Form 3160-3
(June 2015)

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

OCD – HOBBS
06/11/2020
RECEIVED

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.: NMNM134883

6. If Indian, Allotee or Tribe Name:

1a. Type of work: ☑ DRILL ☐ REENTER

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

1c. Type of Completion: ☐ Hydraulic Fracturing ☑ Single Zone ☐ Multiple Zone

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

8. Lease Name and Well No.: DESERT ROSE 17-8 FEDERAL 10H [317383]

2. Name of Operator: CAZA OPERATING LLC [249099]

9. API Well No.: 30-025-47330

3a. Address: 200 N. Loraine Street, Suite 1550 Midland TX 79701

3b. Phone No. *(include area code)*: (432)682-7424

10. Field and Pool, or Exploratory: FEATHERSTONE / BONE SPRING [24250]

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*

At surface: SESE / 100 FSL / 740 FEL / LAT 32.56618 / LONG -103.473286

At proposed prod. zone: NESE / 2400 FSL / 360 FEL / LAT 32.58703 / LONG -103.472058

11. Sec., T. R. M. or Blk. and Survey or Area: SEC 8 / T20S / R35E / NMP

14. Distance in miles and direction from nearest town or post office*: 16 miles

12. County or Parish: LEA

13. State: NM

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any): 100 feet

16. No of acres in lease: 80

17. Spacing Unit dedicated to this well: 240

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.: 30 feet

19. Proposed Depth: 10454 feet / 18199 feet

20. BLM/BIA Bond No. in file: FED: NMB000471

21. Elevations (Show whether DF, KDB, RT, GL, etc.): 3702 feet

22. Approximate date work will start*: 07/18/2019

23. Estimated duration: 38 days

24. Attachments

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

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

25. Signature	Name *(Printed/Typed)*	Date
(Electronic Submission)	Tony B Sam / Ph: (432)682-7424	04/05/2019

Title: VP Operations

Approved by *(Signature)*	Name *(Printed/Typed)*	Date
(Electronic Submission)	Cody Layton / Ph: (575)234-5959	03/30/2020

Title	Office
Assistant Field Manager Lands & Minerals	CARLSBAD

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

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

GCP Rec 06/11/2020

SL

APPROVED WITH CONDITIONS

Approval Date: 03/30/2020

KZ
06/26/2020

(Continued on page 2)

*(Instructions on page 2)

PECOS DISTRICT
DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	Caza Operating LLC
WELL NAME & NO.:	Desert Rose 17-8 Federal 10H
LOCATION:	Sec 17-20S-35E-NMP
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

A Hydrogen Sulfide (H2S) Drilling Plan shall be activated 500 feet prior to drilling into the Seven Rivers / Yates formation. As a result, the Hydrogen Sulfide area must meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, please provide measured values and formations to the BLM.

B. CASING

1. The 20 inch conductor casing shall be set at approximately 120 feet and cemented to the surface.

2. The **13-3/8** inch surface casing shall be set at approximately 1970 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.

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

   Operator has proposed a DV tool, the depth may be adjusted as long as the cement is changed proportionally. The DV tool may be cancelled if cement circulates to surface on the first stage.

   a. First stage to DV tool: Cement to circulate. If cement does not circulate off the DV tool, contact the appropriate BLM office before proceeding with second stage cement job.

   b. Second stage above DV tool:

      - Cement to surface. If cement does not circulate, contact the appropriate BLM office.

4. The minimum required fill of cement behind the **6** 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. 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 surface 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.

D. SPECIAL REQUIREMENT (S)

Communitization Agreement

- The operator will submit a Communitization Agreement to the Santa Fe Office, 301 Dinosaur Trail Santa Fe, New Mexico 87508, at least 90 days before the anticipated date of first production from a well subject to a spacing order issued by the New Mexico Oil Conservation Division. The Communitization Agreement will include the signatures of all working interest owners in all Federal and Indian leases subject to the Communitization Agreement (i.e., operating rights owners and lessees of record), or certification that the operator has obtained the written signatures of all such owners and will make those signatures available to the BLM immediately upon request.
- If the operator does not comply with this condition of approval, the BLM may take enforcement actions that include, but are not limited to, those specified in 43 CFR 3163.1.
- In addition, the well sign shall include the surface and bottom hole lease numbers. When the Communitization Agreement number is known, it shall also be on the sign.

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.

AFMSS

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

Operator Certification Data Report

03/31/2020

Operator Certification

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

NAME: Tony B Sam **Signed on:** 04/05/2019

Title: VP Operations

Street Address: 200 N. Loraine Street, Suite 1550

City: Midland **State:** TX **Zip:** 79701

Phone: (432)682-7424

Email address: steve.morris@morcorengineering.com

Field Representative

Representative Name:

Street Address: 200 N. Lorraine St #1550

City: Midland **State:** TX **Zip:** 79701

Phone: (432)556-8508

Email address: kgarrett@cazapetro.com

APD ID: 10400038921 **Submission Date:** 04/05/2019

Operator Name: CAZA OPERATING LLC

Well Name: DESERT ROSE 17-8 FEDERAL **Well Number:** 10H

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

Highlighted data reflects the most recent changes

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Section 1 - General

APD ID: 10400038921 **Tie to previous NOS?** Y **Submission Date:** 04/05/2019

BLM Office: CARLSBAD **User:** Tony B Sam **Title:** VP Operations

Federal/Indian APD: FED **Is the first lease penetrated for production Federal or Indian?** FED

Lease number: NMNM134883 **Lease Acres:** 80

Surface access agreement in place? **Allotted?** **Reservation:**

Agreement in place? NO **Federal or Indian agreement:**

Agreement number:

Agreement name:

Keep application confidential? YES

Permitting Agent? NO **APD Operator:** CAZA OPERATING LLC

Operator letter of designation:

Operator Info

Operator Organization Name: CAZA OPERATING LLC

Operator Address: 200 N. Loraine Street, Suite 1550

Zip: 79701

Operator PO Box:

Operator City: Midland **State:** TX

Operator Phone: (432)682-7424

Operator Internet Address:

Section 2 - Well Information

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

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

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

Well Name: DESERT ROSE 17-8 FEDERAL **Well Number:** 10H **Well API Number:**

Field/Pool or Exploratory? Field and Pool **Field Name:** FEATHERSTONE **Pool Name:** BONE SPRING

Is the proposed well in an area containing other mineral resources? USEABLE WATER,NATURAL GAS,OIL

Operator Name: CAZA OPERATING LLC

Well Name: DESERT ROSE 17-8 FEDERAL **Well Number:** 10H

Is the proposed well in an area containing other mineral resources? USEABLE WATER,NATURAL GAS,OIL

Is the proposed well in a Helium production area? N **Use Existing Well Pad?** YES **New surface disturbance?** N

Type of Well Pad: MULTIPLE WELL **Multiple Well Pad Name:** DESERT ROSE 17-8 FEDERAL **Number:** 8H

Well Class: HORIZONTAL **Number of Legs:** 1

Well Work Type: Drill

Well Type: OIL WELL

Describe Well Type:

Well sub-Type: DELINEATION

Describe sub-type:

Distance to town: 16 Miles **Distance to nearest well:** 30 FT **Distance to lease line:** 100 FT

Reservoir well spacing assigned acres Measurement: 240 Acres

Well plat: Desert_Rose_17_8_Federal_10H___C_102___signed___BLM_20181104105251.pdf

Well work start Date: 07/18/2019 **Duration:** 38 DAYS

Section 3 - Well Location Table

Survey Type: RECTANGULAR

Describe Survey Type:

Datum: NAD83 **Vertical Datum:** NAVD88

Survey number: 18.11.1064 **Reference Datum:**

Wellbore	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD	Will this well produce from this lease?
SHL Leg #1	100	FSL	740	FEL	20S	35E	8	Aliquot SESE	32.56618	-103.473286	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 134883	3702	0	0	
KOP Leg #1	5	FSL	360	FEL	20S	35E	17	Aliquot SESE	32.565911	-103.472054	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 134883	-6358	10080	10060	
PPP Leg #1-1	0	FSL	360	FEL	20S	35E	8	Aliquot SESE	32.580414	-103.472003	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 0004786	-6807	15648	10509	

Operator Name: CAZA OPERATING LLC

Well Name: DESERT ROSE 17-8 FEDERAL **Well Number:** 10H

Wellbore	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD	Will this well produce from this lease?
PPP Leg #1-2	1320	FSL	360	FEL	20S	35E	17	Aliquot NESE	32.56953	-103.472022	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 086172	-6858	11688	10560	
PPP Leg #1-3	40	FSL	360	FEL	20S	35E	17	Aliquot SESE	32.566005	-103.472053	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 134883	-6542	10268	10244	
EXIT Leg #1	2340	FSL	360	FEL	20S	35E	8	Aliquot NESE	32.586865	-103.472058	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 0004786	-6775	18139	10477	
BHL Leg #1	2400	FSL	360	FEL	20S	35E	8	Aliquot NESE	32.58703	-103.472058	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 0004786	-6752	18199	10454	

APD ID: 10400038921 **Submission Date:** 04/05/2019

Operator Name: CAZA OPERATING LLC

Well Name: DESERT ROSE 17-8 FEDERAL **Well Number:** 10H

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

Highlighted data reflects the most recent changes

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Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
433696	---	3702	0	0		NONE	N
433697	RUSTLER	1780	1922	1922		USEABLE WATER	N
433698	TOP SALT	1452	2250	2250	SALT	NONE	N
433699	BASE OF SALT	103	3599	3599		NONE	N
433700	CAPITAN REEF	-499	4201	4201		USEABLE WATER	N
433701	DELAWARE	-1800	5502	5502		NONE	N
433702	CHERRY CANYON	-2029	5731	5731		NONE	N
433703	BRUSHY CANYON	-2799	6501	6503		NATURAL GAS, OIL	N
433704	BONE SPRING	-4571	8273	8285		NATURAL GAS, OIL	N
433705	BONE SPRING 1ST	-5883	9585	9604		NATURAL GAS, OIL	N
433706	BONE SPRING 2ND	-6520	10222	10246		NATURAL GAS, OIL	Y

Section 2 - Blowout Prevention

Pressure Rating (PSI): 5M **Rating Depth:** 18000

Equipment: Rotating head with a rating of 500psi will be used. A remote kill line and gas buster will be used

Requesting Variance? YES

Variance request: Variance is requested for the use of a coflex hose for the choke line to from the BOP to the choke manifold. A variance is requested to use 1502(15,000psi working pressure) hammer unions downstream of the Choke Manifold used to connect the mud/gas separator and panic line. See choke manifold diagram

Testing Procedure: Minimum Working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the 13-3/8 inch casing shoe shall be 5000 (5M) psi. 5M 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. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests. 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 pug. BOP/BOPE testing can begin after cut-off or once cement reaches 500PSI 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). 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 (18 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). a. The results of the test shall be reported to the appropriate BLM office. b. 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. c. 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.

Choke Diagram Attachment:

Desert_Rose_17_8_Federal_10H___Coflex_Hose_Test_Chart_20190220103019.pdf

Desert_Rose_17_8_Federal_10H___Coflex_Hyd_Test_Cert_20190911075515.pdf

Desert_Rose_17_8_Federal_9H___5M_Choke_Schematic_20200218084658.pdf

BOP Diagram Attachment:

Desert_Rose_17_8_Federal_9H___5M_BOP_Schematic_20200218085057.pdf

Section 3 - Casing

Casing ID	String Type	Hole Size	Csg Size	Condition	Standard	Tapered String	Top Set MD	Bottom Set MD	Top Set TVD	Bottom Set TVD	Top Set MSL	Bottom Set MSL	Calculated casing length MD	Grade	Weight	Joint Type	Collapse SF	Burst SF	Joint SF Type	Joint SF	Body SF Type	Body SF
1	CONDUCTOR	26	20.0	NEW	API	N	0	120	0	120	3702	3580	120	H-40	94	SLIM LINE HIGH PERFORMANCE						
2	SURFACE	17.5	13.375	NEW	API	N	0	2150	0	2150	3702	1552	2150	J-55	54.5	ST&C	1.14	1.66	DRY	4.39	DRY	4.39
3	INTERMEDIATE	12.25	9.625	NEW	API	N	0	5500	0	5500	3702	-1798	5500	HCL-80	40	LT&C	1.48	1.05	DRY	4.17	DRY	4.17
4	PRODUCTION	8.75	OTHER	NEW	API	N	0	18199	0	10570	3702	-6868	18199	P-110	24.5	BUTT	2.08	2.34	DRY	3.1	DRY	3.1

Casing Attachments

Operator Name: CAZA OPERATING LLC

Well Name: DESERT ROSE 17-8 FEDERAL **Well Number:** 10H

Casing Attachments

Casing ID: 1 **String Type:** CONDUCTOR

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Casing ID: 2 **String Type:** SURFACE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Desert_Rose_17_8_Federal_10H___Casing_and_Cement_Design_20200218090116.pdf

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Desert_Rose_17_8_Federal_10H___Casing_and_Cement_Design_20200218090206.pdf

Operator Name: CAZA OPERATING LLC

Well Name: DESERT ROSE 17-8 FEDERAL **Well Number:** 10H

Casing Attachments

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Desert_Rose_17_8_Federal_10H___Casing_and_Cement_Design_20200218090254.pdf

Section 4 - Cement

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
CONDUCTOR	Lead		0	120	140	1.35	14.8	135	5	Class C	CaCl2
SURFACE	Lead		0	1669	1433	1.62	13.5	2321	119	Class c	4% bwoc Bentonite II + 2% bwoc Calcium Chloride + 0.25 lbs/sack Cello Flake + 0.005% bwoc Static Free + 0.005 gps FP- 6L
SURFACE	Tail		1669	1969	309	1.35	14.8	417	119	Class C	1.5% bwoc Calcium Chloride + 0.005 lbs/sack Static Free + 0.005 gps FP-6L
INTERMEDIATE	Lead	3900	0	3800	1150	2.13	12.6	2449	100	Class C	(35:65) + Poz (Fly Ash) + 4% bwoc Bentonite II + 5% bwoc MPA-5 + 0.25% bwoc FL-52 + 5 lbs/sack LCM- 1 + 0.125 lbs/sack Cello Flake + 0.005 lbs/sack Static Free + 0.005 gps FP-6L + 1.2% bwoc Sodium Metasilicate + 5% bwow Sodium Chloride

Operator Name: CAZA OPERATING LLC

Well Name: DESERT ROSE 17-8 FEDERAL **Well Number:** 10H

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
INTERMEDIATE	Tail		3800	3900	150	1.35	14.8	202	100	Class C	CaCl2
INTERMEDIATE	Lead	3900	3900	5000	325	2.13	12.6	692	100	Class C	(35:65) + Poz (Fly Ash) + 4% bwoc Bentonite II + 5% bwoc MPA-5 + 0.25% bwoc FL-52 + 5 lbs/sack LCM- 1 + 0.125 lbs/sack Cello Flake + 0.005 lbs/sack Static Free + 0.005 gps FP-6L + 1.2% bwoc Sodium Metasilicate + 5% bwow Sodium Chloride
INTERMEDIATE	Tail		5000	5500	232	1.35	14.8	317	100	Class C	CaCl2
PRODUCTION	Lead		0	10164	1980	2.38	11.9	4712	100	Class H	(50:50) + Poz (Fly Ash) + 10% bwoc Bentonite II + 5% bwow Sodium Chloride + 5 lbs/sack LCM-1 + 0.005 lbs/sack Static Free + 0.005 gps FP-6L
PRODUCTION	Tail		10164	18199	2120	1.62	13.2	3434	100	Class H	(15:61:11) Poz (Fly Ash):Class H Cement:CSE-2

Section 5 - Circulating Medium

Mud System Type: Closed

Will an air or gas system be Used? NO

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

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

Describe what will be on location to control well or mitigate other conditions: Sufficient mud will be on location to control any abnormal conditions encountered. Such as but not limited to a kick, lost circulation and hole sloughing.

Describe the mud monitoring system utilized: A Pason PVT system will be rigged up prior to spudding the well. A volume monitoring system that measures, calculates, and displays readings from the mud system on the rig to alert the rig crew of impending gas kicks and lost circulation issues. Components a) PVT Pit Bull monitor: Acts as the heart of the system, containing all the controls, switches, and alarms. Typically, it is mounted near the driller's console. b) Junction box: Provides a safe, convenient place for making the wiring connections. c) Mud probes: Measure the volume of drilling fluid in each individual tank. d) Flow sensor: Measures the relative amount of mud flowing in the return line

Circulating Medium Table

Operator Name: CAZA OPERATING LLC

Well Name: DESERT ROSE 17-8 FEDERAL **Well Number:** 10H

Top Depth	Bottom Depth	Mud Type	Min Weight (lbs/gal)	Max Weight (lbs/gal)	Density (lbs/cu ft)	Gel Strength (lbs/100 sqft)	PH	Viscosity (CP)	Salinity (ppm)	Filtration (cc)	Additional Characteristics
0	2150	SPUD MUD	8.4	8.9	62.8	0.1	9.5	2	0	0	
2150	5500	SALT SATURATED	9.2	10	75	0.1	9.5	2	150000	0	
5500	10570	OIL-BASED MUD	9.2	10	72	0.4	9.5	6	135000	18	

Section 6 - Test, Logging, Coring

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

no production tests

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

DS,GR,MWD,MUDLOG

Coring operation description for the well:

no coring

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 5490 **Anticipated Surface Pressure:** 3166.8

Anticipated Bottom Hole Temperature(F): 165

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

Describe:

Contingency Plans geoharzards description:

Contingency Plans geohazards attachment:

Hydrogen Sulfide drilling operations plan required? YES

Hydrogen sulfide drilling operations plan:

Desert_Rose_17_8_Federal_10H___H2S_Plan_20190220103217.pdf

Operator Name: CAZA OPERATING LLC

Well Name: DESERT ROSE 17-8 FEDERAL **Well Number:** 10H

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

Desert_Rose_17_8_Federal_10H___Directional_Plan_20190220103244.pdf

Other proposed operations facets description:

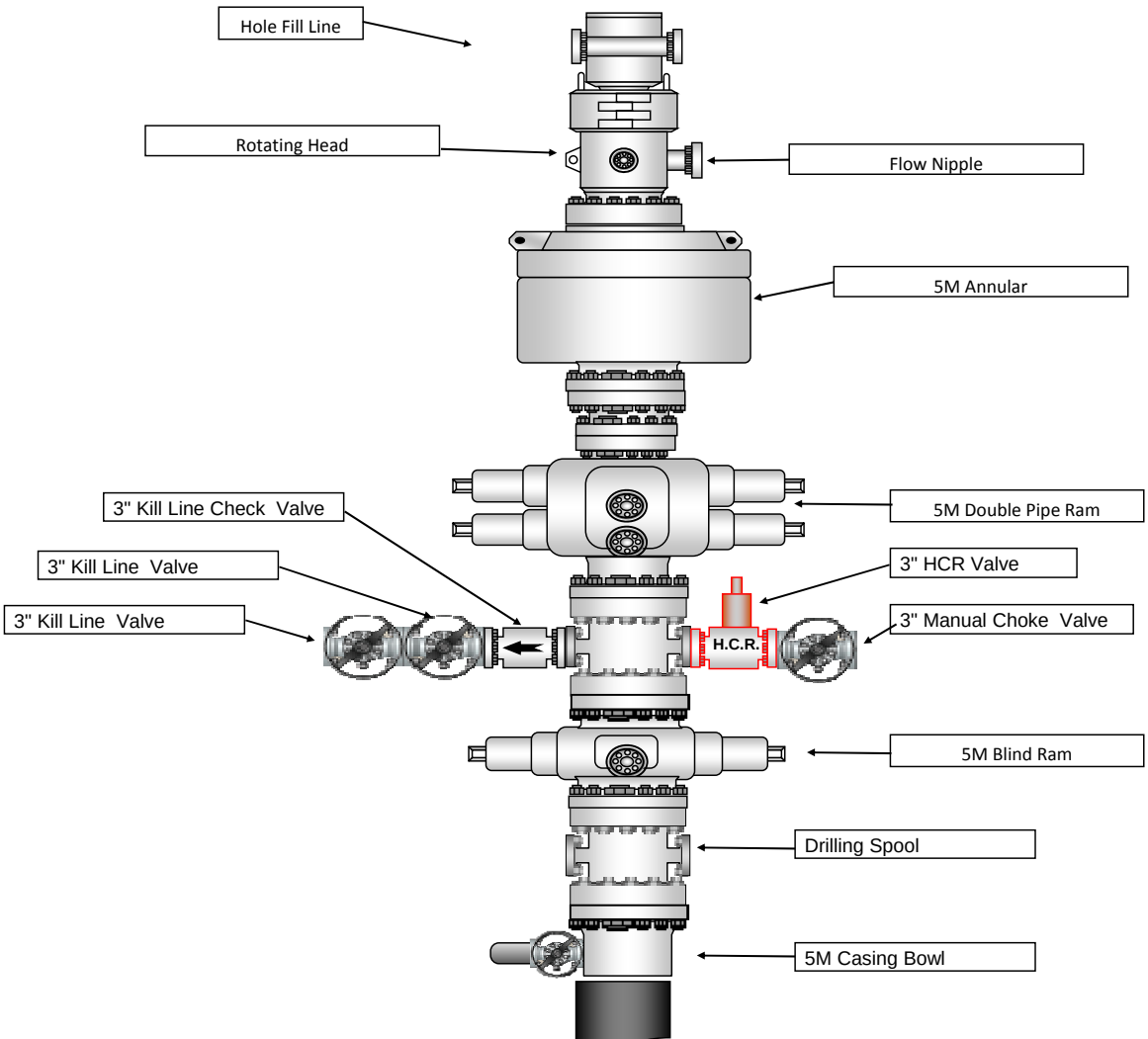
Directional Plot
Gas Capture
Closed Loop Docs

Other proposed operations facets attachment:

Desert_Rose_17_8_Federal_10H___Directional_Plot_20190220103257.pdf
Desert_Rose_17_8_Federal_10H___Gas_Capture_Plan_20190220103311.pdf
Desert_Rose_17_8_Federal_10H___Closed_Loop_Design_Operating_and_Closure_Plan_20190220103322.pdf
Desert_Rose_17_8_Federal_10H___Closed_Loop_Diagram_Design_Plan_20190220103324.pdf

Other Variance attachment:

Desert_Rose_17_8_Federal_10H___Multi_Bowl_Wellhead_20200218090659.pdf


Hole Fill Line
Rotating Head
Flow Nipple
5M Annular
5M Double Pipe Ram
3" Kill Line Check Valve
3" Kill Line Valve
3" HCR Valve
3" Kill Line Valve
3" Manual Choke Valve
H.C.R.
5M Blind Ram
Drilling Spool
5M Casing Bowl

Operator	Caza Operating LLC
Well Name & No.	Talon 4H
County	Lea
Location (S/T/R/Ali)	
Lease Number	
ATS or EC #	APD### or EC###

Colors:
Choose casings
Fill in, if applicable

Name	
Date	
Version	

Remarks

ral 6H Lea NM114998 Caza Operating LLC 13-22 10052019 LV

Type of Casing	Size of Hole (in)	Size of Casing (in)	Weight per Foot (lbs/ft)	Grade	Yield	Coupling #:	Top (ft)	Bottom (MD) (ft)	Setting Depth (TVD) (TVD of entire string) (ft)	Min Mud Weight (ppg)	Max Mud Weight (ppg)	ID	Drift ID	Cplg OD
Surface	17.500	13.375	54.50	j	55	stc	0	2150	2150	8.40	8.90	12.6150	12.4900	14.3750
Int 1	12.250	9.625	40.00	hcl	80	btc	0	5500	5500	9.20	10.00	8.8350	8.7500	10.6250
Int 1 Taper 1														
<Choose Casing>														
Prod 1	8.750	6.000	24.50	p	110	btc	0	18199	10570	9.20	10.00	5.2000	5.0750	6.8750
<Choose Casing>														
<Choose Casing>														

Cement

Surface			Int 1			Prod 1			<Choose Casing>			<Choose Casing>		
TOC	0		TOC	0		TOC	0		TOC			TOC		
DV Depth			DV Depth	3900		DV Depth			DV Depth			DV Depth		
	Sacks	Yield (ft3/sx)			Yield (ft3/sx)		Sacks	Yield (ft3/sx)		Sacks	Yield (ft3/sx)		Sacks	Yield (ft3/sx)
Lead	1330	1.93	Lead	325	2.13	Lead 1	1980	2.38	Lead 1			Lead 1		
Tail	309	1.35	Tail	232	1.35	Tail 1	2120	1.62	Tail 1			Tail 1		
DV Lead			DV Lead	1150	2.13	DV Lead			DV Lead			DV Lead		
DV Tail			DV Tail	150	1.35	DV Tail			DV Tail			DV Tail		
Cmt Added	2984.05	cuft	Cement Added	1005.5 / 2652	cuft	Cement Added	8146.80	cuft	Cement Added	#N/A	cuft	Cement Added	#N/A	cuft
Cmt Req.	1493	cuft	Cement Req.	501.1 / 1327.9	cuft	Cement Req.	4071	cuft	Cement Req.	0	cuft	Cement Req.	0	cuft
Excess	99.81%		Excess	100.6% / 99.7%		Excess	100.11%		Excess	#N/A		Excess	#N/A	

Clearances	in Hole	In Surface	In Int 1	In Int 1 Taper 1		In Prod 1		
Surface	Pass = 1.5625							
Int 1	Pass = 0.8125	Pass = 0.995						
Int 1 Taper 1								
Prod 1	Pass = 0.9375	Pass = 2.87	Pass = 0.98	No Overlap	No Overlap			

Safety Factors	Joint/Body	Collapse	Burst	Alt Burst
Surface	4.39	1.14	0.96	1.66
Int 1	4.17	1.48	1.05	1.82
Int 1 Taper 1				
Prod 1	3.10	2.08	2.34	4.06

BOP Requirements After the Shoe

Surface		Int 1		Prod 1	
Max. Surf. Pressure	1647 psi	Max. Surf. Pressure	3166 psi	Max. Surf. Pressur	psi
BOP Required	2M System	BOP Required	5M System	BOP Required	System
<Choose Casing>					
Max. Surf. Pressure	psi				
BOP Required	System				

Operator	Caza Operating LLC
Well Name & No.	Talon 4H
County	Lea
Location (S/T/R/Ali)	
Lease Number	
ATS or EC #	APD### or EC###

Colors:
Choose casings
Fill in, if applicable

Name	
Date	
Version	

Remarks

ral 6H Lea NM114998 Caza Operating LLC 13-22 10052019 LV

Type of Casing	Size of Hole (in)	Size of Casing (in)	Weight per Foot (lbs/ft)	Grade	Yield	Coupling #:	Top (ft)	Bottom (MD) (ft)	Setting Depth (TVD) (TVD of entire string) (ft)	Min Mud Weight (ppg)	Max Mud Weight (ppg)	ID	Drift ID	Cplg OD
Surface	17.500	13.375	54.50	j	55	stc	0	2150	2150	8.40	8.90	12.6150	12.4900	14.3750
Int 1	12.250	9.625	40.00	hcl	80	btc	0	5500	5500	9.20	10.00	8.8350	8.7500	10.6250
Int 1 Taper 1														
<Choose Casing>														
Prod 1	8.750	6.000	24.50	p	110	btc	0	18199	10570	9.20	10.00	5.2000	5.0750	6.8750
<Choose Casing>														
<Choose Casing>														

Cement

Surface			Int 1			Prod 1			<Choose Casing>			<Choose Casing>		
TOC	0		TOC	0		TOC	0		TOC			TOC		
DV Depth			DV Depth	3900		DV Depth			DV Depth			DV Depth		
	Sacks	Yield (ft3/sx)			Yield (ft3/sx)		Sacks	Yield (ft3/sx)		Sacks	Yield (ft3/sx)		Sacks	Yield (ft3/sx)
Lead	1330	1.93	Lead	325	2.13	Lead 1	1980	2.38	Lead 1			Lead 1		
Tail	309	1.35	Tail	232	1.35	Tail 1	2120	1.62	Tail 1			Tail 1		
DV Lead			DV Lead	1150	2.13	DV Lead			DV Lead			DV Lead		
DV Tail			DV Tail	150	1.35	DV Tail			DV Tail			DV Tail		
Cmt Added	2984.05	cuft	Cement Added	1005.5 / 2652	cuft	Cement Added	8146.80	cuft	Cement Added	#N/A	cuft	Cement Added	#N/A	cuft
Cmt Req.	1493	cuft	Cement Req.	501.1 / 1327.9	cuft	Cement Req.	4071	cuft	Cement Req.	0	cuft	Cement Req.	0	cuft
Excess	99.81%		Excess	100.6% / 99.7%		Excess	100.11%		Excess	#N/A		Excess	#N/A	

Clearances	in Hole	In Surface	In Int 1	In Int 1 Taper 1		In Prod 1		
Surface	Pass = 1.5625							
Int 1	Pass = 0.8125	Pass = 0.995						
Int 1 Taper 1								
Prod 1	Pass = 0.9375	Pass = 2.87	Pass = 0.98	No Overlap	No Overlap			

Safety Factors	Joint/Body	Collapse	Burst	Alt Burst
Surface	4.39	1.14	0.96	1.66
Int 1	4.17	1.48	1.05	1.82
Int 1 Taper 1				
Prod 1	3.10	2.08	2.34	4.06

BOP Requirements After the Shoe

Surface		Int 1		Prod 1	
Max. Surf. Pressure	1647 psi	Max. Surf. Pressure	3166 psi	Max. Surf. Pressur	psi
BOP Required	2M System	BOP Required	5M System	BOP Required	System
<Choose Casing>					
Max. Surf. Pressure	psi				
BOP Required	System				

Operator	Caza Operating LLC
Well Name & No.	Talon 4H
County	Lea
Location (S/T/R/Ali)	
Lease Number	
ATS or EC #	APD### or EC###

Colors:
Choose casings
Fill in, if applicable

Name	
Date	
Version	

Remarks

ral 6H Lea NM114998 Caza Operating LLC 13-22 10052019 LV

Type of Casing	Size of Hole (in)	Size of Casing (in)	Weight per Foot (lbs/ft)	Grade	Yield	Coupling #:	Top (ft)	Bottom (MD) (ft)	Setting Depth (TVD) (TVD of entire string) (ft)	Min Mud Weight (ppg)	Max Mud Weight (ppg)	ID	Drift ID	Cplg OD
Surface	17.500	13.375	54.50	j	55	stc	0	2150	2150	8.40	8.90	12.6150	12.4900	14.3750
Int 1	12.250	9.625	40.00	hcl	80	btc	0	5500	5500	9.20	10.00	8.8350	8.7500	10.6250
Int 1 Taper 1														
<Choose Casing>														
Prod 1	8.750	6.000	24.50	p	110	btc	0	18199	10570	9.20	10.00	5.2000	5.0750	6.8750
<Choose Casing>														
<Choose Casing>														

Cement

Surface			Int 1			Prod 1			<Choose Casing>			<Choose Casing>		
TOC	0		TOC	0		TOC	0		TOC			TOC		
DV Depth			DV Depth	3900		DV Depth			DV Depth			DV Depth		
	Sacks	Yield (ft3/sx)			Yield (ft3/sx)		Sacks	Yield (ft3/sx)		Sacks	Yield (ft3/sx)		Sacks	Yield (ft3/sx)
Lead	1330	1.93	Lead	325	2.13	Lead 1	1980	2.38	Lead 1			Lead 1		
Tail	309	1.35	Tail	232	1.35	Tail 1	2120	1.62	Tail 1			Tail 1		
DV Lead			DV Lead	1150	2.13	DV Lead			DV Lead			DV Lead		
DV Tail			DV Tail	150	1.35	DV Tail			DV Tail			DV Tail		
Cmt Added	2984.05	cuft	Cement Added	1005.5 / 2652	cuft	Cement Added	8146.80	cuft	Cement Added	#N/A	cuft	Cement Added	#N/A	cuft
Cmt Req.	1493	cuft	Cement Req.	501.1 / 1327.9	cuft	Cement Req.	4071	cuft	Cement Req.	0	cuft	Cement Req.	0	cuft
Excess	99.81%		Excess	100.6% / 99.7%		Excess	100.11%		Excess	#N/A		Excess	#N/A	

Clearances	in Hole	In Surface	In Int 1	In Int 1 Taper 1		In Prod 1		
Surface	Pass = 1.5625							
Int 1	Pass = 0.8125	Pass = 0.995						
Int 1 Taper 1								
Prod 1	Pass = 0.9375	Pass = 2.87	Pass = 0.98	No Overlap	No Overlap			

Safety Factors	Joint/Body	Collapse	Burst	Alt Burst
Surface	4.39	1.14	0.96	1.66
Int 1	4.17	1.48	1.05	1.82
Int 1 Taper 1				
Prod 1	3.10	2.08	2.34	4.06

BOP Requirements After the Shoe

Surface		Int 1		Prod 1	
Max. Surf. Pressure	1647 psi	Max. Surf. Pressure	3166 psi	Max. Surf. Pressur	psi
BOP Required	2M System	BOP Required	5M System	BOP Required	System
<Choose Casing>					
Max. Surf. Pressure	psi				
BOP Required	System				

Caza Oil and Gas, Inc

H2S Drilling Operations Plan

Prepared by: Steve Morris

Table of Contents

H2S Contingency Plan Section

Scope:

This contingency plan provides an organized plan of action for alerting and protecting the public within an area of exposure prior to an intentional release, of following the accidental release of a potentially hazardous volume of hydrogen sulfide. The plan establishes guidelines for all personnel whose work activity may involve exposure to Hydrogen Sulfide Gas (H2S).

Objective:

Prevent any and all accidents, and prevent the uncontrolled release of H2S into the atmosphere.

Provide proper evacuation procedures to cope with emergencies.

Provide immediate and adequate medical attention should an injury occur.

Implementation: This plan, with all details, is to be fully implemented 1000’ before drilling into the first sour zone.

Emergency Response Procedure: This section outlines the conditions and denotes steps to be taken in the event of an emergency.

Emergency Equipment and Procedure: This section outlines the safety and emergency equipment that will be required for the drilling of this well.

Training Provisions: This section outlines the training provisions that must be adhered to 1000’ before drilling into the first sour zone.

Emergency Call Lists: Included are the telephone numbers of all persons that would need to be contacted, should an H2S emergency occur.

Briefing: This section deals with the briefing of all persons involved with the drilling of this well.

Public Safety: Public safety personnel will be made aware of the drilling of this well.

Check Lists: Status check lists and procedural check lists have been included to ensure adherence to the plan.

General Information: A general information section has been included to supply support information.

Emergency Procedures Section

Emergency Procedures

I. **In the event of any evidence of H2S level above 10 ppm, take the following steps immediately:**
   A. Secure breathing apparatus.
   B. Order non-essential personnel out of the danger zone.
   C. Take steps to determine if the H2S level can be corrected or suppressed, and if so, proceed with normal operations.

II. **If uncontrollable conditions occur, proceed with the following:**
   A. Take steps to protect and/or remove any public downwind of the rig, including partial evacuation or isolation. Notify necessary public safety personnel and the New Mexico Oil & Gas of the situation.
   B. Remove all personnel to the safe briefing area.
   C. Notify public safety personnel for help with maintaining roadblocks and implementing evacuation.
   D. Determine and proceed with the best possible plan to regain control of the well. Maintain tight security and safety measures.

III. **Responsibility:**
   A. The company approved supervisor shall be responsible for the total implementation of the plan.
   B. The company approved supervisor shall be in complete command during any emergency.
   C. The company approved supervisor shall designate a backup supervisor in the event that he/she is not available.

Emergency Procedure Implementation

I. **Drilling or Tripping:**
   A. All Personnel
      1. When alarm sounds, don escape unit and report to upwind safe briefing area.
      2. Check status of other personnel (buddy system).
      3. Secure breathing apparatus.
      4. Wait for orders from supervisor.
   B. Drilling Foreman
      1. Report to the upwind safe briefing area.
      2. Don breathing apparatus and return to the point of release with the Tool pusher of Driller (buddy system).
      3. Determine the concentration of H2S.
      4. Address the situation and take appropriate control measures.
   C. Tool Pusher
      1. Report to the upwind safe briefing area.
      2. Don breathing apparatus and return to the point of release with the Drilling Foreman or the Driller (buddy system).

3. Determine the concentration.
4. Address the situation and take appropriate control measures.

D. Driller
   1. Check the status of other personnel (in a rescue attempt, always use the buddy system).
   2. Assign the least essential person to notify the Drilling Foreman and Tool Pusher, in the event of their absence.
   3. Assume the responsibility of the Drilling Foreman and the Tool Pusher until they arrive, in the event of their absence.

E. Derrick Man and Floor Hands
   1. Remain in the upwind safe briefing area until otherwise instructed by a supervisor.

F. Mud Engineer
   1. Report to the upwind safe briefing area.
   2. When instructed, begin check of mud for PH level and H2S level.

G. Safety Personnel
   1. Don breathing apparatus.
   2. Check the status of all personnel.
   3. Wait for instructions from Drilling Foreman or Tool Pusher.

II. Taking a Kick:

A. All personnel report to the upwind safe briefing area.
B. Follow standard BOP procedures.

III. Open Hole Logging:

A. All unnecessary personnel should leave the rig floor.
B. Drilling Foreman and Safety personnel should monitor the conditions and make necessary safety equipment recommendations.

IV. Running Casing or Plugging:

A. Follow “Drilling or Tripping” procedures.
B. Assure that all personnel have access to protective equipment.

Simulated Blowout Control Drills

All drills will be initiated by activating alarm devices (air horn). One long blast on the air horn for ACTUAL and SIMULATED blowout control drills. This operation will be performed by the Drilling Foreman or Tool Pusher at least one time per week for each of the following conditions, with each crew:

Drill #1	On-bottom Drilling
Drill #2	Tripping Drill Pipe

In each of these drills, the initial reaction time to shutting in the well shall be timed as well as the total time for the crew to complete its entire put drill assignment. The times must be recorded on the IADC Driller’s log as “Blowout Control Drill”.

Drill No.:		
Reaction Time to Shut-in:	minutes,	seconds.
Total Time to Complete Assignment:	minutes,	seconds.

I. Drill Overviews:
   A. Drill No. 1 – On-bottom Drilling
      1. Sound the alarm immediately.
      2. Stop the rotary and hoist the Kelly joint above the rotary table.
      3. Stop the circulatory pump.
      4. Close the drill pipe rams.
      5. Record casing and drill pipe shut-in pressures and pit volume increases.
   B. Drill No. 2 – Tripping Drill Pipe:
      1. Sound the alarm immediately.
      2. Position the upper tool joint just above the rotary table and set the slips.
      3. Install a full opening valve inside blowout preventer tool in order to close the drill pipe.
      4. Close the drill pipe rams.
      5. Record the shut-in annular pressure.

II. Crew Assignments
   A. Drill No. 1 – On-bottom Drilling:
      1. Driller
         a) Stop the rotary and hoist the Kelly joint above the rotary table.
         b) Stop the circulatory pump.
         c) Check flow.
         d) If flowing, sound the alarm immediately.
         e) Record the shut-in drill pipe pressure.
         f) Determine the mud weight increase needed or other courses of action.
      2. Derrick Man
         a) Open choke line valve at BOP.
         b) Signal Floor Man #1 at accumulator that choke line is open.
         c) Close choke upstream valve after pipe rams have been closed.
         d) Read the shut-in annular pressure and report readings to Driller.
      3. Floor Man #1
         a) Close the pipe rams after receiving the signal from the Derrick Man.
         b) Report to Driller for further instructions.
      4. Floor Man #2
         a) Notify the Tool Pusher and Operator Representative of the H2S alarms.
         b) Check for open fires and, if safe to do so, extinguish them.
         c) Stop all welding operations.
         d) Turn-off all non-explosive proof lights and instruments.

e) Report to Driller for further instructions.

5. Tool Pusher
   a) Report to the rig floor.
   b) Have a meeting with all crews.
   c) Compile and summarize all information.
   d) Calculate the proper kill weight.
   e) Ensure that proper well procedures are put into action.
6. Operator Representative
   a) Notify the Drilling Superintendent.
   b) Determine if an emergency exists and if so, activate the contingency plan.

B. Drill No. 2 – Tripping Pipe:
1. Driller
   a) Sound the alarm immediately when mud volume increase has been detected.
   b) Position the upper tool joint just above the rotary table and set slips.
   c) Install a full opening valve or inside blowout preventer tool to close the drill pipe.
   d) Check flow.
   e) Record all data reported by the crew.
   f) Determine the course of action.
2. Derrick Man
   a) Come down out of derrick.
   b) Notify Tool Pusher and Operator Representative.
   c) Check for open fires and, if safe to do so, extinguish them.
   d) Stop all welding operations.
   e) Report to Driller for further instructions.

3. Floor Man #1
   a) Pick up full opening valve or inside blowout preventer tool and slab into tool join above rotary table (with Floor Man #2)
   b) Tighten valve with back-up tongs.
   c) Close pipe rams after signal from Floor Man #2.
   d) Read accumulator pressure and check for possible high pressure fluid leaks in valves or piping.
   e) Report to Driller for further instructions.
4. Floor Man #2
   a) Pick-up full opening valve or inside blowout preventer tool and tab into tool joint above rotary table (with Floor Man #1)
   b) Position back-up tongs on drill pipe.
   c) Open choke line valve at BOP.
   d) Signal Floor Man #1 at accumulator that choke line is open.
   e) Close choke and upstream valve after pipe rams have been closed.
   f) Check for leaks on BOP stack and choke manifold.

g) Read annular pressure.
h) Report readings to the Driller.

5. Tool Pusher
   a) Report to the rig floor.
   b) Have a meeting with all of the crews.
   c) Compile and summarize all information.
   d) See that proper well kill procedures are put into action.
6. Operator Representative
   a) Notify Drilling Superintendent.
   b) Determine if an emergency exists, and if so, activate the contingency plan

Ignition Procedures

Responsibility:

The decision to ignite the well is responsibility of the DRILLING FOREMAN in concurrence with the STATE POLICE. In the event of the Drilling Foreman is incapacitated, it becomes the responsibility of the RIG TOOL PUSHER. This decision should be made only as a last resort and in a situation where it is clear that:

1. Human life and property are endangered.
2. There is no hope of controlling the blowout under the prevailing conditions.

If time permits, notify the main office, but do not delay if human life is in danger. Initiate the first phase of the evacuation plan.

Instructions for Igniting the Well:

1. Two people are required for the actual igniting operation. Both men must wear self-contained breathing apparatus and must use a full body harness and attach a retrievable safety line to the D-Ring in the back. One man must monitor the atmosphere for explosive gases with the LEL monitor, while the Drilling Foreman is responsible for igniting the well.
2. The primary method to ignite is a 25mm flare gun with a range of approximately 500 feet.
3. Ignite from upwind and do not approach any closer than is warranted.
4. Select the ignition site best suited for protection and which offers an easy escape route.
5. Before igniting, check for the presence of combustible gases.
6. After igniting, continue emergency actions and procedures as before.
7. All unassigned personnel will limit their actions to those directed by the Drilling Foreman.

NOTE: After the well is ignited, burning Hydrogen Sulfide will convert to Sulfur Dioxide, which is also highly toxic. Do not assume the area is safe after the well is ignited.

Training Program

When working in an area where Hydrogen Sulfide (H2S) might be encountered, definite training requirements for all personnel must be carried out. The Company Supervisor will ensure that all personnel at the well site have had adequate training in the following:

1. Hazards and Characteristics of Hydrogen Sulfide.
2. Physicals effects of Hydrogen Sulfide on the human body.
3. Toxicity of Hydrogen Sulfide and Sulfur Dioxide.
4. H2S detection, emergency alarm and sensor location.
5. Emergency rescue.
6. Resuscitators.
7. First aid and artificial resuscitation.
8. The effects of Hydrogen Sulfide on metals.
9. Location safety.

Service company personnel and visiting personnel must be notified if the zone contains H2S, and each service company must provide adequate training and equipment for their employees before they arrive at the well site.

Emergency Equipment Requirements

Lease Entrance Sign:

Should be located at the lease entrance with the following information:

CAUTION- POTENTIAL POISON GAS HYDROGEN SULFIDE

Well Control Equipment:

- A flare line will be located a minimum of 150' from the wellhead to be ignited by a flare gun.
- The choke manifold will include a remotely operated choke.
- A mud/gas separator will be installed to separate gas from the drilling mud.

Mud Program:

The drilling mud program has been designed to minimize the volume of hydrogen sulfide (H2S) circulated to surface. The operator will have the necessary mud products on location to minimize the hazards while drilling in H2S-bearing zones.

Metallurgy:

- All drill strings , casings, tubing, wellhead equipment , the blowout preventer , the drilling spool, kill lines, choke manifold and lines, and all valves shall be suitable for H2S service.
- All elastomers used for packing and seals shall be H2S trim.

Respiratory Equipment:

- Fresh air breathing equipment should be placed at the safe briefing areas and should include the following: Two SCBA's will be placed at each briefing area. A moveable breathing air trailer with 2 SCBA's, 5 work/escape units, ample breathing air hose and manifolds will be on location. The breathing air hose will be installed on the rig floor and derrick along with breathing air manifolds so that it will not restrict work activity. All employees that may wear respiratory will complete a MEQ and be quantitative fit tested 1000' prior to the 1st zone that may contain H2S.

Windsocks or Wind Streamers:

- A minimum of two 10" windsocks located at strategic locations so that they may be seen from any point on location. More will be used if necessary for wind consciousness.
- Wind streamers (if preferred) should be placed at various locations on the well site to ensure wind consciousness at all times. (Corners of location).

Hydrogen Sulfide Detector and Alarms:

- 1 - Four channel H2S monitor with audible and visual alarms, strategically located to be seen and heard by all employees working on the well site. All sensors will be bump tested or calibrated if necessary on a weekly basis. The alarms will be set to visually alarm at 10 PPM and audible at 14 PPM.
- Four (4) sensors located as follows: #1 -Rig Floor, #2 & #3- Bell Nipple, #4- End of flow line where wellbore fluid is discharged.
- Portable color metric tube detector with tubes will be stored in the Tool Pusher trailer.

Well Condition Sign and Flags:

The Well Condition Sign with flags should be placed a minimum of 150' before entry to the location. It should have three (3) color coded flags (green, yellow and red) that will be used to denote the following location conditions:

GREEN - Normal Operating Conditions

YELLOW - Potential Danger

RED - Danger, H2S Gas Present

Auxiliary Rescue Equipment:

- Stretcher (drilling contractor)
- 2- 100' OSHA approved Rescue lines (drilling contractor)
- First Aid Kit properly stocked (drilling contractor)

Mud Inspection Equipment:

Garret Gas Train or Hach Tester for inspection of Hydrogen Sulfide in the drilling mud system.

Fire Extinguishers:

Adequate fire extinguishers shall be located at strategic locations (provided by drilling contractor)

Blowout Preventer:

- The well shall have hydraulic BOP equipment for the anticipated BHP.
- The BOP should be tested upon installation.
- BOP, Choke Line and Kill Line will be tested as specified by Operator.

Confined Space Monitor:

There should be a portable multi-gas monitor with at least 3 sensors (02, LEL & H2S). This instrument should be used to test the atmosphere of any confined space before entering. It should also be used for atmospheric testing for LEL gas before beginning any type of Hot Work. Proper calibration documentation will need to be provided. (Supplied by Drilling Contractor)

Communication Equipment:

- Proper communication equipment such as cell phones or 2 -way radios should be available at the rig.
- Radio communication shall be available for communication between the company man's trailer, rig floor and the tool pusher's trailer.
- Communication equipment shall be available on the vehicles.

Special Control Equipment:

- Hydraulic BOP equipment with remote control on the ground.
- Rotating head at the surface casing point.
- BOP, Choke Manifold and Process Flow Diagrams (see the attached - previously submitted)
- Patriot Rig #5 SM Choke Manifold Equipment (see the attached - previously submitted)

Evacuation Plan:

- Evacuation routes should be established prior to spudding the well.
- Should be discussed with all rig personnel.

Designated Areas:

Parking and Visitor area:

- All vehicles are to be parked at a pre-determined safe distance from the wellhead.
- Designated smoking area.

Safe Briefing Areas:

- Two safe briefing Areas shall be designated on either side of the location at the maximum allowable distance from the well bore so they offset prevailing winds or they are at a 180 degree angle if wind directions tend to shift in the area.
- Personal protective equipment should be stored at both briefing areas or if a moveable cascade trailer is used, it should be kept upwind of existing winds. When wind is from the prevailing direction, both briefing areas should be accessible.

NOTES:

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- Additional personal H2S monitors are available for all employees on location.
- Automatic Flare Igniters are recommended for installation on the rig.

CHECK LISTS

Status Check List

Note: Date each item as they are implemented.

1. Sign at location entrance.
2. Two (2) wind socks (in required locations).
3. Wind Streamers (if required).
4. SCBA's on location for all rig personnel and mud loggers.
5. Air packs, inspected and ready for use.
6. Spare bottles for each air pack (if required).
7. Cascade system for refilling air bottles.
8. Cascade system and hose line hook up.
9. Choke manifold hooked-up and tested. (Before drilling out surface casing.)
10. Remote Hydraulic BOP control (hooked-up and tested before drilling out surface casing).
11. BOP tested (before drilling out surface casing).
12. Mud engineer on location with equipment to test mud for H2S.
13. Safe Briefing Areas set-up.
14. Well Condition sign and flags on location and ready.
15. Hydrogen Sulfide detection system hooked-up & tested.
16. Hydrogen Sulfide alarm system hooked-up & tested.
17. Stretcher on location at Safe Briefing Area.
18. 2-100' OSHA Approved Life Lines on location.
19. 1-20# Fire Extinguisher in safety trailer.
20. Confined Space Monitor on location and tested.
21. All rig crews and supervisor trained (as required).
22. Access restricted for unauthorized personnel.
23. Drills on H2S and well control procedures.
24. All outside service contractors advised of potential H2S on the well.
25. NO SMOKING sign posted.
26. H2S Detector Pump w/tubes on location.
27. 25mm Flare Gun on location w/flares.
28. Automatic Flare Igniter installed on rig.

Procedural Check List

Perform the following on each tour:

1. Check fire extinguishers to see that they have the proper charge.
2. Check breathing equipment to insure that they have not been tampered with.
3. Check pressure on the supply air bottles to make sure they are capable of recharging.
4. Make sure all of the Hydrogen Sulfide detection systems are operative.

Perform the following each week:

1. Check each piece of breathing equipment to make sure that they are fully charged and operational. This requires that the air cylinder be opened and the mask assembly be put on and tested to make sure that the regulators and

masks are properly working. Negative and positive pressure should be conducted on all masks.
2. BOP skills.
3. Check supply pressure on BOP accumulator stand-by source.
4. Check all breathing air mask assemblies to see that straps are loosened and turned back, ready to use.
5. Check pressure on cascade air cylinders to make sure they are fully charged and ready to use for refill purposes if necessary.
6. Check all cascade system regulators to make sure they work properly.
7. Perform breathing drills with on-site personnel.
8. Check the following supplies for availability:
    - Stretcher
    - Safety Belts and ropes.
    - Spare air bottles.
    - Spare oxygen bottles (if resuscitator required).
    - Gas Detector Pump and tubes.
    - Emergency telephone lists.
9. Test the Confined Space Monitor to verify the batteries are good and that the unit is in good working condition and has been properly calibrated according to manufacturer's recommendations.

Briefing Procedures

The following scheduled briefings will be held to ensure the effective drilling and operation of this project:

Pre-Spud Meeting

Date: Prior to spudding the well.

Attendance: Drilling Supervisor
Drilling Engineer
Drilling Foreman
Rig Tool Pushers
Mud Engineer
All Safety Personnel
Key Service Company Personnel

Purpose: Review and discuss the well program, step-by-step, to ensure complete understanding of assignments and responsibilities.

Evacuation Plan

General Plan

The direct lines of action prepared by Caza SAFETY, to protect the public from hazardous gas situations are as follows:

1. When the company approved supervisor (Drilling Foremen, Tool Pusher or Driller) determine that Hydrogen Sulfide gas cannot be limited to the well location, and the public will be involved, he will activate the evacuation plan. Escape routes are noted on the Area Map.
2. Company safety personnel or designee will notify the appropriate local government agency that a hazardous condition exists and evacuation needs to be implemented.
3. Company approved safety personnel that have been trained in the use of the proper emergency equipment will be utilized.
4. Law enforcement personnel (State Police, Local Police Department, Fire Department, and the Sheriff's Department) will be called to aid in setting up and maintaining road blocks. Also, they will aid in evacuation of the public if necessary.

NOTE: Law enforcement personnel will not be asked to come into a contaminated area. Their assistance will be limited to uncontaminated areas. Constant radio contact will be maintained with them.

5. After the discharge of gas has been controlled, "Company" safety personnel will determine when the area is safe for re-entry.

Emergency Assistance Telephone List

PUBLIC SAFETY: 911 or

Lea County Sheriff or Police..... (575) 396-3611

Fire Department .....(575) 397-9308

Hospital ..... (575) 492-5000

Ambulance 911

Department of Public Safety..... (392) 392-5588

Oil Conservation Division .....(575) 748-1823

New Mexico Energy, Minerals & Natural Resources Department .....(575) 748-1283

Caza Oil and Gas, Inc:

Office .....(423) 682-7424

VP Operations: Tony Sam

Office .....(423) 682-7424

Cell .....(432) 556-6708

The geologic zones that will be encountered during drilling may contain hazardous quantities of H2S. The accompanying map illustrates the affected areas of the community. The residents within this radius will be notified via a hand delivered written notice describing the activities, potential hazards, and conditions of evacuation, evacuation drill siren alarms and other precautionary measures.

Evacuee Description:

Residents: THERE ARE NO RESIDENTS WITHIN 3000' ROE.

Notification Process:

A continuous siren audible to all residence will be activated, signaling evacuation of previously notified and informed residents.

Evacuation Plan:

All evacuees will migrate laterally toward the wind direction.

Caza Oil and Gas, Inc. will identify all home bound or highly susceptible individuals and make special evacuation preparations, interfacing with the local and emergency medical service as necessary.

MAPS AND PLATS

See the attached map showing the 3000' ROE clarification.

Caza Operating LLC

Desert Rose 17-8 Federal 10H
Desert Rose 17-8 Federal 10H
Desert Rose 17-8 Federal 10H
Desert Rose 17-8 Federal 10H

Plan: 181103 Desert Rose 17-8 Federal 10H

Morcor Standard Plan

03 November, 2018

Company:	Caza Operating LLC	**Local Co-ordinate Reference:**	Well Desert Rose 17-8 Federal 10H
Project:	Desert Rose 17-8 Federal 10H	**TVD Reference:**	WELL @ 3724.0usft (Original Well Elev)
Site:	Desert Rose 17-8 Federal 10H	**MD Reference:**	WELL @ 3724.0usft (Original Well Elev)
Well:	Desert Rose 17-8 Federal 10H	**North Reference:**	Grid
Wellbore:	Desert Rose 17-8 Federal 10H	**Survey Calculation Method:**	Minimum Curvature
Design:	181103 Desert Rose 17-8 Federal 10H	**Database:**	EDM 5000.1 Single User Db

Project Desert Rose 17-8 Federal 10H

Map System:	US State Plane 1983	**System Datum:**	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site Desert Rose 17-8 Federal 10H

Site Position:		**Northing:**	570,777.42 usft	**Latitude:**	32° 33' 58.248 N
From:	Lat/Long	**Easting:**	806,294.84 usft	**Longitude:**	103° 28' 23.830 W
Position Uncertainty:	1.0 usft	**Slot Radius:**	17-1/2 "	**Grid Convergence:**	0.46 °

Well Desert Rose 17-8 Federal 10H

Well Position	**+N/-S**	0.0 usft	**Northing:**	570,777.42 usft	**Latitude:**	32° 33' 58.248 N
	+E/-W	0.0 usft	**Easting:**	806,294.84 usft	**Longitude:**	103° 28' 23.830 W
Position Uncertainty		1.0 usft	**Wellhead Elevation:**	usft	**Ground Level:**	3,702.0 usft

Wellbore Desert Rose 17-8 Federal 10H

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	11/3/2018	6.65	60.33	48,089

Design 181103 Desert Rose 17-8 Federal 10H

Audit Notes:

Version:		**Phase:**	PLAN	**Tie On Depth:**	0.0

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	2.34

Survey Tool Program **Date** 11/3/2018

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.0	18,199.0	181103 Desert Rose 17-8 Federal 10H (De	MWD	MWD - Standard

Company:	Caza Operating LLC	**Local Co-ordinate Reference:**	Well Desert Rose 17-8 Federal 10H
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Wellbore:	Desert Rose 17-8 Federal 10H	**Survey Calculation Method:**	Minimum Curvature
Design:	181103 Desert Rose 17-8 Federal 10H	**Database:**	EDM 5000.1 Single User Db

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	Easting (usft)	Northing (usft)	V. Sec (usft)	DLeg (°/100usft)
0.0	0.00	0.00	0.0	-3,724.0	0.0	0.0	806,294.84	570,777.42	0.00	0.00
100.0	0.00	104.00	100.0	-3,624.0	0.0	0.0	806,294.84	570,777.42	0.00	0.00
120.0	0.00	104.00	120.0	-3,604.0	0.0	0.0	806,294.84	570,777.42	0.00	0.00
20" Conductor										
200.0	0.00	104.00	200.0	-3,524.0	0.0	0.0	806,294.84	570,777.42	0.00	0.00
300.0	0.00	104.00	300.0	-3,424.0	0.0	0.0	806,294.84	570,777.42	0.00	0.00
400.0	0.00	104.00	400.0	-3,324.0	0.0	0.0	806,294.84	570,777.42	0.00	0.00
500.0	0.00	104.00	500.0	-3,224.0	0.0	0.0	806,294.84	570,777.42	0.00	0.00
600.0	0.00	104.00	600.0	-3,124.0	0.0	0.0	806,294.84	570,777.42	0.00	0.00
700.0	0.00	104.00	700.0	-3,024.0	0.0	0.0	806,294.84	570,777.42	0.00	0.00
800.0	0.00	104.00	800.0	-2,924.0	0.0	0.0	806,294.84	570,777.42	0.00	0.00
900.0	0.00	104.00	900.0	-2,824.0	0.0	0.0	806,294.84	570,777.42	0.00	0.00
1,000.0	0.00	104.00	1,000.0	-2,724.0	0.0	0.0	806,294.84	570,777.42	0.00	0.00
1,100.0	0.00	104.00	1,100.0	-2,624.0	0.0	0.0	806,294.84	570,777.42	0.00	0.00
1,200.0	0.00	104.00	1,200.0	-2,524.0	0.0	0.0	806,294.84	570,777.42	0.00	0.00
1,300.0	0.00	104.00	1,300.0	-2,424.0	0.0	0.0	806,294.84	570,777.42	0.00	0.00
1,400.0	0.00	104.00	1,400.0	-2,324.0	0.0	0.0	806,294.84	570,777.42	0.00	0.00
1,500.0	0.00	104.00	1,500.0	-2,224.0	0.0	0.0	806,294.84	570,777.42	0.00	0.00
1,600.0	0.00	104.00	1,600.0	-2,124.0	0.0	0.0	806,294.84	570,777.42	0.00	0.00
1,700.0	0.00	104.00	1,700.0	-2,024.0	0.0	0.0	806,294.84	570,777.42	0.00	0.00
1,800.0	0.00	104.00	1,800.0	-1,924.0	0.0	0.0	806,294.84	570,777.42	0.00	0.00
1,900.0	0.00	104.00	1,900.0	-1,824.0	0.0	0.0	806,294.84	570,777.42	0.00	0.00
1,944.0	0.00	104.00	1,944.0	-1,780.0	0.0	0.0	806,294.84	570,777.42	0.00	0.00
Rustler										
1,969.0	0.00	104.00	1,969.0	-1,755.0	0.0	0.0	806,294.84	570,777.42	0.00	0.00
13 3/8" Surface Casing										
2,000.0	0.00	104.00	2,000.0	-1,724.0	0.0	0.0	806,294.84	570,777.42	0.00	0.00
2,100.0	0.00	104.00	2,100.0	-1,624.0	0.0	0.0	806,294.84	570,777.42	0.00	0.00

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Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	Easting (usft)	Northing (usft)	V. Sec (usft)	DLeg (°/100usft)
2,200.0	0.00	104.00	2,200.0	-1,524.0	0.0	0.0	806,294.84	570,777.42	0.00	0.00
2,272.0	0.00	104.00	2,272.0	-1,452.0	0.0	0.0	806,294.84	570,777.42	0.00	0.00
Top of Salt										
2,300.0	0.00	104.00	2,300.0	-1,424.0	0.0	0.0	806,294.84	570,777.42	0.00	0.00
2,400.0	0.00	104.00	2,400.0	-1,324.0	0.0	0.0	806,294.84	570,777.42	0.00	0.00
2,500.0	0.00	104.00	2,500.0	-1,224.0	0.0	0.0	806,294.84	570,777.42	0.00	0.00
2,600.0	0.00	104.00	2,600.0	-1,124.0	0.0	0.0	806,294.84	570,777.42	0.00	0.00
2,700.0	0.00	104.00	2,700.0	-1,024.0	0.0	0.0	806,294.84	570,777.42	0.00	0.00
2,800.0	0.00	104.00	2,800.0	-924.0	0.0	0.0	806,294.84	570,777.42	0.00	0.00
2,900.0	0.00	104.00	2,900.0	-824.0	0.0	0.0	806,294.84	570,777.42	0.00	0.00
3,000.0	0.00	104.00	3,000.0	-724.0	0.0	0.0	806,294.84	570,777.42	0.00	0.00
3,100.0	0.00	104.00	3,100.0	-624.0	0.0	0.0	806,294.84	570,777.42	0.00	0.00
3,200.0	0.00	104.00	3,200.0	-524.0	0.0	0.0	806,294.84	570,777.42	0.00	0.00
3,300.0	0.00	104.00	3,300.0	-424.0	0.0	0.0	806,294.84	570,777.42	0.00	0.00
3,400.0	0.00	104.00	3,400.0	-324.0	0.0	0.0	806,294.84	570,777.42	0.00	0.00
3,500.0	0.00	104.00	3,500.0	-224.0	0.0	0.0	806,294.84	570,777.42	0.00	0.00
3,600.0	0.00	104.00	3,600.0	-124.0	0.0	0.0	806,294.84	570,777.42	0.00	0.00
3,621.0	0.00	104.00	3,621.0	-103.0	0.0	0.0	806,294.84	570,777.42	0.00	0.00
Base of Salt										
3,700.0	0.00	104.00	3,700.0	-24.0	0.0	0.0	806,294.84	570,777.42	0.00	0.00
3,800.0	0.00	104.00	3,800.0	76.0	0.0	0.0	806,294.84	570,777.42	0.00	0.00
3,900.0	0.00	104.00	3,900.0	176.0	0.0	0.0	806,294.84	570,777.42	0.00	0.00
4,000.0	0.00	104.00	4,000.0	276.0	0.0	0.0	806,294.84	570,777.42	0.00	0.00
4,100.0	0.00	104.00	4,100.0	376.0	0.0	0.0	806,294.84	570,777.42	0.00	0.00
4,200.0	0.00	104.00	4,200.0	476.0	0.0	0.0	806,294.84	570,777.42	0.00	0.00
4,223.0	0.00	104.00	4,223.0	499.0	0.0	0.0	806,294.84	570,777.42	0.00	0.00
Capitan										
4,300.0	0.00	104.00	4,300.0	576.0	0.0	0.0	806,294.84	570,777.42	0.00	0.00

Company:	Caza Operating LLC	**Local Co-ordinate Reference:**	Well Desert Rose 17-8 Federal 10H
Project:	Desert Rose 17-8 Federal 10H	**TVD Reference:**	WELL @ 3724.0usft (Original Well Elev)
Site:	Desert Rose 17-8 Federal 10H	**MD Reference:**	WELL @ 3724.0usft (Original Well Elev)
Well:	Desert Rose 17-8 Federal 10H	**North Reference:**	Grid
Wellbore:	Desert Rose 17-8 Federal 10H	**Survey Calculation Method:**	Minimum Curvature
Design:	181103 Desert Rose 17-8 Federal 10H	**Database:**	EDM 5000.1 Single User Db

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	Easting (usft)	Northing (usft)	V. Sec (usft)	DLeg (°/100usft)
4,400.0	0.00	104.00	4,400.0	676.0	0.0	0.0	806,294.84	570,777.42	0.00	0.00
4,500.0	0.00	104.00	4,500.0	776.0	0.0	0.0	806,294.84	570,777.42	0.00	0.00
4,600.0	0.00	104.00	4,600.0	876.0	0.0	0.0	806,294.84	570,777.42	0.00	0.00
4,700.0	0.00	104.00	4,700.0	976.0	0.0	0.0	806,294.84	570,777.42	0.00	0.00
4,800.0	0.00	104.00	4,800.0	1,076.0	0.0	0.0	806,294.84	570,777.42	0.00	0.00
4,900.0	0.00	104.00	4,900.0	1,176.0	0.0	0.0	806,294.84	570,777.42	0.00	0.00
5,000.0	0.00	104.00	5,000.0	1,276.0	0.0	0.0	806,294.84	570,777.42	0.00	0.00
5,100.0	0.00	104.00	5,100.0	1,376.0	0.0	0.0	806,294.84	570,777.42	0.00	0.00
5,200.0	0.00	104.00	5,200.0	1,476.0	0.0	0.0	806,294.84	570,777.42	0.00	0.00
5,300.0	0.00	104.00	5,300.0	1,576.0	0.0	0.0	806,294.84	570,777.42	0.00	0.00
5,400.0	0.00	104.00	5,400.0	1,676.0	0.0	0.0	806,294.84	570,777.42	0.00	0.00
5,499.0	0.00	104.00	5,499.0	1,775.0	0.0	0.0	806,294.84	570,777.42	0.00	0.00
9 5/8" Intermediate Casing										
5,500.0	0.00	104.00	5,500.0	1,776.0	0.0	0.0	806,294.84	570,777.42	0.00	0.00
5,524.0	0.00	104.00	5,524.0	1,800.0	0.0	0.0	806,294.84	570,777.42	0.00	0.00
Delaware										
5,600.0	0.00	104.00	5,600.0	1,876.0	0.0	0.0	806,294.84	570,777.42	0.00	0.00
5,700.0	0.00	104.00	5,700.0	1,976.0	0.0	0.0	806,294.84	570,777.42	0.00	0.00
5,753.0	0.00	104.00	5,753.0	2,029.0	0.0	0.0	806,294.84	570,777.42	0.00	0.00
Cherry Canyon										
5,800.0	0.00	104.00	5,800.0	2,076.0	0.0	0.0	806,294.84	570,777.42	0.00	0.00
5,900.0	0.00	104.00	5,900.0	2,176.0	0.0	0.0	806,294.84	570,777.42	0.00	0.00
6,000.0	0.00	104.00	6,000.0	2,276.0	0.0	0.0	806,294.84	570,777.42	0.00	0.00
6,050.0	0.00	104.00	6,050.0	2,326.0	0.0	0.0	806,294.84	570,777.42	0.00	0.00
Start Build 3.00										
6,100.0	1.50	104.00	6,100.0	2,376.0	-0.2	0.6	806,295.48	570,777.26	-0.13	3.00
6,200.0	4.50	104.00	6,199.8	2,475.8	-1.4	5.7	806,300.56	570,776.00	-1.19	3.00

Company:	Caza Operating LLC	**Local Co-ordinate Reference:**	Well Desert Rose 17-8 Federal 10H
Project:	Desert Rose 17-8 Federal 10H	**TVD Reference:**	WELL @ 3724.0usft (Original Well Elev)
Site:	Desert Rose 17-8 Federal 10H	**MD Reference:**	WELL @ 3724.0usft (Original Well Elev)
Well:	Desert Rose 17-8 Federal 10H	**North Reference:**	Grid
Wellbore:	Desert Rose 17-8 Federal 10H	**Survey Calculation Method:**	Minimum Curvature
Design:	181103 Desert Rose 17-8 Federal 10H	**Database:**	EDM 5000.1 Single User Db

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	Easting (usft)	Northing (usft)	V. Sec (usft)	DLeg (°/100usft)
6,250.0	6.00	104.00	6,249.6	2,525.6	-2.5	10.2	806,305.00	570,774.89	-2.11	3.00
Start 3550.0 hold at 6250.0 MD										
6,300.0	6.00	104.00	6,299.4	2,575.4	-3.8	15.2	806,310.07	570,773.63	-3.17	0.00
6,400.0	6.00	104.00	6,398.8	2,674.8	-6.3	25.4	806,320.21	570,771.10	-5.28	0.00
6,500.0	6.00	104.00	6,498.3	2,774.3	-8.9	35.5	806,330.35	570,768.57	-7.39	0.00
6,524.9	6.00	104.00	6,523.0	2,799.0	-9.5	38.0	806,332.87	570,767.94	-7.92	0.00
Brushy Canyon										
6,600.0	6.00	104.00	6,597.7	2,873.7	-11.4	45.6	806,340.49	570,766.04	-9.50	0.00
6,700.0	6.00	104.00	6,697.2	2,973.2	-13.9	55.8	806,350.64	570,763.51	-11.62	0.00
6,800.0	6.00	104.00	6,796.6	3,072.6	-16.4	65.9	806,360.78	570,760.98	-13.73	0.00
6,900.0	6.00	104.00	6,896.1	3,172.1	-19.0	76.1	806,370.92	570,758.45	-15.84	0.00
7,000.0	6.00	104.00	6,995.5	3,271.5	-21.5	86.2	806,381.06	570,755.93	-17.95	0.00
7,100.0	6.00	104.00	7,095.0	3,371.0	-24.0	96.4	806,391.21	570,753.40	-20.06	0.00
7,200.0	6.00	104.00	7,194.4	3,470.4	-26.6	106.5	806,401.35	570,750.87	-22.18	0.00
7,300.0	6.00	104.00	7,293.9	3,569.9	-29.1	116.6	806,411.49	570,748.34	-24.29	0.00
7,400.0	6.00	104.00	7,393.3	3,669.3	-31.6	126.8	806,421.63	570,745.81	-26.40	0.00
7,500.0	6.00	104.00	7,492.8	3,768.8	-34.1	136.9	806,431.78	570,743.28	-28.51	0.00
7,600.0	6.00	104.00	7,592.2	3,868.2	-36.7	147.1	806,441.92	570,740.75	-30.62	0.00
7,700.0	6.00	104.00	7,691.7	3,967.7	-39.2	157.2	806,452.06	570,738.22	-32.73	0.00
7,800.0	6.00	104.00	7,791.1	4,067.1	-41.7	167.4	806,462.20	570,735.70	-34.85	0.00
7,900.0	6.00	104.00	7,890.6	4,166.6	-44.3	177.5	806,472.35	570,733.17	-36.96	0.00
8,000.0	6.00	104.00	7,990.0	4,266.0	-46.8	187.6	806,482.49	570,730.64	-39.07	0.00
8,100.0	6.00	104.00	8,089.5	4,365.5	-49.3	197.8	806,492.63	570,728.11	-41.18	0.00
8,200.0	6.00	104.00	8,189.0	4,465.0	-51.8	207.9	806,502.77	570,725.58	-43.29	0.00
8,300.0	6.00	104.00	8,288.4	4,564.4	-54.4	218.1	806,512.91	570,723.05	-45.40	0.00
8,306.6	6.00	104.00	8,295.0	4,571.0	-54.5	218.7	806,513.59	570,722.88	-45.54	0.00
Bone Spring										

Company:	Caza Operating LLC	**Local Co-ordinate Reference:**	Well Desert Rose 17-8 Federal 10H
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Site:	Desert Rose 17-8 Federal 10H	**MD Reference:**	WELL @ 3724.0usft (Original Well Elev)
Well:	Desert Rose 17-8 Federal 10H	**North Reference:**	Grid
Wellbore:	Desert Rose 17-8 Federal 10H	**Survey Calculation Method:**	Minimum Curvature
Design:	181103 Desert Rose 17-8 Federal 10H	**Database:**	EDM 5000.1 Single User Db

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	Easting (usft)	Northing (usft)	V. Sec (usft)	DLeg (°/100usft)
8,400.0	6.00	104.00	8,387.9	4,663.9	-56.9	228.2	806,523.06	570,720.52	-47.52	0.00
8,500.0	6.00	104.00	8,487.3	4,763.3	-59.4	238.4	806,533.20	570,717.99	-49.63	0.00
8,600.0	6.00	104.00	8,586.8	4,862.8	-62.0	248.5	806,543.34	570,715.47	-51.74	0.00
8,700.0	6.00	104.00	8,686.2	4,962.2	-64.5	258.6	806,553.48	570,712.94	-53.85	0.00
8,800.0	6.00	104.00	8,785.7	5,061.7	-67.0	268.8	806,563.63	570,710.41	-55.96	0.00
8,900.0	6.00	104.00	8,885.1	5,161.1	-69.5	278.9	806,573.77	570,707.88	-58.08	0.00
9,000.0	6.00	104.00	8,984.6	5,260.6	-72.1	289.1	806,583.91	570,705.35	-60.19	0.00
9,100.0	6.00	104.00	9,084.0	5,360.0	-74.6	299.2	806,594.05	570,702.82	-62.30	0.00
9,200.0	6.00	104.00	9,183.5	5,459.5	-77.1	309.4	806,604.20	570,700.29	-64.41	0.00
9,300.0	6.00	104.00	9,282.9	5,558.9	-79.7	319.5	806,614.34	570,697.76	-66.52	0.00
9,400.0	6.00	104.00	9,382.4	5,658.4	-82.2	329.6	806,624.48	570,695.24	-68.63	0.00
9,500.0	6.00	104.00	9,481.8	5,757.8	-84.7	339.8	806,634.62	570,692.71	-70.75	0.00
9,600.0	6.00	104.00	9,581.3	5,857.3	-87.2	349.9	806,644.77	570,690.18	-72.86	0.00
9,625.9	6.00	104.00	9,607.0	5,883.0	-87.9	352.5	806,647.39	570,689.52	-73.40	0.00
1st Bone Spring Sand										
9,700.0	6.00	104.00	9,680.7	5,956.7	-89.8	360.1	806,654.91	570,687.65	-74.97	0.00
9,800.0	6.00	104.00	9,780.2	6,056.2	-92.3	370.2	806,665.05	570,685.12	-77.08	0.00
Start Drop -3.00										
9,900.0	3.00	104.00	9,879.9	6,155.9	-94.2	377.8	806,672.66	570,683.22	-78.67	3.00
10,000.0	0.00	0.00	9,979.8	6,255.8	-94.8	380.4	806,675.20	570,682.59	-79.19	3.00
Start 80.0 hold at 10000.0 MD										
10,080.0	0.00	0.00	10,059.8	6,335.8	-94.8	380.4	806,675.20	570,682.59	-79.19	0.00
Start Build 11.23										
10,100.0	2.25	0.00	10,079.8	6,355.8	-94.4	380.4	806,675.20	570,682.98	-78.80	11.23
10,200.0	13.47	0.00	10,178.7	6,454.7	-80.8	380.4	806,675.20	570,696.63	-65.16	11.23
10,268.4	21.16	0.00	10,244.0	6,520.0	-60.4	380.4	806,675.20	570,716.99	-44.82	11.23
2nd Bone Spring Sand										
10,300.0	24.70	0.00	10,273.1	6,549.1	-48.1	380.4	806,675.20	570,729.29	-32.54	11.23

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Wellbore:	Desert Rose 17-8 Federal 10H	**Survey Calculation Method:**	Minimum Curvature
Design:	181103 Desert Rose 17-8 Federal 10H	**Database:**	EDM 5000.1 Single User Db

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	Easting (usft)	Northing (usft)	V. Sec (usft)	DLeg (°/100usft)
10,400.0	35.93	0.00	10,359.3	6,635.3	2.3	380.4	806,675.20	570,779.69	17.82	11.23
10,500.0	47.16	0.00	10,434.0	6,710.0	68.5	380.4	806,675.20	570,845.90	83.98	11.23
10,600.0	58.39	0.00	10,494.4	6,770.4	148.0	380.4	806,675.20	570,925.40	163.42	11.23
10,700.0	69.62	0.00	10,538.1	6,814.1	237.7	380.4	806,675.20	571,015.14	253.08	11.23
10,800.0	80.85	0.00	10,563.6	6,839.6	334.3	380.4	806,675.20	571,111.69	349.54	11.23
10,888.0	90.73	0.00	10,570.0	6,846.0	421.9	380.4	806,675.20	571,199.34	437.12	11.23
Start Turn -0.01										
10,900.0	90.73	360.00	10,569.9	6,845.9	433.9	380.4	806,675.20	571,211.34	449.11	0.01
11,000.0	90.73	359.98	10,568.6	6,844.6	533.9	380.3	806,675.19	571,311.33	549.02	0.01
11,100.0	90.73	359.97	10,567.3	6,843.3	633.9	380.3	806,675.15	571,411.32	648.93	0.01
11,200.0	90.73	359.96	10,566.1	6,842.1	733.9	380.2	806,675.09	571,511.31	748.83	0.01
11,300.0	90.73	359.94	10,564.8	6,840.8	833.9	380.2	806,675.00	571,611.31	848.74	0.01
11,400.0	90.73	359.93	10,563.5	6,839.5	933.9	380.0	806,674.89	571,711.30	948.64	0.01
11,500.0	90.73	359.92	10,562.2	6,838.2	1,033.9	379.9	806,674.75	571,811.29	1,048.54	0.01
11,600.0	90.73	359.90	10,561.0	6,837.0	1,133.9	379.8	806,674.60	571,911.28	1,148.44	0.01
11,700.0	90.73	359.89	10,559.7	6,835.7	1,233.9	379.6	806,674.41	572,011.27	1,248.35	0.01
11,800.0	90.73	359.88	10,558.4	6,834.4	1,333.8	379.4	806,674.21	572,111.27	1,348.25	0.01
11,900.0	90.73	359.86	10,557.1	6,833.1	1,433.8	379.1	806,673.98	572,211.26	1,448.14	0.01
12,000.0	90.73	359.85	10,555.9	6,831.9	1,533.8	378.9	806,673.73	572,311.25	1,548.04	0.01
12,100.0	90.73	359.83	10,554.6	6,830.6	1,633.8	378.6	806,673.45	572,411.24	1,647.94	0.01
12,200.0	90.73	359.82	10,553.3	6,829.3	1,733.8	378.3	806,673.15	572,511.23	1,747.83	0.01
12,300.0	90.73	359.81	10,552.0	6,828.0	1,833.8	378.0	806,672.82	572,611.22	1,847.73	0.01
12,400.0	90.73	359.79	10,550.8	6,826.8	1,933.8	377.6	806,672.47	572,711.21	1,947.62	0.01
12,500.0	90.73	359.78	10,549.5	6,825.5	2,033.8	377.3	806,672.10	572,811.21	2,047.51	0.01
12,600.0	90.73	359.77	10,548.2	6,824.2	2,133.8	376.9	806,671.70	572,911.20	2,147.40	0.01
12,700.0	90.73	359.75	10,546.9	6,822.9	2,233.8	376.4	806,671.28	573,011.19	2,247.29	0.01
12,800.0	90.73	359.74	10,545.7	6,821.7	2,333.8	376.0	806,670.84	573,111.18	2,347.18	0.01

Company:	Caza Operating LLC	**Local Co-ordinate Reference:**	Well Desert Rose 17-8 Federal 10H
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Wellbore:	Desert Rose 17-8 Federal 10H	**Survey Calculation Method:**	Minimum Curvature
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Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	Easting (usft)	Northing (usft)	V. Sec (usft)	DLeg (°/100usft)
12,900.0	90.73	359.72	10,544.4	6,820.4	2,433.7	375.5	806,670.37	573,211.17	2,447.07	0.01
13,000.0	90.73	359.71	10,543.1	6,819.1	2,533.7	375.0	806,669.88	573,311.16	2,546.96	0.01
13,100.0	90.73	359.70	10,541.8	6,817.8	2,633.7	374.5	806,669.36	573,411.15	2,646.84	0.01
13,200.0	90.73	359.68	10,540.6	6,816.6	2,733.7	374.0	806,668.82	573,511.14	2,746.73	0.01
13,300.0	90.73	359.67	10,539.3	6,815.3	2,833.7	373.4	806,668.26	573,611.13	2,846.61	0.01
13,400.0	90.73	359.66	10,538.0	6,814.0	2,933.7	372.8	806,667.67	573,711.12	2,946.49	0.01
13,500.0	90.73	359.64	10,536.8	6,812.8	3,033.7	372.2	806,667.06	573,811.11	3,046.38	0.01
13,600.0	90.73	359.63	10,535.5	6,811.5	3,133.7	371.6	806,666.42	573,911.10	3,146.26	0.01
13,700.0	90.73	359.62	10,534.2	6,810.2	3,233.7	370.9	806,665.76	574,011.09	3,246.13	0.01
13,800.0	90.73	359.60	10,532.9	6,808.9	3,333.7	370.2	806,665.08	574,111.08	3,346.01	0.01
13,900.0	90.73	359.59	10,531.7	6,807.7	3,433.6	369.5	806,664.37	574,211.07	3,445.89	0.01
14,000.0	90.73	359.57	10,530.4	6,806.4	3,533.6	368.8	806,663.64	574,311.06	3,545.76	0.01
14,100.0	90.73	359.56	10,529.1	6,805.1	3,633.6	368.0	806,662.89	574,411.05	3,645.64	0.01
14,200.0	90.73	359.55	10,527.8	6,803.8	3,733.6	367.3	806,662.11	574,511.04	3,745.51	0.01
14,300.0	90.73	359.53	10,526.6	6,802.6	3,833.6	366.5	806,661.31	574,611.03	3,845.38	0.01
14,400.0	90.73	359.52	10,525.3	6,801.3	3,933.6	365.6	806,660.48	574,711.01	3,945.26	0.01
14,500.0	90.73	359.51	10,524.0	6,800.0	4,033.6	364.8	806,659.63	574,811.00	4,045.13	0.01
14,600.0	90.73	359.49	10,522.7	6,798.7	4,133.6	363.9	806,658.76	574,910.99	4,144.99	0.01
14,700.0	90.73	359.48	10,521.5	6,797.5	4,233.6	363.0	806,657.86	575,010.98	4,244.86	0.01
14,800.0	90.73	359.46	10,520.2	6,796.2	4,333.5	362.1	806,656.94	575,110.97	4,344.73	0.01
14,900.0	90.73	359.45	10,518.9	6,794.9	4,433.5	361.1	806,655.99	575,210.95	4,444.59	0.01
15,000.0	90.73	359.44	10,517.6	6,793.6	4,533.5	360.2	806,655.02	575,310.94	4,544.46	0.01
15,100.0	90.73	359.42	10,516.4	6,792.4	4,633.5	359.2	806,654.03	575,410.93	4,644.32	0.01
15,200.0	90.73	359.41	10,515.1	6,791.1	4,733.5	358.2	806,653.01	575,510.91	4,744.18	0.01
15,300.0	90.73	359.40	10,513.8	6,789.8	4,833.5	357.1	806,651.97	575,610.90	4,844.04	0.01
15,400.0	90.73	359.38	10,512.5	6,788.5	4,933.5	356.1	806,650.90	575,710.89	4,943.90	0.01
15,500.0	90.73	359.37	10,511.3	6,787.3	5,033.4	355.0	806,649.81	575,810.87	5,043.76	0.01

Company:	Caza Operating LLC	**Local Co-ordinate Reference:**	Well Desert Rose 17-8 Federal 10H
Project:	Desert Rose 17-8 Federal 10H	**TVD Reference:**	WELL @ 3724.0usft (Original Well Elev)
Site:	Desert Rose 17-8 Federal 10H	**MD Reference:**	WELL @ 3724.0usft (Original Well Elev)
Well:	Desert Rose 17-8 Federal 10H	**North Reference:**	Grid
Wellbore:	Desert Rose 17-8 Federal 10H	**Survey Calculation Method:**	Minimum Curvature
Design:	181103 Desert Rose 17-8 Federal 10H	**Database:**	EDM 5000.1 Single User Db

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	Easting (usft)	Northing (usft)	V. Sec (usft)	DLeg (°/100usft)
15,600.0	90.73	359.36	10,510.0	6,786.0	5,133.4	353.9	806,648.70	575,910.86	5,143.61	0.01
15,700.0	90.73	359.34	10,508.7	6,784.7	5,233.4	352.7	806,647.57	576,010.84	5,243.47	0.01
15,800.0	90.73	359.33	10,507.4	6,783.4	5,333.4	351.6	806,646.40	576,110.83	5,343.32	0.01
15,900.0	90.73	359.31	10,506.2	6,782.2	5,433.4	350.4	806,645.22	576,210.81	5,443.18	0.01
16,000.0	90.73	359.30	10,504.9	6,780.9	5,533.4	349.2	806,644.01	576,310.80	5,543.03	0.01
16,100.0	90.73	359.29	10,503.6	6,779.6	5,633.4	347.9	806,642.78	576,410.78	5,642.88	0.01
16,200.0	90.73	359.27	10,502.4	6,778.4	5,733.3	346.7	806,641.52	576,510.77	5,742.73	0.01
16,300.0	90.73	359.26	10,501.1	6,777.1	5,833.3	345.4	806,640.24	576,610.75	5,842.57	0.01
16,400.0	90.73	359.25	10,499.8	6,775.8	5,933.3	344.1	806,638.94	576,710.73	5,942.42	0.01
16,500.0	90.73	359.23	10,498.5	6,774.5	6,033.3	342.8	806,637.61	576,810.72	6,042.27	0.01
16,600.0	90.73	359.22	10,497.3	6,773.3	6,133.3	341.4	806,636.26	576,910.70	6,142.11	0.01
16,700.0	90.73	359.21	10,496.0	6,772.0	6,233.3	340.0	806,634.89	577,010.68	6,241.95	0.01
16,800.0	90.73	359.19	10,494.7	6,770.7	6,333.2	338.6	806,633.49	577,110.66	6,341.79	0.01
16,900.0	90.73	359.18	10,493.4	6,769.4	6,433.2	337.2	806,632.06	577,210.65	6,441.63	0.01
17,000.0	90.73	359.16	10,492.2	6,768.2	6,533.2	335.8	806,630.62	577,310.63	6,541.47	0.01
17,100.0	90.73	359.15	10,490.9	6,766.9	6,633.2	334.3	806,629.15	577,410.61	6,641.31	0.01
17,200.0	90.73	359.14	10,489.6	6,765.6	6,733.2	332.8	806,627.65	577,510.59	6,741.14	0.01
17,300.0	90.73	359.12	10,488.3	6,764.3	6,833.1	331.3	806,626.13	577,610.57	6,840.98	0.01
17,400.0	90.73	359.11	10,487.1	6,763.1	6,933.1	329.7	806,624.59	577,710.55	6,940.81	0.01
17,500.0	90.73	359.10	10,485.8	6,761.8	7,033.1	328.2	806,623.02	577,810.53	7,040.64	0.01
17,600.0	90.73	359.08	10,484.5	6,760.5	7,133.1	326.6	806,621.43	577,910.51	7,140.47	0.01
17,700.0	90.73	359.07	10,483.2	6,759.2	7,233.1	325.0	806,619.82	578,010.49	7,240.30	0.01
17,800.0	90.73	359.05	10,482.0	6,758.0	7,333.0	323.3	806,618.18	578,110.47	7,340.13	0.01
17,900.0	90.73	359.04	10,480.7	6,756.7	7,433.0	321.7	806,616.52	578,210.44	7,439.96	0.01
18,000.0	90.73	359.03	10,479.4	6,755.4	7,533.0	320.0	806,614.83	578,310.42	7,539.78	0.01
18,100.0	90.73	359.01	10,478.1	6,754.1	7,633.0	318.3	806,613.12	578,410.40	7,639.61	0.01

Company:	Caza Operating LLC	**Local Co-ordinate Reference:**	Well Desert Rose 17-8 Federal 10H
Project:	Desert Rose 17-8 Federal 10H	**TVD Reference:**	WELL @ 3724.0usft (Original Well Elev)
Site:	Desert Rose 17-8 Federal 10H	**MD Reference:**	WELL @ 3724.0usft (Original Well Elev)
Well:	Desert Rose 17-8 Federal 10H	**North Reference:**	Grid
Wellbore:	Desert Rose 17-8 Federal 10H	**Survey Calculation Method:**	Minimum Curvature
Design:	181103 Desert Rose 17-8 Federal 10H	**Database:**	EDM 5000.1 Single User Db

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	Easting (usft)	Northing (usft)	V. Sec (usft)	DLeg (°/100usft)
18,199.0	90.73	359.00	10,476.9	6,752.9	7,732.0	316.6	806,611.41	578,509.38	7,738.43	0.01
TD at 18199.0 - 5 1/2" Production Casing										

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
18,199.0	10,476.9	5 1/2" Production Casing	5-1/2	8-3/4
5,499.0	5,499.0	9 5/8" Intermediate Casing	9-5/8	12-1/4
120.0	120.0	20" Conductor	20	26
1,969.0	1,969.0	13 3/8" Surface Casing	13-3/8	17-1/2

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
10,268.4	10,244.0	2nd Bone Spring Sand		0.00	
9,625.9	9,607.0	1st Bone Spring Sand		0.00	
8,306.6	8,295.0	Bone Spring		0.00	
5,753.0	5,753.0	Cherry Canyon		0.00	
2,272.0	2,272.0	Top of Salt		0.00	
3,621.0	3,621.0	Base of Salt		0.00	
4,223.0	4,223.0	Capitan		0.00	
5,524.0	5,524.0	Delaware		0.00	
6,524.9	6,523.0	Brushy Canyon		0.00	
1,944.0	1,944.0	Rustler		0.00	

Company:	Caza Operating LLC	**Local Co-ordinate Reference:**	Well Desert Rose 17-8 Federal 10H
Project:	Desert Rose 17-8 Federal 10H	**TVD Reference:**	WELL @ 3724.0usft (Original Well Elev)
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Well:	Desert Rose 17-8 Federal 10H	**North Reference:**	Grid
Wellbore:	Desert Rose 17-8 Federal 10H	**Survey Calculation Method:**	Minimum Curvature
Design:	181103 Desert Rose 17-8 Federal 10H	**Database:**	EDM 5000.1 Single User Db

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
6,050.0	6,050.0	0.0	0.0	Start Build 3.00
6,250.0	6,249.6	-2.5	10.2	Start 3550.0 hold at 6250.0 MD
9,800.0	9,780.2	-92.3	370.2	Start Drop -3.00
10,000.0	9,979.8	-94.8	380.4	Start 80.0 hold at 10000.0 MD
10,080.0	10,059.8	-94.8	380.4	Start Build 11.23
10,888.0	10,570.0	421.9	380.4	Start Turn -0.01
18,199.0	10,476.9	7,732.0	316.6	TD at 18199.0

Checked By: _____ Approved By: _____ Date: _____

Project: Desert Rose 17-8 Federal 10H
Site: Desert Rose 17-8 Federal 10H
Well: Desert Rose 17-8 Federal 10H
Wellbore: Desert Rose 17-8 Federal 10H
Design: 181103 Desert Rose 17-8 Federal 10H

Caza Petroleum

G
T M

Azimuths to Grid North
True North: -0.46°
Magnetic North: 6.18°

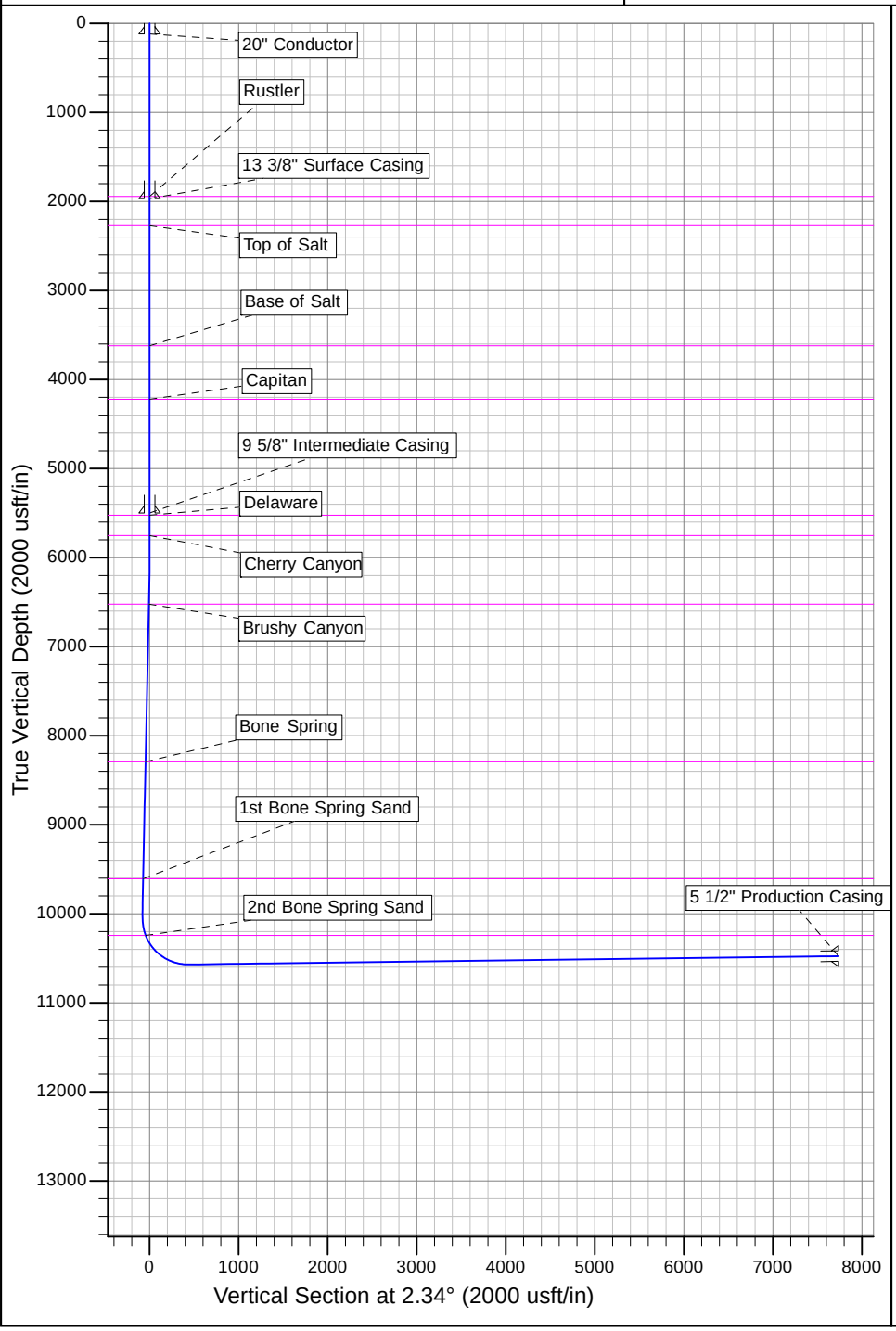
Magnetic Field
Strength: 48089.3snT
Dip Angle: 60.33°
Date: 11/3/2018
Model: IGRF2010

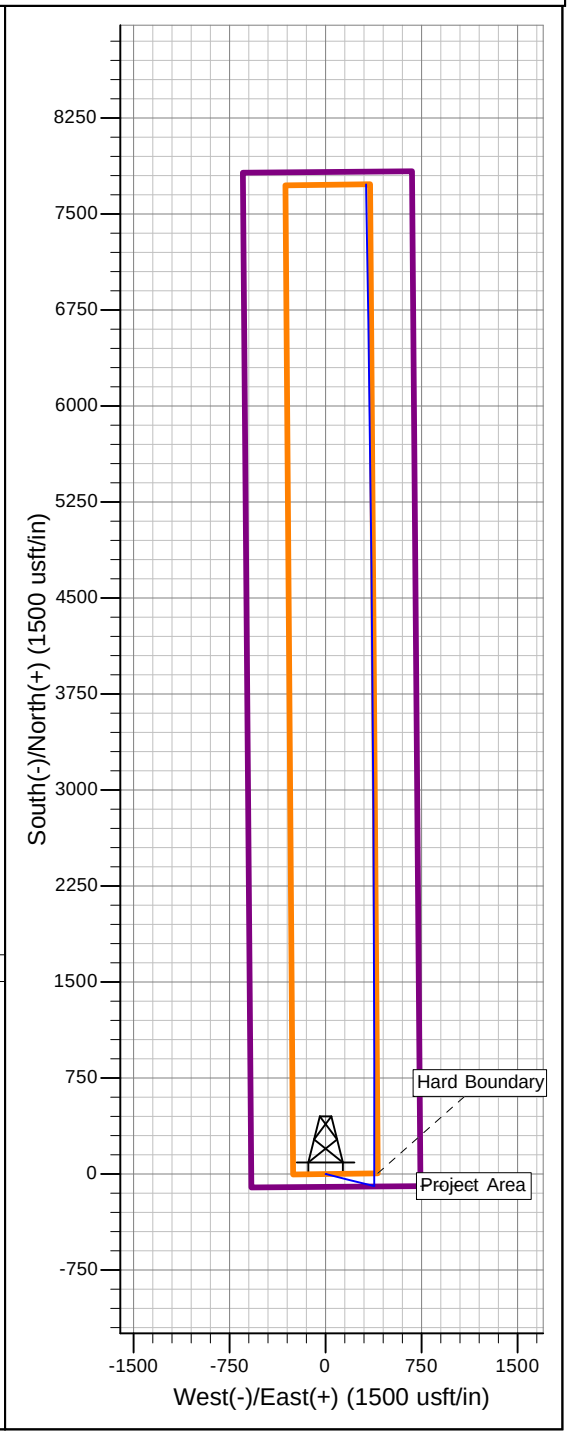
CASING DETAILS

TVD	MD	Name	Size
120.0	120.0	20" Conductor	20
1969.0	1969.0	13 3/8" Surface Casing	13-3/8
5499.0	5499.0	9 5/8" Intermediate Casing	9-5/8
10476.9	18199.0	5 1/2" Production Casing	5-1/2

FORMATION TOP DETAILS

TVDPath	MDPath	Formation	DipAngle	DipDir
1944.0	1944.0	Rustler	0.00	
2272.0	2272.0	Top of Salt	0.00	
3621.0	3621.0	Base of Salt	0.00	
4223.0	4223.0	Capitan	0.00	
5524.0	5524.0	Delaware	0.00	
5753.0	5753.0	Cherry Canyon	0.00	
6523.0	6524.9	Brushy Canyon	0.00	
8295.0	8306.6	Bone Spring	0.00	
9607.0	9625.9	1st Bone Spring Sand	0.00	
10244.0	10268.4	2nd Bone Spring Sand	0.00	





Design Plan, Operating Plan and Maintenance Plan, and Closure Plan for the OCD form C-144

Design Plan:

Fluid and cuttings coming from drilling operations will pass over the shale shaker with the cuttings going to the haul off bin and the cleaned fluid returning to the working steel pits.

Equipment Includes:

1-670bbl steel working pit
2-100bbl steel working suction pits
2-500bbl steel tanks
2-20yd^3 steel haul off bins
2-pumps (HHF-1600)
2-Shale shakers
1-Centrifuge
1-Desilter/Desander

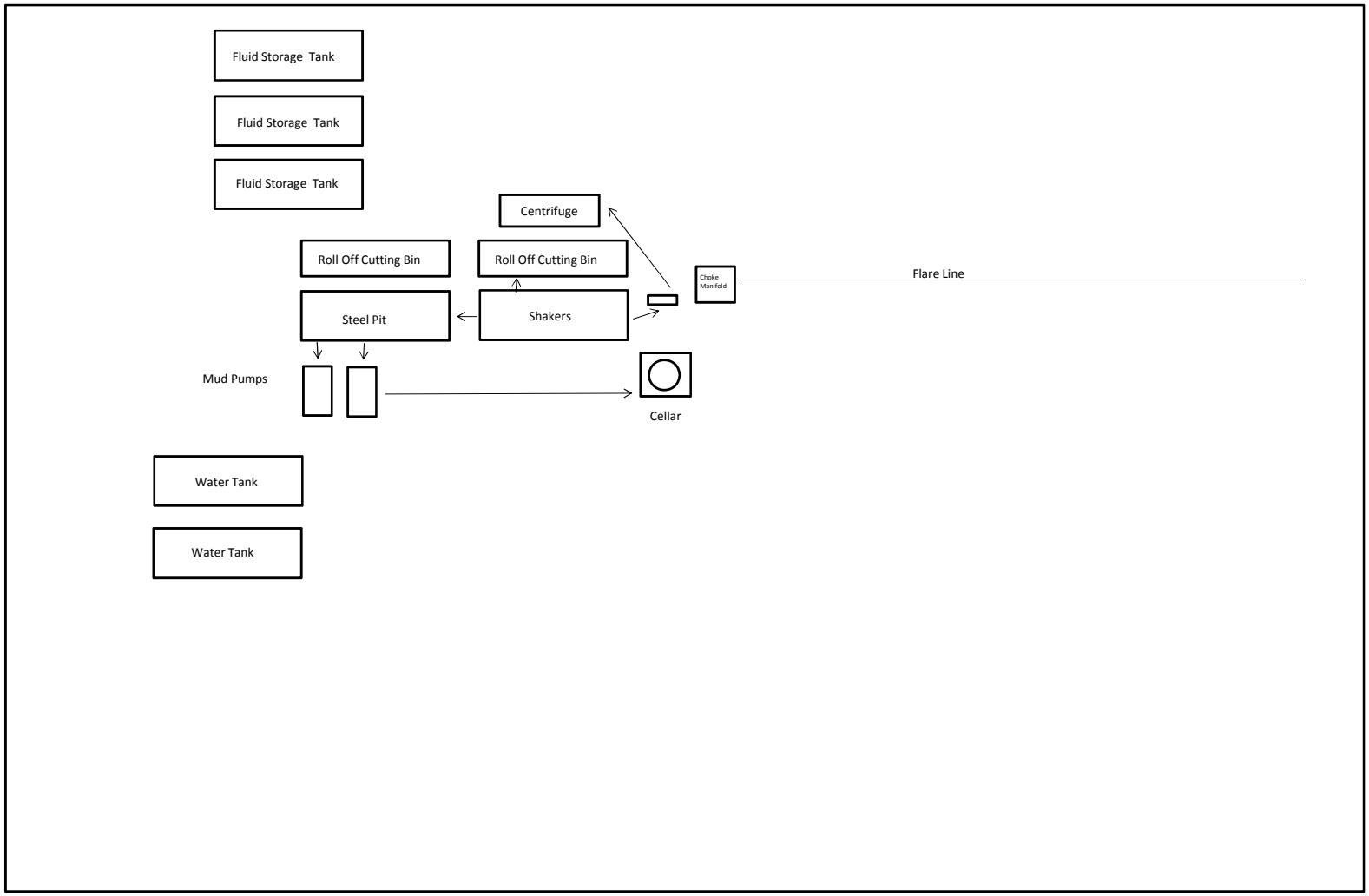
Operating and Maintenance Plan:

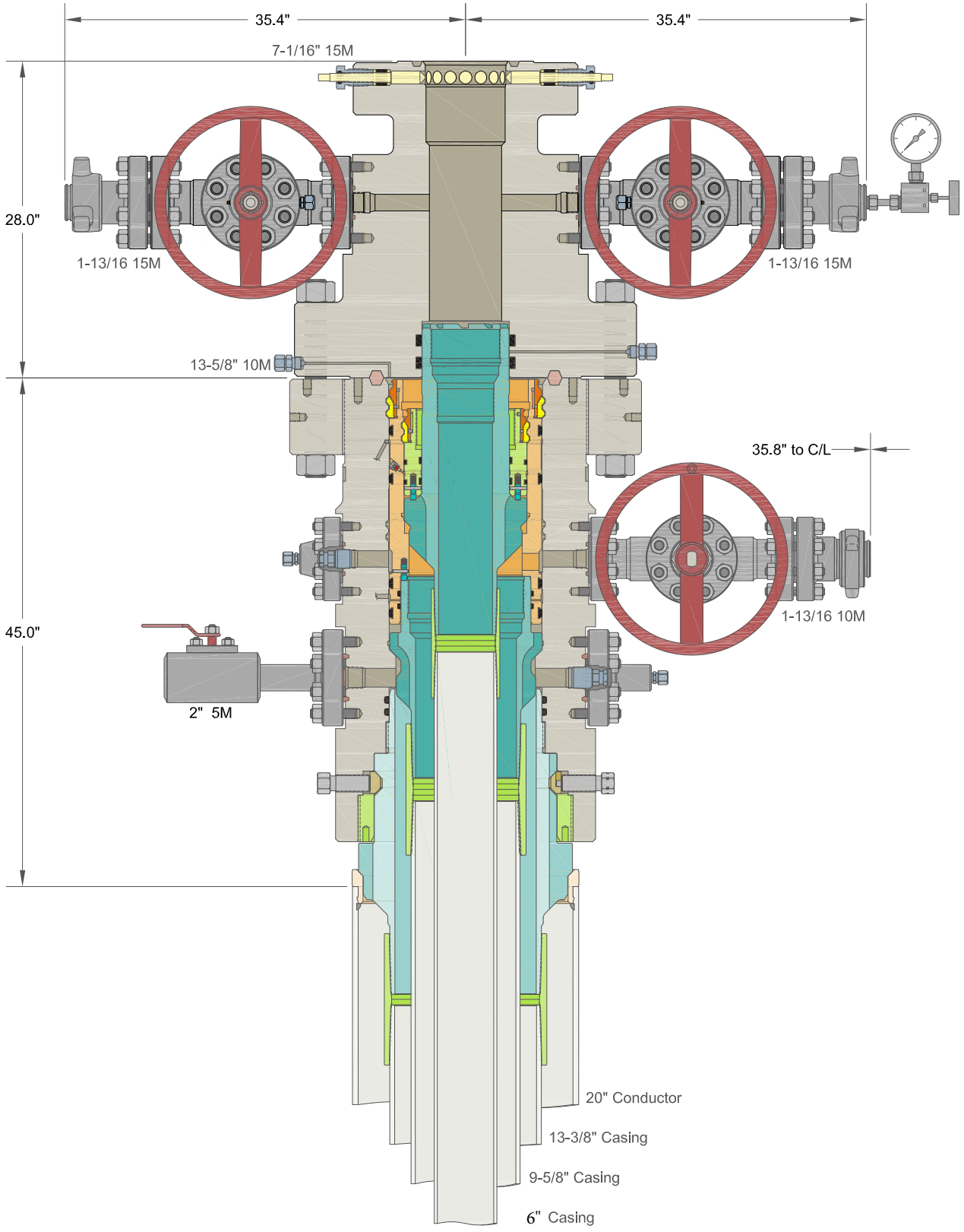
Inspection to occur every tour for proper operation of system and individual components. If any problems are found they will be repaired and/or corrected immediately.

Closure Plan:

All haul off bins containing cuttings will be removed from location and hauled to R-360 (NM-01-0006) disposal site located 30 miles east of Carlsbad.

Closed Loop Diagram Design Plan





ALL DIMENSIONS APPROXIMATE

CACTUS WELLHEAD LLC

CAZA PETROLEUM
PERMIAN BASIN

13-3/8" x 9-5/8" x 5-1/2" MBU-3T-CFL-R-DBLO Wellhead System
With 13-5/8" 10M x 7-1/16" 15M CTH-DBLHPS Tubing Head
And 13-3/8", 9-5/8" & 5-1/2" Mandrel Casing Hangers

DRAWN	DLE	25SEP19
APPRV		

DRAWING NO. ODE0003135

APD ID: 10400038921 **Submission Date:** 04/05/2019

Operator Name: CAZA OPERATING LLC

Well Name: DESERT ROSE 17-8 FEDERAL **Well Number:** 10H

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

Section 1 - General

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

Section 2 - Lined Pits

Would you like to utilize Lined Pit PWD options? NO

Produced Water Disposal (PWD) Location:

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

Lined pit PWD on or off channel:

Lined pit PWD discharge volume (bbl/day):

Lined pit specifications:

Pit liner description:

Pit liner manufacturers information:

Precipitated solids disposal:

Decribe precipitated solids disposal:

Precipitated solids disposal permit:

Lined pit precipitated solids disposal schedule:

Lined pit precipitated solids disposal schedule attachment:

Lined pit reclamation description:

Lined pit reclamation attachment:

Leak detection system description:

Leak detection system attachment:

Operator Name: CAZA OPERATING LLC

Well Name: DESERT ROSE 17-8 FEDERAL **Well Number:** 10H

Lined pit Monitor description:

Lined pit Monitor attachment:

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

Is the reclamation bond a rider under the BLM bond?

Lined pit bond number:

Lined pit bond amount:

Additional bond information attachment:

Section 3 - Unlined Pits

Would you like to utilize Unlined Pit PWD options? NO

Produced Water Disposal (PWD) Location:

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

Unlined pit PWD on or off channel:

Unlined pit PWD discharge volume (bbl/day):

Unlined pit specifications:

Precipitated solids disposal:

Decribe precipitated solids disposal:

Precipitated solids disposal permit:

Unlined pit precipitated solids disposal schedule:

Unlined pit precipitated solids disposal schedule attachment:

Unlined pit reclamation description:

Unlined pit reclamation attachment:

Unlined pit Monitor description:

Unlined pit Monitor attachment:

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

Beneficial use user confirmation:

Estimated depth of the shallowest aquifer (feet):

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

TDS lab results:

Geologic and hydrologic evidence:

State authorization:

Unlined Produced Water Pit Estimated percolation:

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

Operator Name: CAZA OPERATING LLC

Well Name: DESERT ROSE 17-8 FEDERAL **Well Number:** 10H

Is the reclamation bond a rider under the BLM bond?

Unlined pit bond number:

Unlined pit bond amount:

Additional bond information attachment:

Section 4 - Injection

Would you like to utilize Injection PWD options? NO

Produced Water Disposal (PWD) Location:

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

Injection PWD discharge volume (bbl/day):

Injection well mineral owner:

Injection well type:

Injection well number: **Injection well name:**

Assigned injection well API number? **Injection well API number:**

Injection well new surface disturbance (acres):

Minerals protection information:

Mineral protection attachment:

Underground Injection Control (UIC) Permit?

UIC Permit attachment:

Section 5 - Surface Discharge

Would you like to utilize Surface Discharge PWD options? NO

Produced Water Disposal (PWD) Location:

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

Surface discharge PWD discharge volume (bbl/day):

Surface Discharge NPDES Permit?

Surface Discharge NPDES Permit attachment:

Surface Discharge site facilities information:

Surface discharge site facilities map:

Section 6 - Other

Would you like to utilize Other PWD options? NO

Produced Water Disposal (PWD) Location:

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

Other PWD discharge volume (bbl/day):

Operator Name: CAZA OPERATING LLC

Well Name: DESERT ROSE 17-8 FEDERAL **Well Number:** 10H

Other PWD type description:

Other PWD type attachment:

Have other regulatory requirements been met?

Other regulatory requirements attachment:

AFMSS

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

Bond Info Data Report

03/31/2020

APD ID: 10400038921

Submission Date: 04/05/2019

Operator Name: CAZA OPERATING LLC

Well Name: DESERT ROSE 17-8 FEDERAL

Well Number: 10H

Well Type: OIL WELL

Well Work Type: Drill

Highlighted data reflects the most recent changes

Show Final Text

Bond Information

Federal/Indian APD: FED

BLM Bond number: NMB000471

BIA Bond number:

Do you have a reclamation bond? NO

Is the reclamation bond a rider under the BLM bond?

Is the reclamation bond BLM or Forest Service?

BLM reclamation bond number:

Forest Service reclamation bond number:

Forest Service reclamation bond attachment:

Reclamation bond number:

Reclamation bond amount:

Reclamation bond rider amount:

Additional reclamation bond information attachment:

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, New Mexico 87505

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

OCD – HOBBS
06/11/2020
RECEIVED

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number	Pool Code	Pool Name
30-025-47330	24250	Featherstone; Bone Spring

Property Code	Property Name	Well Number
317383	DESERT ROSE 17-8 FEDERAL	10H

OGRID No.	Operator Name	Elevation
249099	CAZA OPERATING, LLC	3702'

Surface Location

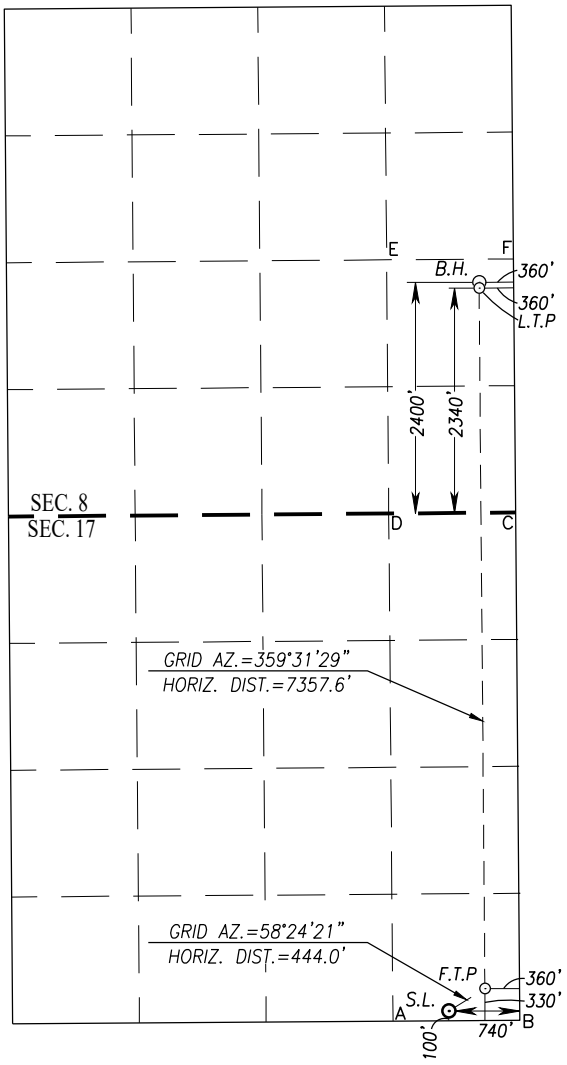
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
P	17	20-S	35-E		100	SOUTH	740	EAST	LEA

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
I	8	20-S	35-E		2400	SOUTH	360	EAST	LEA

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.
240			

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



BOTTOM HOLE LOCATION
NAD 83 NME
Y= 578366.0 N
X= 806611.9 E
LAT.=32.587030° N
LONG.=103.472058° W

BOTTOM HOLE LOCATION
NAD 27 NME
Y= 578303.3 N
X= 765430.7 E
LAT.=32.586906° N
LONG.=103.471570° W

LAST TAKE POINT
NAD 83 NME
Y= 578306.1 N
X= 806612.4 E
LAT.=32.586865° N
LONG.=103.472058° W

LAST TAKE POINT
NAD 27 NME
Y= 578243.3 N
X= 765431.2 E
LAT.=32.586741° N
LONG.=103.471570° W

CORNER COORDINATES TABLE
NAD 27 NME
A – Y= 570611.1 N, X= 764533.6 E
B – Y= 570620.1 N, X= 765854.1 E
C – Y= 575906.8 N, X= 765810.9 E
D – Y= 575896.2 N, X= 764490.0 E
E – Y= 578537.7 N, X= 764467.9 E
F – Y= 578548.0 N, X= 765788.5 E

CORNER COORDINATES TABLE
NAD 83 NME
A – Y= 570673.6 N, X= 805715.0 E
B – Y= 570682.6 N, X= 807035.5 E
C – Y= 575969.5 N, X= 806992.2 E
D – Y= 575958.9 N, X= 805671.3 E
E – Y= 578600.5 N, X= 805649.1 E
F – Y= 578610.7 N, X= 806969.7 E

FIRST TAKE POINT
NAD 83 NME
Y= 571010.1 N
X= 806672.9 E
LAT.=32.566811° N
LONG.=103.472053° W

FIRST TAKE POINT
NAD 27 NME
Y= 570947.6 N
X= 765491.5 E
LAT.=32.566687° N
LONG.=103.471566° W

GEODETIC COORDINATES
NAD 83 NME
SURFACE LOCATION
Y= 570777.6 N
X= 806294.8 E
LAT.=32.566180° N
LONG.=103.473286° W

GEODETIC COORDINATES
NAD 27 NME
SURFACE LOCATION
Y= 570715.0 N
X= 765113.4 E
LAT.=32.566057° N
LONG.=103.472799° W

OPERATOR CERTIFICATION

I hereby certify that the information 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 mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

11/03/2018
Signature Date

Steve Morris
Printed Name

steve.morris@morcorengineering.com
E-mail Address

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.

SEPTEMBER 29, 2018
Date of Survey
Signature & Seal of Professional Surveyor:

RONALD J. EIDSON
NEW MEXICO
3239
REGISTERED PROFESSIONAL SURVEYOR

Ronald J Eidson 11/02/2018
Certificate Number Gary G. Eidson 12641
Ronald J. Eidson 3239

LSL JWSC W.O.: 18.11.1064

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

OCD – HOBBS
06/11/2020
RECEIVED

Submit Original
to Appropriate
District Office

GAS CAPTURE PLAN

Date: 11/05/2018

■ Original
☐ Amended - Reason for Amendment:

Operator & OGRID No.: 249099

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
DESERT ROSE 17-8 FEDERAL 10H	30-025-47330	P-17-20S-35E	100'FSL 740'FEL	1000	flared	

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 Verdsado and will be connected to Versado low/high pressure gathering system located in Lea County, New Mexico. It will require 1000' of pipeline to connect the facility to low/high pressure gathering system. Caza provides (periodically) to Versado a drilling, completion and estimated first production date for wells that are scheduled to be drilled in the foreseeable future. In addition, Caza and Versado have periodic conference calls to discuss changes to drilling and completion schedules. Gas from these wells will be processed at Versado Processing Plant located in Sec.29, Twn.21S, Rng.37E, Lea County, New Mexico. 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 Versado system at that time. Based on current information, it is Caza'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