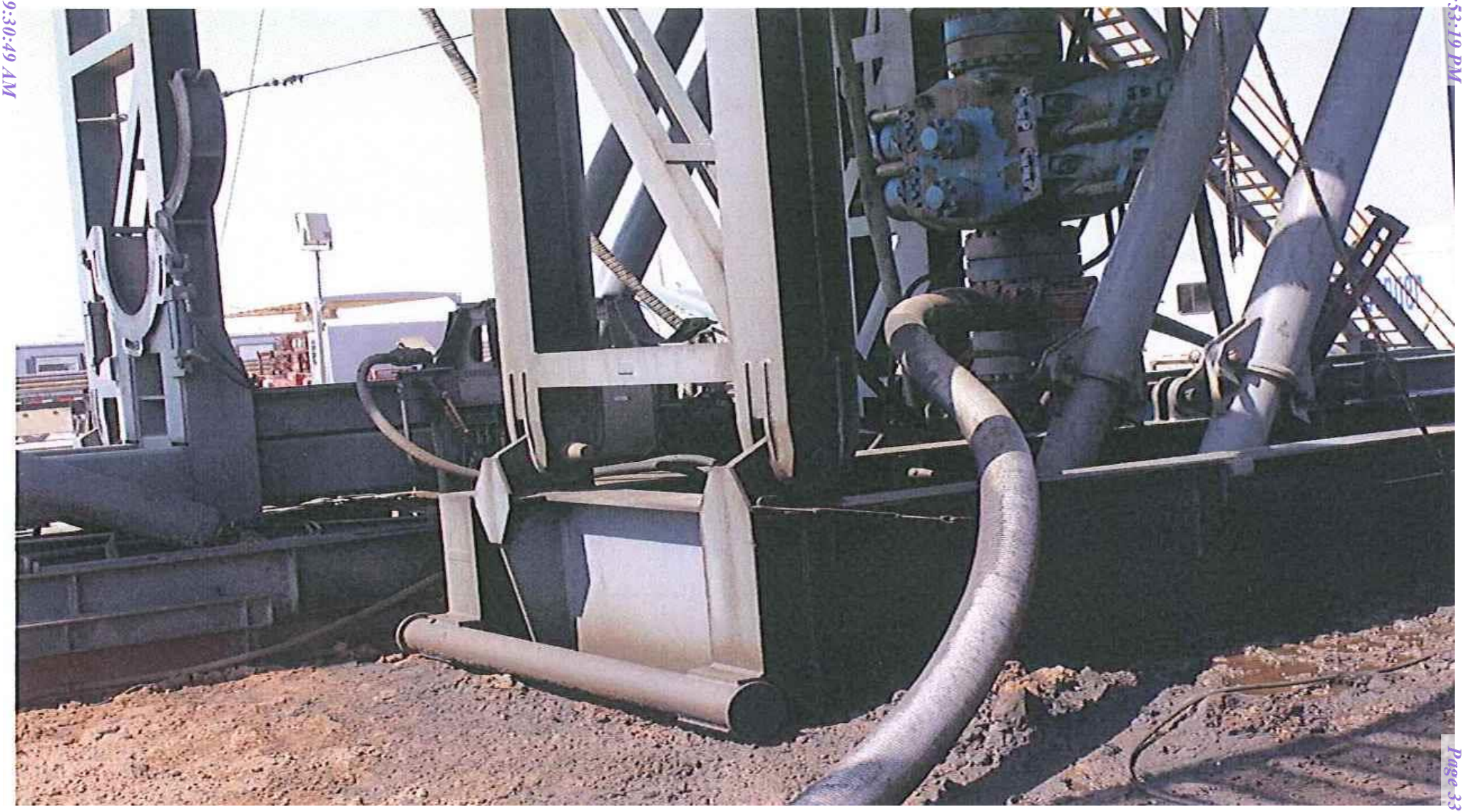

Mud Tanks
Shaker
8" Nominal
Mud-Gas Separator
To Flare 150'
(Bleed line)
Choke Manifold Diagram
Red Hills 32-5 Fed Com 157H
Cimarex Energy Co.
32-25S-33E
Lea Co., NM
Mud Tanks 40'-50' from wellbore
Buffer Tank
Choke Isolation Valve
2" Nominal
To mud gas separator
3" Minimum
Bleed line to burn area (150')
(Not connected to buffer tank)
To mud gas separator
2" Nominal
Choke Isolation Valve
Adjustable Choke
2"
2"
2"
2"
REMOTELY OPERATED Adjustable Choke
Choke Line:
5M System: 3" Minimum
OPTIONAL: 4" Flex Hose may be used if approved in APD
HCR (Required)
BOP Outlet
5M: 2 Valves Minimum
Drilling Operations
Choke Manifold
5M Service

Multi-bowl Wellhead Diagram



Multi-bowl Wellhead Diagram
Red Hills 32-5 Fed Com 157H
Cimarex Energy Co.
32-25S-33E
Lea Co., NM

Co-Flex Hose
Red Hills 32-5 Fed Com 157H
Cimarex Energy Co.
32-25S-33E
Lea Co., NM



Co-Flex Hose Hydrostatic Test
Red Hills 32-5 Fed Com 157H
Cimarex Energy Co.
32-25S-33E
Lea Co., NM

Midwest Hose & Specialty, Inc.

INTERNAL HYDROSTATIC TEST REPORT

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

HOSE SPECIFICATIONS

Type:	Hose Length:
Stainless Steel Armor Choke & Kill Hose	45'ft.

I.D.	O.D.
4 INCHES	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	A. Jaime Sanchez	

Midwest Hose & Specialty, Inc.

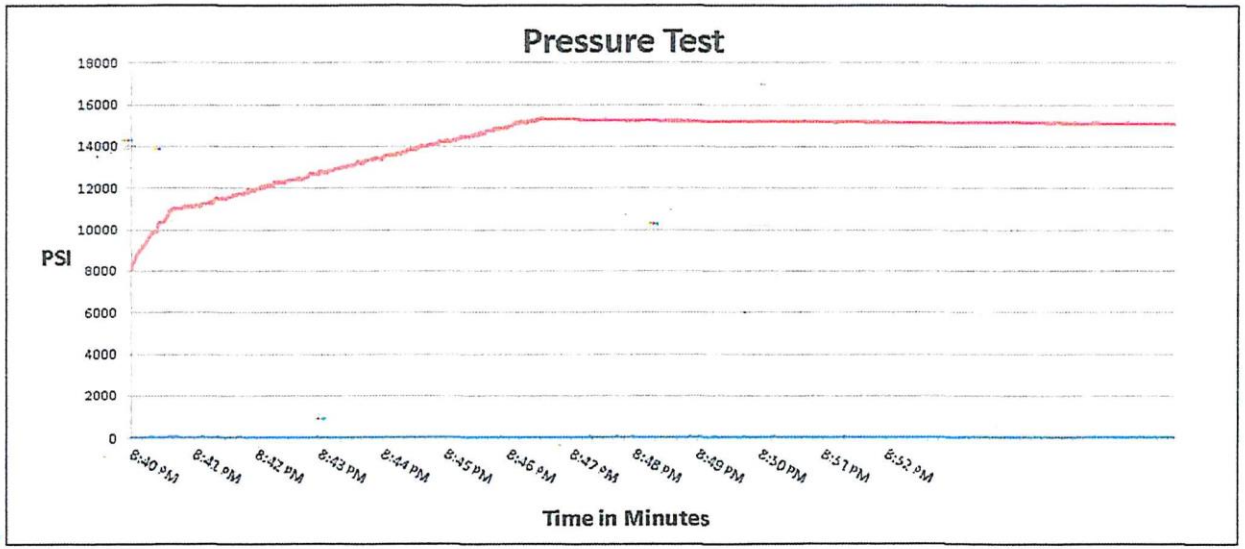
Internal Hydrostatic Test Graph

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*

Co-Flex Hose Hydrostatic Test
Red Hills 32-5 Fed Com 157H
Cimarex Energy Co.
32-25S-33E
Lea Co., NM

Co-Flex Hose
Red Hills 32-5 Fed Com 157H
Cimarex Energy Co.
32-25S-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: Samuel Garcia	Date: 3/8/2011

Midwest Hose & Specialty, Inc.

Co-Flex Hose
Red Hills 32-5 Fed Com 157H
Cimarex Energy Co.
32-25S-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

SeAH

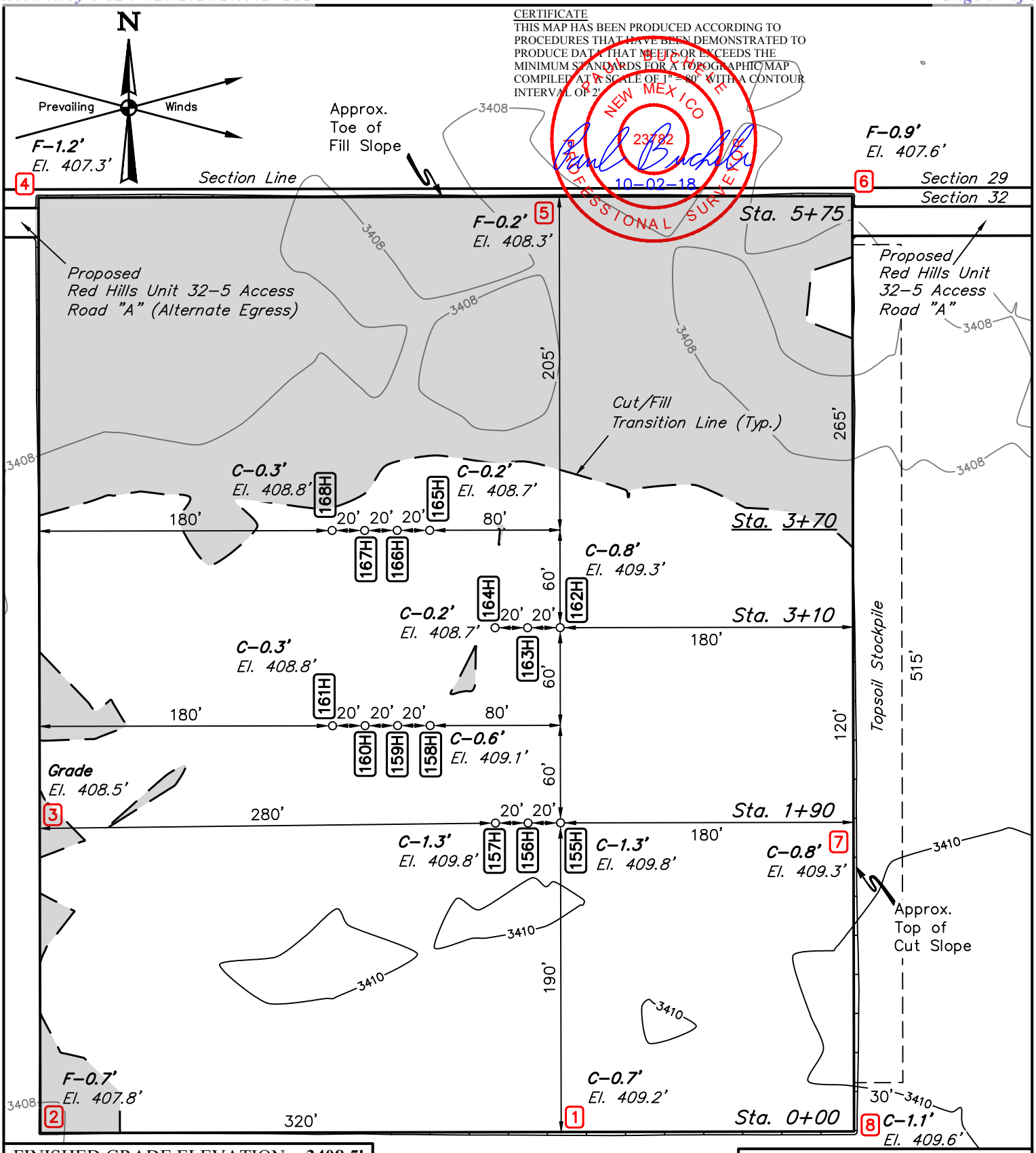
13-3/8" 48# 46.020 J-55 STC

Dimensions (Nominal)

Outside Diameter	13.375	in.
Wall	0.330	in.
Inside Diameter	12.715	in.
Drift	12.559	in.
Weight, T&C	48.000	lbs/ft
Weight, PE	46.020	lbs/ft

Performance Ratings, Minimum

Collapse, PE	740	psi
Internal Yields Pressure		
PE	2370	psi
STC	2370	psi
Yield Strength, Pipe Body	744	1000 lbs
Joint Strength, STC	433	1000 lbs



FINISHED GRADE ELEVATION = **3408.5'**

REV: 2 10-02-18 D.J.S. (NAME CHANGE)

NOTES:

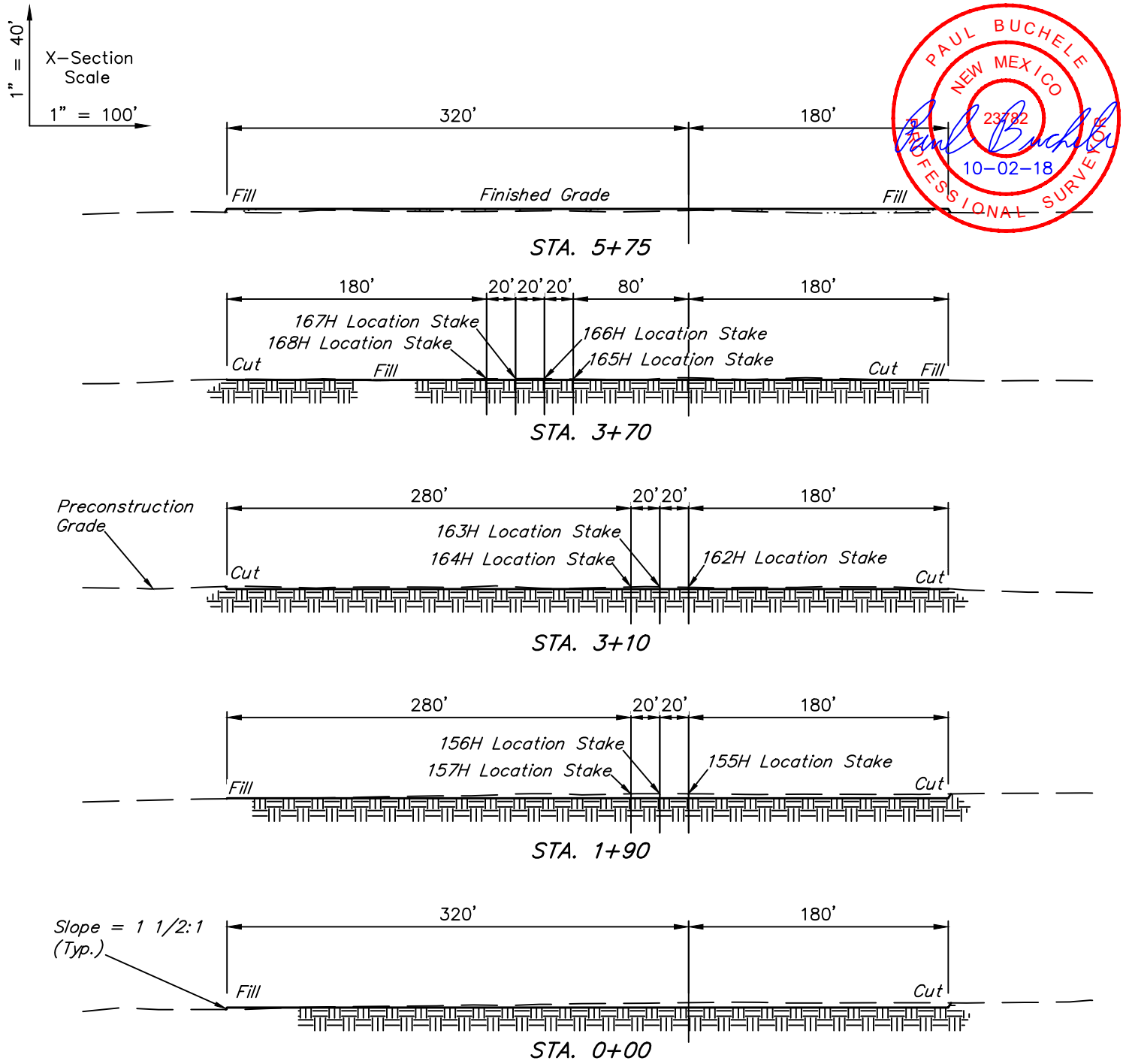
- Flare pit is to be located a min. of 100' from the wellhead.
- Contours shown at 2' intervals.
- Cut/Fill slopes 1 1/2:1 (Typ. except where noted)
- Basis of Bearings is a Transverse Mercator Projection with a Central Meridian of W103°53'00"

CIMAREX ENERGY CO.

RED HILLS 32-5 FEDERAL COM E2W2 PAD #3
NE 1/4 NW 1/4, SECTION 32, T25S, R33E, N.M.P.M.
LEA COUNTY, NEW MEXICO

SURVEYED BY	J.J., C.H.	05-01-18	SCALE
DRAWN BY	J.A.	05-08-18	1" = 80'
LOCATION LAYOUT			EXHIBIT J

UINTAH ENGINEERING & LAND SURVEYING
UELS, LLC
Corporate Office * 85 South 200 East
Vernal, UT 84078 * (435) 789-1017



PAUL BUCHELE NEW MEXICO 23782 PROFESSIONAL SURVEYOR 10-02-18

APPROXIMATE EARTHWORK QUANTITIES	
(4") TOPSOIL STRIPPING	3,580 Cu. Yds.
REMAINING LOCATION	3,530 Cu. Yds.
TOTAL CUT	**7,110 Cu. Yds.**
FILL	**3,530 Cu. Yds.**
EXCESS MATERIAL	3,580 Cu. Yds.
TOPSOIL	3,580 Cu. Yds.
EXCESS UNBALANCE (After Interim Rehabilitation)	**0 Cu. Yds.**

APPROXIMATE SURFACE DISTURBANCE AREAS		
	DISTANCE	**ACRES**
WELL SITE DISTURBANCE	NA	±6.991

REV: 2 10-02-18 D.J.S. (NAME CHANGE)

NOTES:

- Fill quantity includes 5% for compaction.
- Cut/Fill slopes 1 1/2:1 (Typ. except where noted)

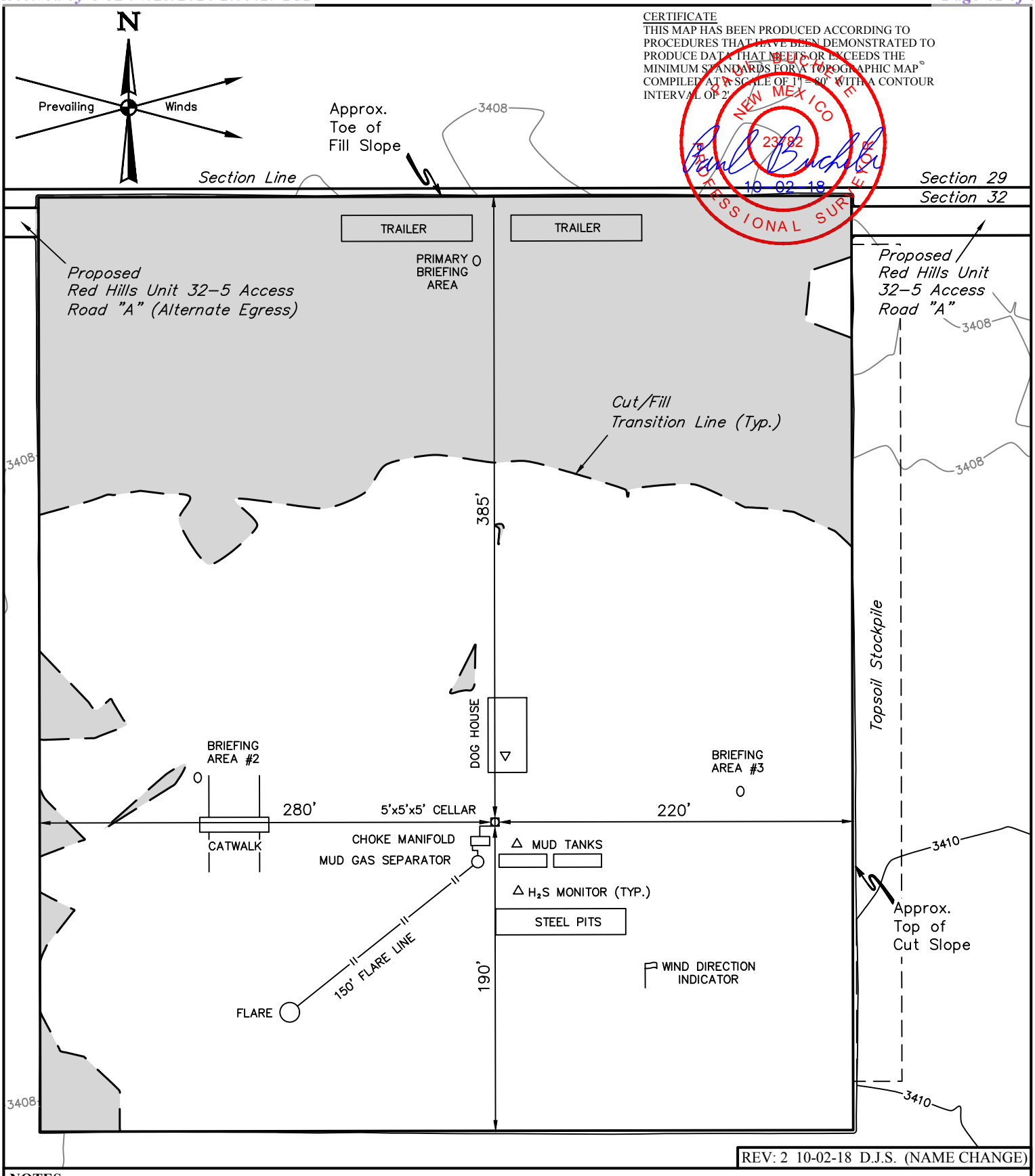
CIMAREX ENERGY CO.

RED HILLS 32-5 FEDERAL COM E2W2 PAD #3
NE 1/4 NW 1/4, SECTION 32, T25S, R33E, N.M.P.M.
LEA COUNTY, NEW MEXICO

UINTAH ENGINEERING & LAND SURVEYING
UELS, LLC
Corporate Office * 85 South 200 East
Vernal, UT 84078 * (435) 789-1017

SURVEYED BY	J.J., C.H.	05-01-18	SCALE
DRAWN BY	J.A.	05-08-18	AS SHOWN

TYPICAL CROSS SECTIONS **EXHIBIT J**



CERTIFICATE
THIS MAP HAS BEEN PRODUCED ACCORDING TO PROCEDURES THAT HAVE BEEN DEMONSTRATED TO PRODUCE DATA THAT MEETS OR EXCEEDS THE MINIMUM STANDARDS FOR A TOPOGRAPHIC MAP COMPILED AT A SCALE OF 1" = 80' WITH A CONTOUR INTERVAL OF 2'.

STATE OF NEW MEXICO 23782 PROFESSIONAL SURVEYOR
Paul Buchanan
10-02-18

REV: 2 10-02-18 D.J.S. (NAME CHANGE)

NOTES:

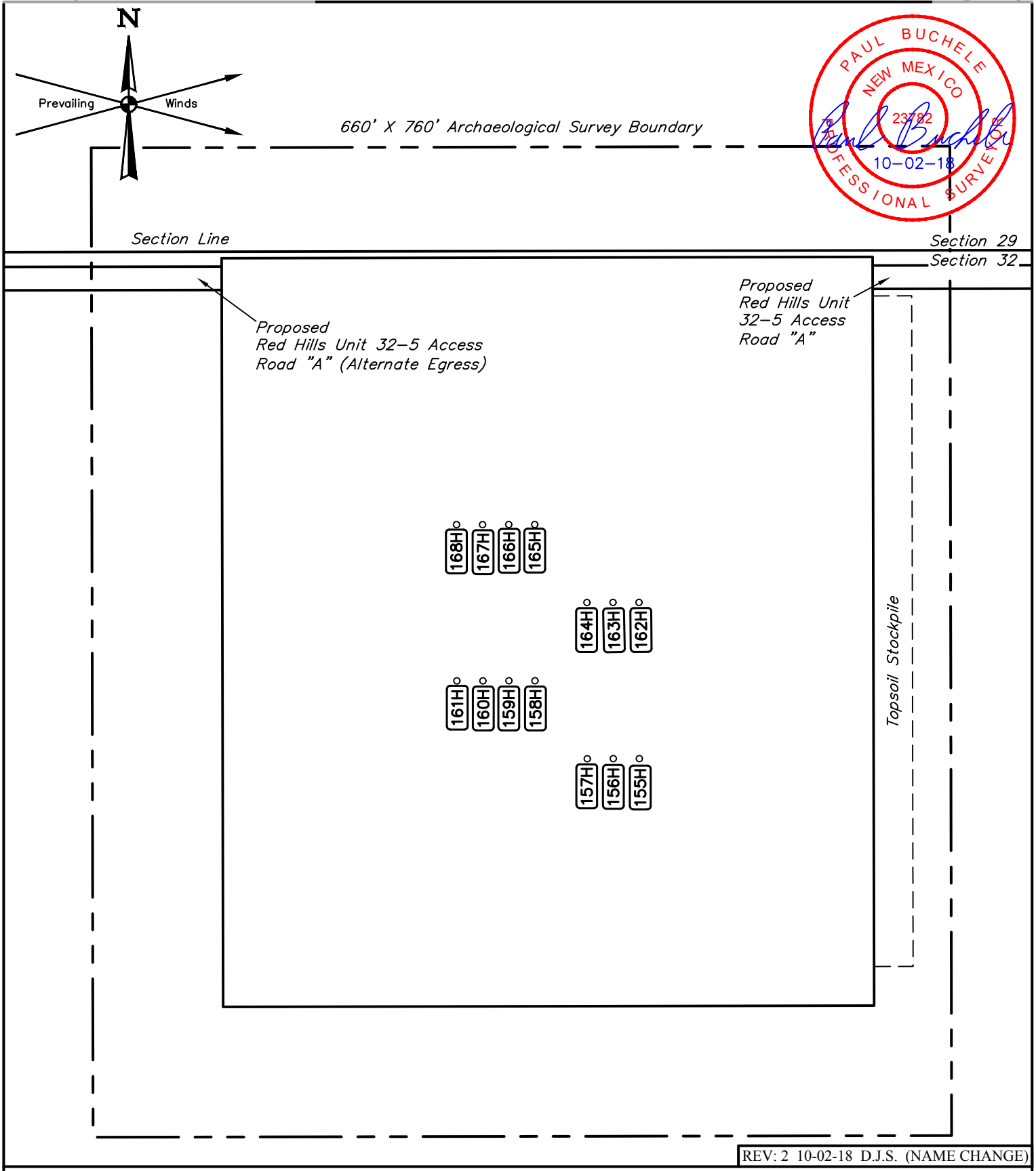
- Contours shown at 2' intervals.

CIMAREX ENERGY CO.

RED HILLS 32-5 FEDERAL COM 157H
390' FNL 2345' FWL
NE 1/4 NW 1/4, SECTION 32, T25S, R33E, N.M.P.M.
LEA COUNTY, NEW MEXICO

SURVEYED BY	J.J., C.H.	05-01-18	SCALE
DRAWN BY	J.A.	05-08-18	1" = 80'
TYPICAL RIG LAYOUT			EXHIBIT K

UINTAH ENGINEERING & LAND SURVEYING
UELS, LLC
Corporate Office * 85 South 200 East
Vernal, UT 84078 * (435) 789-1017



REV: 2 10-02-18 D.J.S. (NAME CHANGE)

NOTES:

CIMAREX ENERGY CO.

RED HILLS 32-5 FEDERAL COM E2W2 PAD #3
NE 1/4 NW 1/4, SECTION 32, T25S, R33E, N.M.P.M.
LEA COUNTY, NEW MEXICO

SURVEYED BY	J.J., C.H.	05-01-18	SCALE
DRAWN BY	J.A.	05-08-18	1" = 100'
ARCHAEOLOGICAL SURVEY BOUNDARY			EXHIBIT L

UINTAH ENGINEERING & LAND SURVEYING

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

District I
1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720
District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-102
Revised August 1, 2011
Submit one copy to appropriate District Office

[X] AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

[1] API Number	[2] Pool Code	[3] Pool Name
30-025-46326	97903	WC-025 G08 S253235G; LWR Bone Spring

[4] Property Code	[5] Property Name	[6] Well Number
326032	RED HILLS 32-5 FED COM	157H

[7] OGRID No.	[8] Operator Name	[9] Elevation
162683	CIMAREX ENERGY CO. of Colorado	3409.6'

[10] Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
C	32	25S	33E		390	NORTH	2345	WEST	LEA

[11] Bottom Hole Location If Different From Surface

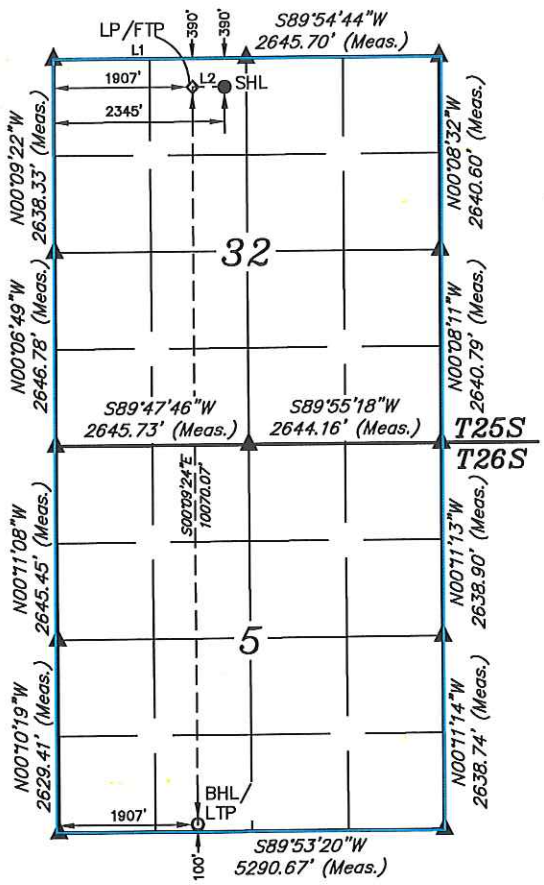
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
N	5	26S	33E		100	SOUTH	1907	WEST	LEA

[12] Dedicated Acres	[13] Joint or Infill	[14] Consolidation Code	[15] Order No.
1280			

No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.

[16]

LINE TABLE		
LINE	DIRECTION	LENGTH
L1	S89°53'08"W	2643.77'
L2	S89°53'08"W	438.00'



NAD 83 (SURFACE HOLE LOCATION)
LATITUDE = 32°05'35.68" (32.093245°)
LONGITUDE = 103°35'43.02" (103.595284°)
NAD 27 (SURFACE HOLE LOCATION)
LATITUDE = 32°05'35.23" (32.093120°)
LONGITUDE = 103°35'41.33" (103.594813°)
STATE PLANE NAD 83 (N.M. EAST)
N: 398441.35' E: 769894.85'
STATE PLANE NAD 27 (N.M. EAST)
N: 398383.72' E: 728708.41'

NAD 83 (LP/FTP)
LATITUDE = 32°05'35.68" (32.093245°)
LONGITUDE = 103°35'48.11" (103.596698°)
NAD 27 (LP/FTP)
LATITUDE = 32°05'35.23" (32.093121°)
LONGITUDE = 103°35'46.42" (103.596227°)
STATE PLANE NAD 83 (N.M. EAST)
N: 398438.65' E: 769456.93'
STATE PLANE NAD 27 (N.M. EAST)
N: 398381.01' E: 728270.49'

NAD 83 (BHL/LTP)
LATITUDE = 32°03'56.05" (32.065570°)
LONGITUDE = 103°35'48.10" (103.596696°)
NAD 27 (BHL/LTP)
LATITUDE = 32°03'55.60" (32.065445°)
LONGITUDE = 103°35'46.42" (103.596226°)
STATE PLANE NAD 83 (N.M. EAST)
N: 388370.56' E: 769526.45'
STATE PLANE NAD 27 (N.M. EAST)
N: 388313.18' E: 728339.54'

NOTE:
- Distances referenced on plat to section lines are perpendicular.
- Basis of Bearing is a Transverse Mercator Projection with a Central Meridian of W103°53'00"

● = SURFACE HOLE LOCATION
◇ = LANDING POINT/FIRST TAKE POINT
O = BOTTOM HOLE LOCATION /LAST TAKE POINT
▲ = SECTION CORNER LOCATED

2000' 1000' 0' 2000'
SCALE

DRAWN BY: J.N. 05-03-18
REV: 5 T.B.S. 11-25-19 (SHL CHANGE)

[17] OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Signature 12/3/19 Date

Amithy Crawford
Printed Name

acrawford@cimarex.com
E-mail Address

[18] SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

May 01, 2018
Date of Survey
Signature and Seal of Professional Surveyor:

PAUL BUCHELE
NEW MEXICO
23782
PROFESSIONAL SURVEYOR
11-25-19

Certificate Number:

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources Department

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Submit Original
to Appropriate
District Office

GAS CAPTURE PLAN

Date: 10/3/18

☒ Original

Operator & OGRID No.: Cimarex Energy Co of Colorado- 162683

☐ Amended - Reason for Amendment:

This Gas Capture Plan outlines actions to be taken by the Operator to reduce well/production facility flaring/venting for new completion (new drill, recomplete to new zone, re-frac) activity.

Note: Form C-129 must be submitted and approved prior to exceeding 60 days allowed by Rule (Subsection A of 19.15.18.12 NMAC).

Well(s)/Production Facility – Name of facility

The well(s) that will be located at the production facility are shown in the table below.

Well Name	API	Well Location (ULSTR)	Footages	Expected MCF/D	Flared or Vented	Comments
Red Hills 32-5 fed com 157H	Pending	32-25S-33E	390'FNL & 2345' FWL	7000		

Gathering System and Pipeline Notification

Well(s) will be connected to a production facility after flowback operations are complete, if gas transporter system is in place. The gas produced from production facility is dedicated to Gas Transporter and will be connected to Gas Transporter low/high pressure gathering system located in _Loving___ County, Texas. It will require _7555_' of pipeline to connect the facility to low/high pressure gathering system. Operator provides (periodically) to Gas Transporter a drilling, completion and estimated first production date for wells that are scheduled to be drilled in the foreseeable future. In addition, Operator and Gas Transporter have periodic conference calls to discuss changes to drilling and completion schedules. Gas from these wells will be processed at Gas Transporter Processing Plant located in _Sec 4 Blk C-27 , _Loving_ County, Texas. The actual flow of the gas will be based on compression operating parameters and gathering system pressures.

Flowback Strategy

After the fracture treatment/completion operations, well(s) will be produced to temporary production tanks and gas will be flared or vented. During flowback, the fluids and sand content will be monitored. When the produced fluids contain minimal sand, the wells will be turned to production facilities. Gas sales should start as soon as the wells start flowing through the production facilities, unless there are operational issues on Gas Transporter system at that time. Based on current information, it is Operator's belief the system can take this gas upon completion of the well(s).

Safety requirements during cleanout operations from the use of underbalanced air cleanout systems may necessitate that sand and non-pipeline quality gas be vented and/or flared rather than sold on a temporary basis.

Alternatives to Reduce Flaring

Below are alternatives considered from a conceptual standpoint to reduce the amount of gas flared.

- Power Generation – On lease
  - Only a portion of gas is consumed operating the generator, remainder of gas will be flared
- Compressed Natural Gas – On lease
  - Gas flared would be minimal, but might be uneconomical to operate when gas volume declines
- NGL Removal – On lease
  - Plants are expensive, residue gas is still flared, and uneconomical to operate when gas volume declines

PECOS DISTRICT
DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	**CIMAREX ENERGY COMPANY**
LEASE NO.:	**NMNM0106040A**
WELL NAME & NO.:	**RED HILLS 32-5 FEDERAL COM 157H**
SURFACE HOLE FOOTAGE:	**390'/N & 2345'/W**
BOTTOM HOLE FOOTAGE	**100'/S & 1907'/W**
LOCATION:	**Section 32, T.25 S., R.33 E., NMPM**
COUNTY:	**Lea County, New Mexico**

COA

H2S	○ Yes	◉ No	
Potash	◉ None	○ Secretary	○ R-111-P
Cave/Karst Potential	◉ Low	○ Medium	○ High
Cave/Karst Potential	○ Critical		
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 **1050** feet (a minimum of **25 feet (Lea County)** 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.

Intermediate casing must be kept fluid filled to meet BLM minimum collapse requirement.

2. The minimum required fill of cement behind the **9-5/8** inch intermediate casing is:

   - Cement to surface. If cement does not circulate, contact the appropriate BLM office.
     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 **2000 (2M)** 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 **5000 (5M)** psi.

   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. 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.

e. 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)

☒ 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. The casing intergrity test can be done (prior to the cement setting up) immediately after bumping the plug.

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. The casing intergrity test can be done (prior to the cement setting up) immediately after bumping the plug.

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: The flex line must meet the requirements of API 16C. 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, except the casing pressure test can be initiated immediately after bumping the plug (only applies to single stage cement jobs).

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.

JJP01172020

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1625 N. French Dr., Hobbs, NM 88240
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Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Action 366532

CONDITIONS

Operator: CIMAREX ENERGY CO. 6001 Deauville Blvd Midland, TX 79706	OGRID: 215099
	Action Number: 366532
	Action Type: [C-103] NOI Change of Plans (C-103A)

CONDITIONS

Created By	Condition	Condition Date
pkautz	MUST CORRECT PRODUCTION ON C-115's	8/8/2024