

Form 3160-3  
(June 2015)

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

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT  
**APPLICATION FOR PERMIT TO DRILL OR REENTER**

1a. Type of work: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER		5. Lease Serial No. NMNM119759
1b. Type of Well: <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other		6. If Indian, Allottee or Tribe Name
1c. Type of Completion: <input type="checkbox"/> Hydraulic Fracturing <input checked="" type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone		7. If Unit or CA Agreement, Name and No.
2. Name of Operator CAZA OPERATING LLC [249099]		8. Lease Name and Well No. IGLOO 19-18 STATE FED COM [326170] 11H
3a. Address 200 N. Loraine Street, Suite 1550, Midland , TX 79701	3b. Phone No. (include area code) (432) 682-7424	9. API Well No. 30-025-50389
4. Location of Well (Report location clearly and in accordance with any State requirements. *) At surface SESE / 100 FSL / 872 FEL / LAT 32.5516615 / LONG -103.490869 At proposed prod. zone NENE / 20 FNL / 777 FEL / LAT 32.5803756 / LONG -103.4905615		10. Field and Pool, or Exploratory LEA BONE SPRING SOUTH/LEA BONE 11. Sec., T. R. M. or Blk. and Survey or Area SEC 19/T20S/R35E/NMP
14. Distance in miles and direction from nearest town or post office* 26 miles		12. County or Parish LEA
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) 100 feet		13. State NM
16. No of acres in lease		17. Spacing Unit dedicated to this well 320.0
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 235 feet		20. BLM/BIA Bond No. in file FED: NMB000471
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3703 feet		22. Approximate date work will start* 05/31/2021
		23. Estimated duration 30 days
24. Attachments		

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

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

25. Signature (Electronic Submission)	Name (Printed/Typed) STEVE MORRIS / Ph: (432) 682-7424	Date 12/07/2020
Title Engineer		
Approved by (Signature) (Electronic Submission)	Name (Printed/Typed) Cody Layton / Ph: (575) 234-5959	Date 05/05/2022
Title Assistant Field Manager Lands & Minerals	Office Carlsbad Field Office	

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

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

NGMP Rec 06/24/2022

SL

(Continued on page 2)



KZ  
07/28/2022

\*(Instructions on page 2)

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

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

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

WELL LOCATION AND ACREAGE DEDICATION PLAT

<sup>1</sup> API Number		<sup>2</sup> Pool Code 37580		<sup>3</sup> Pool Name LEA BONE SPRING; SOUTH	
<sup>4</sup> Property Code 313780		<sup>5</sup> Property Name IGLOO 19-18 STATE FED COM			<sup>6</sup> Well Number 11H
<sup>7</sup> OGRID No. 249099		<sup>8</sup> Operator Name CAZA OPERATING LLC			<sup>9</sup> Elevation 3703'

<sup>10</sup> 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	19	20S	35E		100	SOUTH	872	EAST	LEA

<sup>11</sup> 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
A	18	20S	35E		20	NORTH	777	EAST	LEA

<sup>12</sup> Dedicated Acres 320.0	<sup>13</sup> Joint or Infill	<sup>14</sup> Consolidation Code	<sup>15</sup> Order No.
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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.

**CORNER COORDINATES NAD 83, SPCS NM EAST**  
 A - X: 801708.43' / Y: 575929.48'  
 B - X: 801753.54' / Y: 570646.63'  
 C - X: 801792.16' / Y: 565360.44'  
 D - X: 800473.12' / Y: 565347.09'  
 E - X: 800433.03' / Y: 570631.28'  
 F - X: 800388.50' / Y: 575912.42'

**CORNER COORDINATES NAD 27, SPCS NM EAST**  
 A - X: 760527.27' / Y: 575866.73'  
 B - X: 760572.23' / Y: 570584.05'  
 C - X: 760610.69' / Y: 565298.03'  
 D - X: 759291.69' / Y: 565284.67'  
 E - X: 759251.75' / Y: 570568.69'  
 F - X: 759207.37' / Y: 575849.65'

**BOTTOM HOLE LOCATION**  
 20' FNL 777' FEL, SECTION 18  
 NAD 83, SPCS NM EAST  
 X: 800931.64' / Y: 575899.47'  
 LAT: 32.58037562N / LON: 103.49056157W  
 NAD 27, SPCS NM EAST  
 X: 759750.50' / Y: 575836.71'  
 LAT: 32.58025180N / LON: 103.49007340W

**LAST TAKE POINT**  
 100' FNL 777' FEL, SECTION 18  
 NAD 83, SPCS NM EAST  
 X: 800932.28' / Y: 575819.47'  
 LAT: 32.58015573N / LON: 103.49056157W  
 NAD 27, SPCS NM EAST  
 X: 759751.13' / Y: 575756.71'  
 LAT: 32.58003191N / LON: 103.49007340W

**KICK OFF POINT/FIRST TAKE POINT**  
 100' FSL 777' FEL, SECTION 19  
 NAD 83, SPCS NM EAST  
 X: 801014.40' / Y: 565453.07'  
 LAT: 32.55166232N / LON: 103.49056142W  
 NAD 27, SPCS NM EAST  
 X: 759832.96' / Y: 565390.65'  
 LAT: 32.55153853N / LON: 103.49007439W

**SURFACE HOLE LOCATION**  
 100' FSL 872' FEL, SECTION 19  
 NAD 83, SPCS NM EAST  
 X: 800919.61' / Y: 565452.03'  
 LAT: 32.55166154N / LON: 103.49086905W  
 NAD 27, SPCS NM EAST  
 X: 759738.17' / Y: 565389.62'  
 LAT: 32.55153775N / LON: 103.49038201W

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

Signature: *[Signature]* Date: 10/16/2020  
 Printed Name: Steve Morris  
 E-mail Address: steve.morris@morcorengineering.com

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

OCTOBER 9, 2020  
 Date of Survey  
 Signature and Seal of Professional Surveyor: *[Signature]*  
 Certificate Number: DAVID W. MYERS 11403

Distances/areas relative to NAD 83 Combined Scale Factor: 0.99981205 Convergence Angle: 00°26'57.22000"

## PECOS DISTRICT DRILLING CONDITIONS OF APPROVAL

<b>OPERATOR'S NAME:</b>	Caza Operating LLC
<b>WELL NAME &amp; NO.:</b>	Igloo 19-18 State Fed Com 11H
<b>LOCATION:</b>	Sec 19-20S-35E-NMP
<b>COUNTY:</b>	Lea County, New Mexico

COA

H2S	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
Potash	<input checked="" type="radio"/> None	<input type="radio"/> Secretary	<input type="radio"/> R-111-P
Cave/Karst Potential	<input checked="" type="radio"/> Low	<input type="radio"/> Medium	<input type="radio"/> High
Cave/Karst Potential	<input type="radio"/> Critical		
Variance	<input type="radio"/> None	<input checked="" type="radio"/> Flex Hose	<input type="radio"/> Other
Wellhead	<input checked="" type="radio"/> Conventional	<input type="radio"/> Multibowl	<input type="radio"/> Both
Other	<input type="checkbox"/> 4 String Area	<input checked="" type="checkbox"/> Capitan Reef	<input type="checkbox"/> WIPP
Other	<input type="checkbox"/> Fluid Filled	<input type="checkbox"/> Cement Squeeze	<input type="checkbox"/> Pilot Hole
Special Requirements	<input type="checkbox"/> Water Disposal	<input checked="" type="checkbox"/> COM	<input type="checkbox"/> Unit

### A. HYDROGEN SULFIDE

A Hydrogen Sulfide (H2S) Drilling Plan shall be activated 500 feet prior to drilling into the **Bone Spring, Pennsylvanian, and Devonians** 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 **13-3/8** inch surface casing shall be set at approximately 2150 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.
2. The minimum required fill of cement behind the **9-5/8** inch intermediate casing is:
    - Cement to surface. If cement does not circulate see B.1.a, c-d above.
    - ❖ In Capitan Reef Areas if cement does not circulate to surface on the first two casing strings, the cement on the 3rd casing string must come to surface.
    - ❖ **Special Capitan Reef requirements.** If lost circulation (50% or greater) occurs below the Base of the Salt, the operator shall do the following:
      - Switch to fresh water mud to protect the Capitan Reef and use fresh water mud until setting the intermediate casing. The appropriate BLM office is to be notified for a PET to witness the switch to fresh water.
      - Daily drilling reports from the Base of the Salt to the setting of the intermediate casing are to be submitted to the BLM CFO engineering staff via e-mail by 0800 hours each morning. Any lost circulation encountered is to be recorded on these drilling reports. The daily drilling report should show mud volume per shift/tour. Failure to submit these reports will result in an Incidence of Non-Compliance being issued for failure to comply with the Conditions of Approval. If not already planned, the operator shall run a caliper survey for the intermediate well bore and submit to the appropriate BLM office.
  3. The minimum required fill of cement behind the **6** inch production casing is:
    - Cement should tie-back at least **50 feet** on top of Capitan Reef top **or 200 feet** into the previous casing, whichever is greater. If cement does not circulate see B.1.a, c-d above.  
**Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst, potash or capitan reef.**

### C. PRESSURE CONTROL

1. Variance approved to use flex line from BOP to choke manifold. Manufacturer's specification to be readily available. No external damage to flex line. Flex line to be installed as straight as possible (no hard bends).'
2. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **5000 (5M)** psi.

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

#### **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 2<sup>nd</sup> 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 integrity 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 integrity 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.



# Operator Certification Data Report

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

05/12/2022

## Operator

*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:** STEVE MORRIS

**Signed on:** 12/07/2020

**Title:** Engineer

**Street Address:** 14102 WCR 173

**City:** ODESSA

**State:** TX

**Zip:** 79766

**Phone:** (985)415-9729

**Email address:** steve.morris@morcoreengineering.com

## Field

**Representative Name:** STEVE MORRIS

**Street Address:** 200 N. LORRAINE ST 1550

**City:** MIDLAND

**State:** TX

**Zip:** 79701

**Phone:** (985)415-9729

**Email address:** steve.morris@morcoreengineering.com



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

# Application Data

05/12/2022

APD ID: 10400063695

Submission Date: 12/07/2020

Highlighted data reflects the most recent changes  
[Show Final Text](#)

Operator Name: CAZA OPERATING LLC

Well Name: IGLOO 19-18 STATE FED COM

Well Number: 11H

Well Type: OIL WELL

Well Work Type: Drill

## Section 1 - General

APD ID: 10400063695

Tie to previous NOS?

Submission Date: 12/07/2020

BLM Office: Carlsbad

User: STEVE MORRIS

Title: Engineer

Federal/Indian APD: FED

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

Lease number: NMNM119759

Lease Acres:

Surface access agreement in place?

Allotted?

Reservation:

Agreement in place? NO

Federal or Indian agreement:

Agreement number:

Agreement name:

Keep application confidential? Y

Permitting Agent? YES

APD Operator: CAZA OPERATING LLC

Operator letter of

## Operator Info

Operator Organization Name: CAZA OPERATING LLC

Operator Address: 200 NORTH LORRAINE SUITE 1550

Zip: 79701

Operator PO Box:

Operator City: MIDLAND

State: TX

Operator Phone: (432)638-8475

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: IGLOO 19-18 STATE FED COM

Well Number: 11H

Well API Number:

Field/Pool or Exploratory? Field and Pool

Field Name: LEA BONE SPRING SOUTH  
Pool Name: LEA BONE SPRING SOUTH

**Operator Name:** CAZA OPERATING LLC

**Well Name:** IGLOO 19-18 STATE FED COM

**Well Number:** 11H

**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?** Y **New surface disturbance?** N

**Type of Well Pad:** MULTIPLE WELL

**Multiple Well Pad Name:** Igloo **Number:** 1H  
19 State

**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:** 26 Miles

**Distance to nearest well:** 235 FT

**Distance to lease line:** 100 FT

**Reservoir well spacing assigned acres Measurement:** 320 Acres

**Well plat:** IGLOO\_19\_18\_STATE\_FED\_COM\_11H\_\_C102\_signed\_20201207154708.pdf

**Well work start Date:** 05/31/2021

**Duration:** 30 DAYS

**Section 3 - Well Location Table**

**Survey Type:** RECTANGULAR

**Describe Survey Type:**

**Datum:** NAD83

**Vertical Datum:** NAVD88

**Survey number:** R4021-011

**Reference Datum:** GROUND LEVEL

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
SHL Leg #1	100	FSL	872	FEL	20S	35E	19	Aliquot SESE	32.55166 15	- 103.4908 69	LEA	NEW MEXI CO	NEW MEXI CO	S	STATE	370 3	0	0	Y
KOP Leg #1	100	FSL	777	FEL	20S	35E	19	Aliquot SESE	32.55166 23	- 103.4905 614	LEA	NEW MEXI CO	NEW MEXI CO	S	STATE	- 568 1	939 3	938 4	Y
PPP Leg #1-1	100	FSL	777	FEL	20S	35E	19	Aliquot SESE	32.55166 23	- 103.4905 614	LEA	NEW MEXI CO	NEW MEXI CO	S	STATE	- 624 7	102 90	995 0	Y

**Operator Name:** CAZA OPERATING LLC

**Well Name:** IGL00 19-18 STATE FED COM

**Well Number:** 11H

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
PPP Leg #1-2	0	FSL	777	FEL	20S	35E	18	Aliquot SESE	32.565911	-103.490553	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 119759	-6155	14956	9858	Y
EXIT Leg #1	100	FNL	777	FEL	20S	35E	18	Aliquot NENE	32.5801557	-103.4905615	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 119759	-6250	20120	9953	Y
BHL Leg #1	20	FNL	777	FEL	20S	35E	18	Aliquot NENE	32.5803756	-103.4905615	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 119759	-6251	20220	9954	Y



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

# Drilling Plan Data Report

05/12/2022

APD ID: 10400063695

Submission Date: 12/07/2020

Highlighted data  
reflects the most  
recent changes

Operator Name: CAZA OPERATING LLC

Well Name: IGLOO 19-18 STATE FED COM

Well Number: 11H

Well Type: OIL WELL

Well Work Type: Drill

[Show Final Text](#)

## Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical	Measured Depth	Lithologies	Mineral Resources	Producing Formatio
1223080	---	3703	0	0	ALLUVIUM	NONE	N
1223081	RUSTLER	1842	1861	1861	DOLOMITE, LIMESTONE, SILTSTONE	USEABLE WATER	N
1223082	TOP SALT	1474	2229	2229	SALT	NONE	N
1223083	BASE OF SALT	231	3472	3472	SALT	NONE	N
1223084	YATES	-79	3782	3782	LIMESTONE	NONE	N
1223085	CAPITAN REEF	-340	4043	4043	ANHYDRITE, LIMESTONE	USEABLE WATER	N
1223086	DELAWARE	-1951	5654	5654	CONGLOMERATE, LIMESTONE, SANDSTONE	NONE	N
1223087	CHERRY CANYON	-2162	5865	5868	CONGLOMERATE, LIMESTONE, SANDSTONE	NONE	N
1223088	BRUSHY CANYON	-3099	6802	6802	CONGLOMERATE, LIMESTONE, SANDSTONE	NATURAL GAS, OIL	N
1223089	BONE SPRING	-4925	8628	8631	CONGLOMERATE, LIMESTONE, SANDSTONE	NATURAL GAS, OIL	N
1223090	BONE SPRING 1ST	-6143	9846	9952	CONGLOMERATE, LIMESTONE, SANDSTONE	NATURAL GAS, OIL	Y

## Section 2 - Blowout Prevention

Pressure Rating (PSI): 5M

Rating Depth: 12000

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 10000 (10M) psi. 10M system requires

**Operator Name:** CAZA OPERATING LLC**Well Name:** IGLOO 19-18 STATE FED COM**Well Number:** 11H

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:**

IGLOO\_19\_18\_STATE\_FED\_COM\_11H\_\_5M\_Choke\_Schematic\_20201207160913.pdf

IGLOO\_19\_18\_STATE\_FED\_COM\_11H\_\_Coflex\_Hyd\_Test\_Cert\_20201207160938.pdf

IGLOO\_19\_18\_STATE\_FED\_COM\_11H\_\_Coflex\_Hose\_Test\_Chart\_20201207160948.pdf

**BOP Diagram Attachment:**

IGLOO\_19\_18\_STATE\_FED\_COM\_11H\_\_5M\_BOP\_Schematic\_20201207161001.pdf

IGLOO\_19\_18\_STATE\_FED\_COM\_11H\_\_Well\_Control\_20201207161016.pdf

IGLOO\_19\_18\_STATE\_FED\_COM\_11H\_\_Multi\_Bowl\_Wellhead\_20201207161030.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	3703	3583	120	H-40	94	ST&C							
2	SURFACE	17.5	13.375	NEW	API	N	0	2150	0	2150	3703	1553	2150	J-55	54.5	ST&C	1.13	1.61	DRY	4.36	DRY	4.36	
3	INTERMEDIATE	12.25	9.625	NEW	API	N	0	5653	0	5653	3703	-1950	5653	HCL-80	40	BUTT	1.44	1.13	DRY	4.05	DRY	4.05	
4	PRODUCTION	8.5	6.0	NEW	API	N	0	20220	0	9754	3703	-6051	20220	P-110	24.5	BUTT	2.26	2.54	DRY	3.36	DRY	3.36	

**Operator Name:** CAZA OPERATING LLC

**Well Name:** IGLOO 19-18 STATE FED COM

**Well Number:** 11H

**Casing Attachments**

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

**Inspection Document:**

**Spec Document:**

**Tapered String Spec:**

**Casing Design Assumptions and Worksheet(s):**

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

**Inspection Document:**

**Spec Document:**

**Tapered String Spec:**

**Casing Design Assumptions and Worksheet(s):**

IGLOO\_19\_18\_STATE\_FED\_COM\_11H\_\_\_Casing\_and\_Cement\_Design\_20201207161658.pdf

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

**Inspection Document:**

**Spec Document:**

**Tapered String Spec:**

**Casing Design Assumptions and Worksheet(s):**

IGLOO\_19\_18\_STATE\_FED\_COM\_11H\_\_\_Casing\_and\_Cement\_Design\_20201207161644.pdf

**Operator Name:** CAZA OPERATING LLC

**Well Name:** IGLOO 19-18 STATE FED COM

**Well Number:** 11H

**Casing Attachments**

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

**Inspection Document:**

**Spec Document:**

**Tapered String Spec:**

**Casing Design Assumptions and Worksheet(s):**

IGLOO\_19\_18\_STATE\_FED\_COM\_11H\_\_\_Casing\_and\_Cement\_Design\_20201207161753.pdf

**Section 4 - Cement**

String Type	Lead/Tail	Stage Tool Depth	Top MID	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	1850	1350	1.93	13.5	2065	100	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		1865	2150	309	1.35	14.8	417	100	Class C	CaCl2
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:** IGLOO 19-18 STATE FED COM

**Well Number:** 11H

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	5153	370	2.13	12.6	810	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		5153	5653	232	1.35	14.8	313	100	Class C	CaCl2
PRODUCTION	Lead		0	9460	2250	2.38	11.8	5355	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
PRODUCTION	Tail		9460	2022 0	2300	1.62	13.2	3726	50	Class H	(15:61:11) Poz (Fly Ash):Class H Cement:CSE-2 + 4% Sodium Chloride + 3 lbs/sack LCM-1 + 0.6% bwoc FL-25 + FP-6L + 0.005% bwoc Static Free

**Operator Name:** CAZA OPERATING LLC

**Well Name:** IGLOO 19-18 STATE FED COM

**Well Number:** 11H

### 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

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	0.1	9.5	2	0	0	
2150	5653	SALT SATURATED	9.2	10	75	0.1	9.5	2	150000	0	
5653	9754	OIL-BASED MUD	9.2	10	75	0.4	9.5	6	135000	18	

**Operator Name:** CAZA OPERATING LLC**Well Name:** IGLOO 19-18 STATE FED COM**Well Number:** 11H

## Section 6 - Test, Logging, Coring

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

none

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

GAMMA RAY LOG,DIRECTIONAL SURVEY,MEASUREMENT WHILE DRILLING,MUD LOG/GEOLOGICAL LITHOLOGY LOG,

**Coring operation description for the well:**

none

## Section 7 - Pressure

**Anticipated Bottom Hole Pressure:** 5111**Anticipated Surface Pressure:** 2921**Anticipated Bottom Hole Temperature(F):** 154**Anticipated abnormal pressures, temperatures, or potential geologic hazards?** NO**Describe:****Contingency Plans geohazards description:****Contingency Plans geohazards****Hydrogen Sulfide drilling operations plan required?** YES**Hydrogen sulfide drilling operations**

IGLOO\_19\_18\_STATE\_FED\_COM\_11H\_\_\_H2S\_Plan\_20201207163049.pdf

## Section 8 - Other Information

**Proposed horizontal/directional/multi-lateral plan submission:**

20201016\_Igloo\_19\_18\_State\_Fed\_Com\_11H\_\_\_Plot\_20201207163115.pdf

20201016\_Igloo\_19\_18\_State\_Fed\_Com\_11H\_\_\_Plan\_1\_20201207163116.pdf

**Other proposed operations facets description:****Other proposed operations facets attachment:**

IGLOO\_19\_18\_STATE\_FED\_COM\_11H\_\_\_Closed\_Loop\_Diagram\_Design\_Plan\_20201207163141.pdf

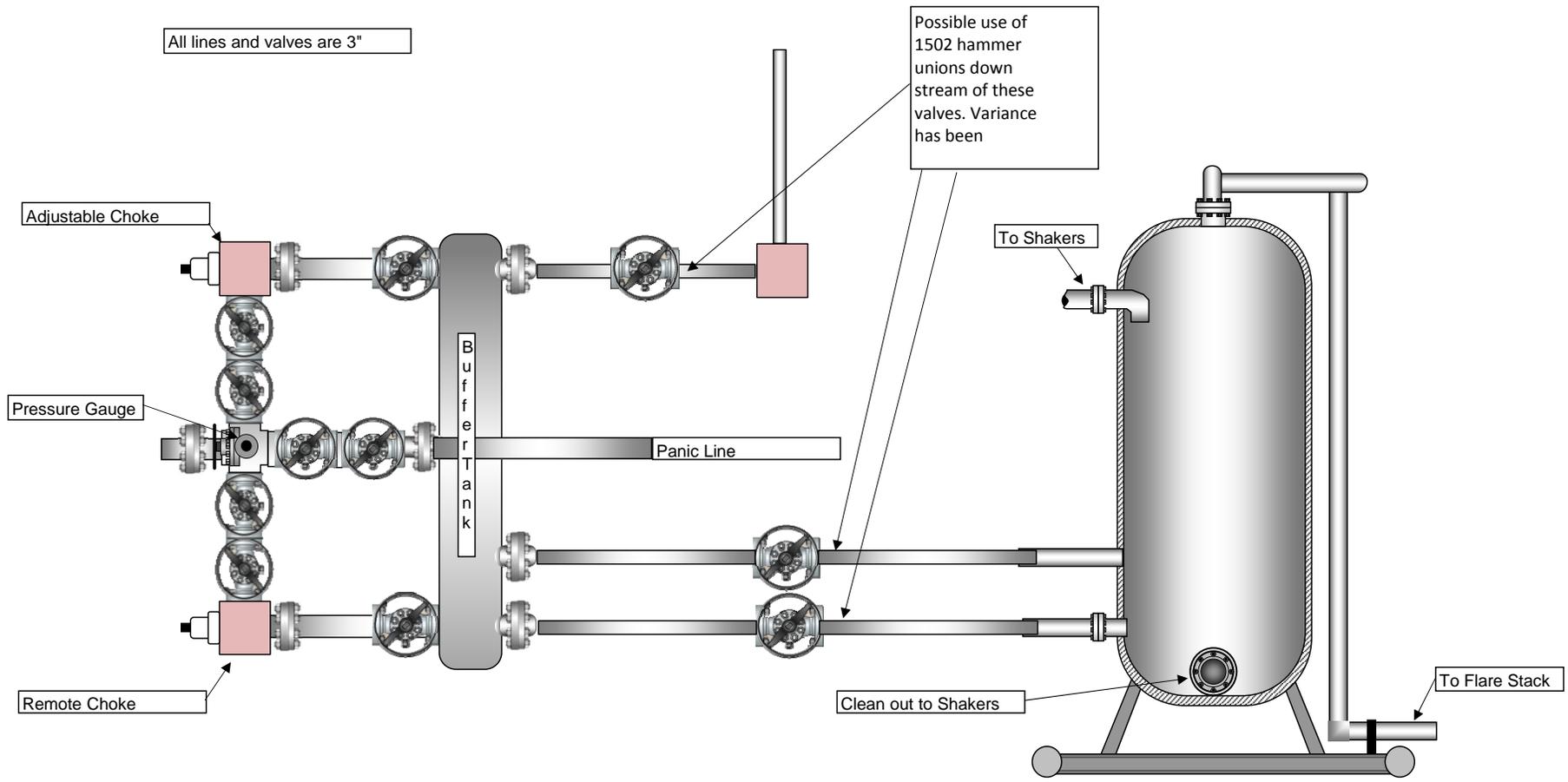
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IGLOO\_19\_18\_STATE\_FED\_COM\_11H\_\_\_C\_129\_Gas\_Capture\_Plan\_20201207163303.pdf

IGLOO\_19\_18\_STATE\_FED\_COM\_11H\_\_\_APD\_RECEIPT\_20201207163313.pdf

**Other Variance attachment:**

IGLOO\_19\_18\_STATE\_FED\_COM\_11H\_\_\_Multi\_Bowl\_Wellhead\_20201207163334.pdf





# Midwest Hose & Specialty, Inc.

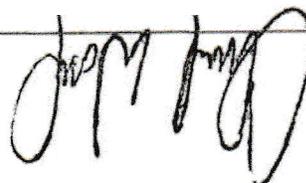
INTERNAL HYDROSTATIC TEST CERTIFICATE		
<b>Customer:</b> HWD		<b>Customer P.O. Number:</b> RIG# 92112-11
<b>HOSE SPECIFICATIONS</b>		
<b>Type:</b> Rotary / Vibrator Hose D / API 7K		<b>Hose Length:</b> 173 IN
<b>I.D.</b> 4 INCHES	<b>O.D.</b> 5.87 INCHES	
<b>WORKING PRESSURE</b> 10,000 PSI	<b>TEST PRESSURE</b> 15,000 PSI	<b>BURST PRESSURE</b> N/A PSI
<b>COUPLINGS</b>		
<b>Part Number</b> E4.0X64WB E4.0X64WB	<b>Stem Lot Number</b> 2Q11LOT1 2Q11LOT1	<b>Ferrule Lot Number</b> NQ745 NQ745
<b>Type of Coupling:</b> Swage-it		<b>Die Size:</b> 6.38 INCHES
<b>PROCEDURE</b>		
<i>Hose assembly pressure tested with water at ambient temperature.</i>		
<b>TIME HELD AT TEST PRESSURE</b> 11 1/4 MIN.		<b>ACTUAL BURST PRESSURE:</b> N/A PSI
<b>Hose Assembly Serial Number:</b> 170980		<b>Hose Serial Number:</b> 8268
<b>Comments:</b>		
<b>Date:</b> 9/21/2012	<b>Tested:</b> <i>D. McNamee</i>	<b>Approved:</b> <i>Kim Thomas</i>

FORM QA-21-REV-2  
3-22-00

DATE

Nov 15, 2018

WITNESSED BY:



3 MIN. @ 15,000 PSI

2 MIN. @ 0 PSI

5 MIN. @ 10,000 PSI

OAL 51"

HYDROSTATIC TEST

(C) INTERIOR TUBE:

OK

(B) EXTERIOR / COVER / BRANDING:

OK

(A) END CAPS / SLEEVE RECESS:

OK

VISUAL INSPECTION

CONNECTIONS:

4-1/16" 10,000 PSI API FLANGES

HT-X1840

SERIAL NO.:

22199

LENGTH 50 FT. IN.

SHOP ORDER NO.:

16454

SIZE: 4" I.D.

H2S SUITABLE

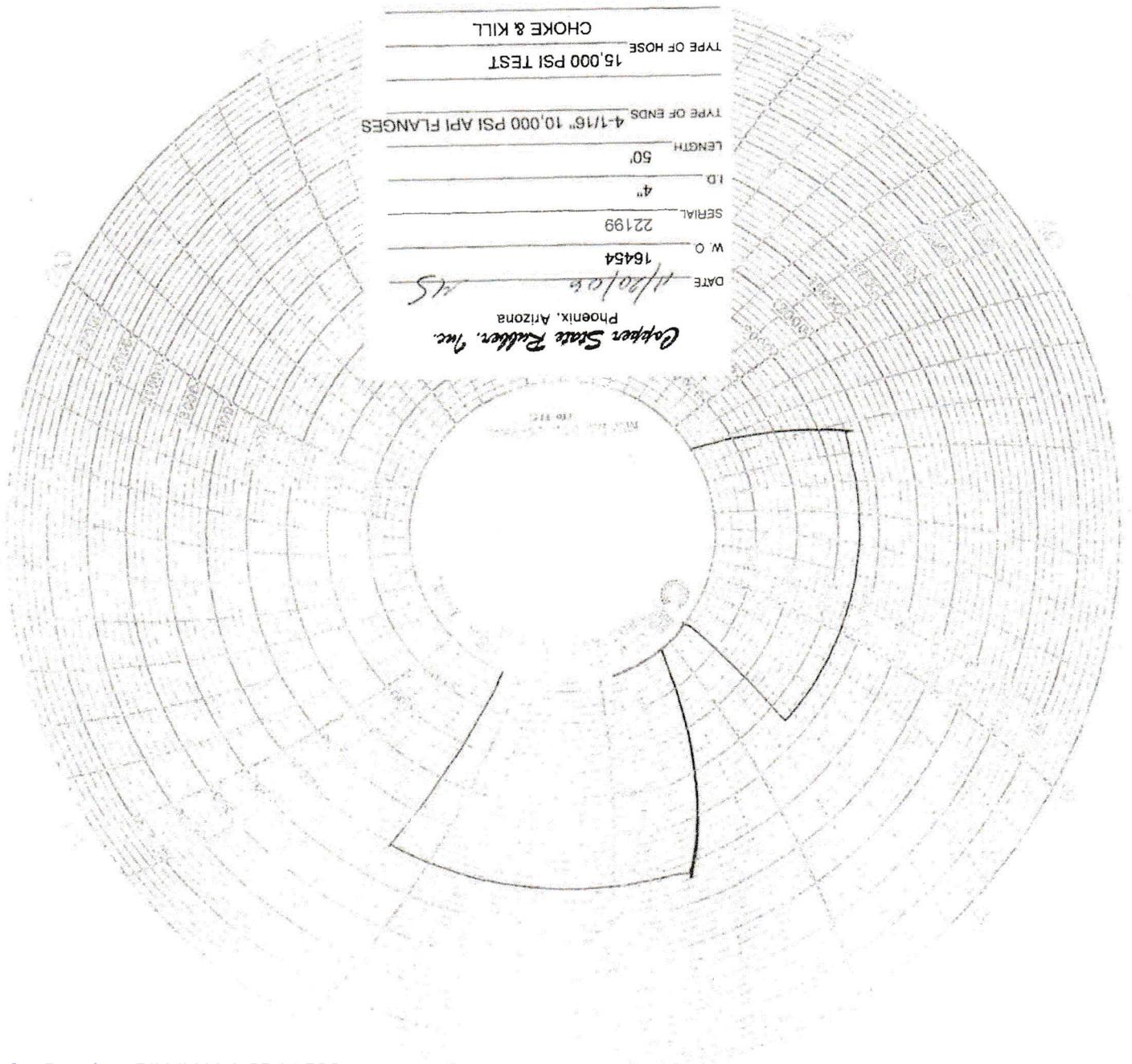
SPEC: 090-1915 HS

10,000 P.S.I. W/P X 15,000 P.S.I. T/P

CHOKE & KILL HOSE

VISUAL INSPECTION / HYDROSTATIC TEST REPORT

COPPER STATE RUBBER



TYPE OF HOSE 15,000 PSI TEST  
CHOKE & KILL

TYPE OF ENDS 4-1/16" 10,000 PSI API FLANGES

LENGTH 50'

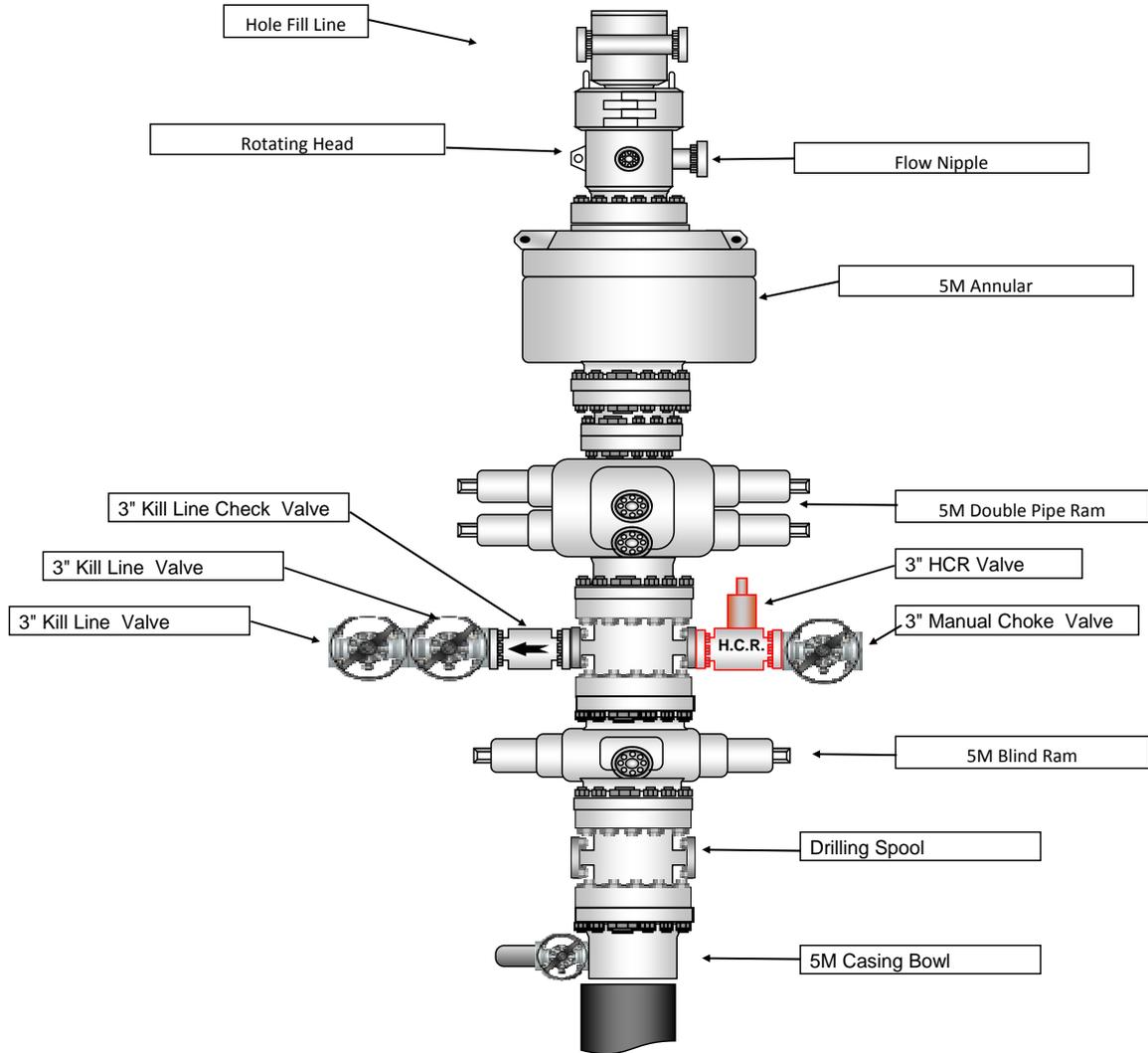
ID 4"

SERIAL 22199

W. O. 16454

DATE 1/20/06 MS

Copper State Rubber, Inc.  
Phoenix, Arizona



**Well Control Plan For 10M MASP Section of Wellbore****1. Component and Preventer Compatibility Table**

The table below covers drilling and casing of the 10M MASP portion of the well and outlines the tubulars and the compatible preventers in use. Combined with the mud program, the below documents that two barriers to flow can be maintained at all times, independent of the rating of the annular preventer.

Component	OD	Preventer	RWP
Drill Pipe	5"	Upper 5"-7" VBR Lower 5"-7" VBR	10M
HWDP	5"		
Drill Collars and MWD	6"-6.75"		
Mud Motor	6.75"-7.25"		
Production Casing	6"		
ALL		Annular	5M
Open-hole	0-13.625"	Blind Rams	10M

VBR = Variable Bore Ram with compatible range listed in chart.

**2. Well Control and Shut-In Procedures**

Well control procedures are specific to the rig equipment and the operation at the time the kick occurs. Below are minimum tasks prescribed to assure a proper shut-in while drilling, tripping, running casing, pipe out of the hole (open hole), and moving the BHA through the BOPs. The maximum pressure at which well control is transferred from the annular to another compatible ram is 2500 psi.

Drilling:

1. Sound the alarm (alert rig crew)
2. Space out the drill string
3. Shut down pumps and stop the rotary
4. Shut-in the well with the annular with HCR and choke in closed position
5. Confirm the well is shut-in
6. Notify contractor and company representatives
7. Read and record the following data
  - Time of shut-in
  - SIDPP and SICP
  - Pit gain
8. If pressure has increased to or is anticipated to increase to 2500 psi, confirm spacing and close the upper pipe rams.
9. Prepare for well kill operation.

Tripping:

1. Sound alarm (alert rig crew)
2. Stab full opening safety valve and close the valve
3. Space out the drill string
4. Shut-in the well with the annular with HCR and choke in closed position
5. Confirm shut-in
6. Notify contractor and company representatives
7. Read and record the following data:

**Well Control Plan For 10M MASP Section of Wellbore**

- Time of shut-in
  - SIDPP and SICP
  - Pit gain
8. If pressure has increased to or is anticipated to increase to 2500 psi, confirm spacing and close the upper pipe rams.
  9. Prepare for well kill operation.

**Running Casing**

1. Sound alarm (alert rig crew)
2. Stab crossover and valve and close the valve
3. Shut-in the well with annular with HCR and choke in closed position
4. Confirm shut-in
5. Notify contractor and company representatives
6. Read and record the following data
  - Time of shut-in
  - SIDPP and SICP
  - Pit gain
7. If pressure has increased to or is anticipated to increase to 2500 psi, confirm spacing and close the upper pipe rams.
8. Prepare for well kill operation

**No Pipe in Hole (Open Hole)**

1. At any point when pipe or BHA are not in BOP stack, well will be shut in with blind rams, HCR will be open and choke will be closed. If pressure increase is observed:
2. Sound alarm (alert crew)
3. Confirm shut-in
4. Notify contractor and company representatives
5. Read and record the following data
  - Time of shut-in
  - Time of pressure increase
  - SICP
6. Prepare for well kill operation

**Pulling BHA through BOP Stack**

1. Prior to pulling last joint/stand of drillpipe through the stack, perform a flow check. If well is flowing:
  - a. Sound alarm (alert crew)
  - b. Stab full opening safety valve and close the valve
  - c. Space out drill string with tooljoint just beneath the upper pipe ram.
  - d. Shut-in the well with upper pipe ram with HCR and choke in closed position
  - e. Confirm shut-in
  - f. Notify contractor and company representatives
  - g. Read and record the following data
    - Time of shut-in
    - SIDPP and SICP
    - Pit gain
  - h. Prepare for well kill operation.

**Well Control Plan For 10M MASP Section of Wellbore**

2. With BHA in the stack:
  - a. If possible to pick up high enough, pull BHA clear of the stack
    - i. Follow "Open Hole" procedure above
  - b. If impossible to pick up high enough to pull BHA clear of the stack:
    - i. Stab crossover, make up one joint/stand of drillpipe, and full opening safety valve and close
    - ii. Space out drill string with tooljoint just beneath the upper pipe ram.
    - iii. Shut-in the well with upper pipe ram with HCR and choke in closed position
    - iv. Confirm shut-in
    - v. Notify contractor and company representatives
    - vi. Read and record the following:
      - Time of shut-in
      - SIDPP and SICP
      - Pit gain
    - vii. Prepare for well kill operation.

**3. Well Control Drills**

Well control drills are specific to the rig equipment, personnel and operation at the time a kick occurs. Each crew will execute one drill weekly relevant to ongoing operations, but will make a reasonable attempt to vary the type of drills. The drills will be recorded in the daily drilling log. Below are minimum tasks for respective well control drills.

Drilling/Pit:

Action	Responsible Party
Initiate Drill <ul style="list-style-type: none"> <li>• Lift Flow Sensor or Pit Float to indicate a kick</li> <li>• Immediately record start time</li> </ul>	Company Representative / Rig Manager
Recognition <ul style="list-style-type: none"> <li>• Driller and/or Crew recognizes indicator</li> <li>• Driller stop drilling, pick up off bottom and spaces out drill string, stop pumps and rotary</li> <li>• Conduct flow check</li> </ul>	Driller
Initiate Action <ul style="list-style-type: none"> <li>• Sound alarm, notify rig crew that the well is flowing</li> </ul>	Company Representative / Rig Manager
Reaction <ul style="list-style-type: none"> <li>• Driller moves BOP remote and stands by</li> <li>• Crew is at their assigned stations</li> <li>• Time is stopped</li> <li>• Record time and drill type in the Drilling Report</li> </ul>	Driller / Crew

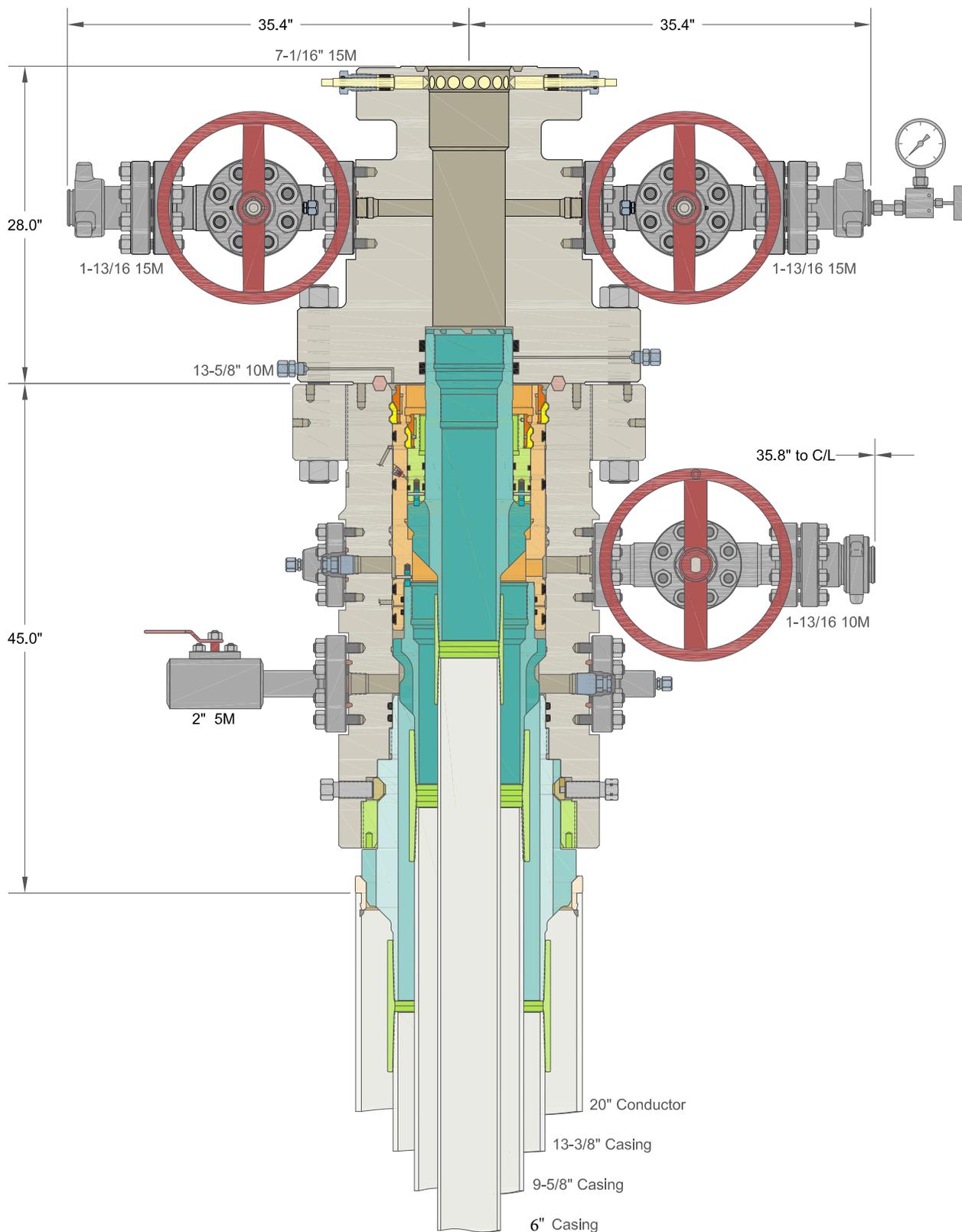
**Well Control Plan For 10M MASP Section of Wellbore**

Tripping Pit Drills (either in the hole or out of the hole)

Action	Responsible Party
Initiate Drill <ul style="list-style-type: none"> <li>• Lift Flow Sensor or Pit Float to indicate a kick</li> <li>• Immediately record start time</li> </ul>	Company Representative / Rig Manager
Recognition <ul style="list-style-type: none"> <li>• Driller recognizes indicator</li> <li>• Suspends tripping operations</li> <li>• Conduct Flow Check</li> </ul>	Driller
Initiate Action <ul style="list-style-type: none"> <li>• Sound alarm, notify rig crew that the well is flowing</li> </ul>	Company Representative / Rig Manager
Reaction <ul style="list-style-type: none"> <li>• Position tool joint above rotary and set slips</li> <li>• Stab FOSV and close valve</li> <li>• Driller moves to BOP remote and stands by</li> <li>• Crew is at their assigned stations</li> <li>• Time is stopped</li> <li>• Record time and drill type in the Drilling Report</li> </ul>	Driller / Crew

Choke

Action	Responsible Party
<ul style="list-style-type: none"> <li>• Have designated choke operator on station at the choke panel</li> <li>• Close annular preventer</li> <li>• Pressure annulus up 200-300 psi</li> <li>• Pump slowly to bump the float and obtain SIDPP</li> <li>• At choke operator instruction, slowly bring pumps online to slow pump rate while holding casing pressure constant at the SICP.</li> <li>• Allow time for the well to stabilize. Mark and record circulating drillpipe pressure.</li> <li>• Measure time lag on drillpipe gauge after choke adjustments.</li> <li>• Hold casing pressure constant as pumps are slowed down while choke is closed.</li> <li>• Record time and drill type in the Drilling Report</li> </ul>	Company Man / Rig Manager & Rig Crew



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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	

Operator	Caza Operating LLC
Well Name & No.	Igloo 19-18 State Fed Comm 10H
County	Lea
Location (S/T/R/Alt)	
Lease Number	
ATS or EC #	

APD### or EC###

Colors:
Choose casings
Fill in, if applicable

Fed Comm 10H Lea - Caza Operating LLC

Name	
Date	
Version	

Remarks	
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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	2165	2150	8.40	8.90	12.6150	12.4900	14.3750
Int 1	12.250	9.625	40.00	hcl	80	btc	0	5653	5653	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	20220	9754	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	1350	1.93	Lead	370	2.13	Lead 1	2250	2.38	Lead 1			Lead 1		
Tail	309	1.35	Tail	232	1.35	Tail 1	2300	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	3022.65	cuft	Cement Added	1101.3 / 2652	cuft	Cement Added	9081.00	cuft	Cement Added	#N/A	cuft	Cement Added	#N/A	cuft
Cmt Req.	1504	cuft	Cement Req.	549 / 1328.6	cuft	Cement Req.	4519	cuft	Cement Req.	0	cuft	Cement Req.	0	cuft
Excess	100.99%		Excess	100.6% / 99.6%		Excess	100.93%		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	4.36	1.13	0.93	1.61
Int 1	4.05	1.44	1.13	1.97
Int 1 Taper 1				
Prod 1	3.36	2.26	2.54	4.40

BOP Requirements After the Shoe					
Surface		Int 1		Prod 1	
Max. Surf. Pressure	1693 psi	Max. Surf. Pressure	2921 psi	Max. Surf. Pressure	psi
BOP Required	2M System	BOP Required	3M System	BOP Required	System
<Choose Casing>					
Max. Surf. Pressure	psi				
BOP Required	System				

Operator	Caza Operating LLC
Well Name & No.	Igloo 19-18 State Fed Comm 10H
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Location (S/T/R/Alt)	
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Choose casings
Fill in, if applicable

Name	
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Fed Comm 10H Lea - Caza Operating LLC  
APD### or EC###

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<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)
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Cmt Req.	1504	cuft	Cement Req.	549 / 1328.6	cuft	Cement Req.	4519	cuft	Cement Req.	0	cuft	Cement Req.	0	cuft
Excess	100.99%		Excess	100.6% / 99.6%		Excess	100.93%		Excess	#N/A		Excess	#N/A	

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BOP Required	2M System	BOP Required	3M System	BOP Required	System
<Choose Casing>					
Max. Surf. Pressure	psi				
BOP Required	System				

Operator	Caza Operating LLC
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<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)	Sacks		Yield (ft3/sx)	Sacks		Yield (ft3/sx)	Sacks		Yield (ft3/sx)	Sacks		Yield (ft3/sx)
Lead	1350	1.93	Lead	370	2.13	Lead 1	2250	2.38	Lead 1			Lead 1		
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Cmt Added	3022.65	cuft	Cement Added	1101.3 / 2652	cuft	Cement Added	9081.00	cuft	Cement Added	#N/A	cuft	Cement Added	#N/A	cuft
Cmt Req.	1504	cuft	Cement Req.	549 / 1328.6	cuft	Cement Req.	4519	cuft	Cement Req.	0	cuft	Cement Req.	0	cuft
Excess	100.99%		Excess	100.6% / 99.6%		Excess	100.93%		Excess	#N/A		Excess	#N/A	

Clearances	in Hole	In Surface	In Int 1	In Int 1 Taper 1	In Prod 1
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BOP Required	2M System	BOP Required	3M 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

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## 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, or 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 (H<sub>2</sub>S).

### **Objective:**

Prevent any and all accidents, and prevent the uncontrolled release of H<sub>2</sub>S 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 H<sub>2</sub>S 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 H<sub>2</sub>S 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 H<sub>2</sub>S 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 H<sub>2</sub>S.
    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 joint 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 (H<sub>2</sub>S) 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. H<sub>2</sub>S 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 H<sub>2</sub>S, 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 (H<sub>2</sub>S) circulated to surface. The operator will have the necessary mud products on location to minimize the hazards while drilling in H<sub>2</sub>S-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.

### **Windssocks or Wind Streamers:**

- A minimum of two 10" windssocks 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 (O2, 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:**

- 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.

Project: Igloo 19-18 State Fed Com 11H  
 Site: Igloo 19-18 State Fed Com 11H  
 Well: Igloo 19-18 State Fed Com 11H  
 Wellbore: Igloo 19-18 State Fed Com 11H  
 Design: 20201016 Igloo 19-18 State Fed Com 11H

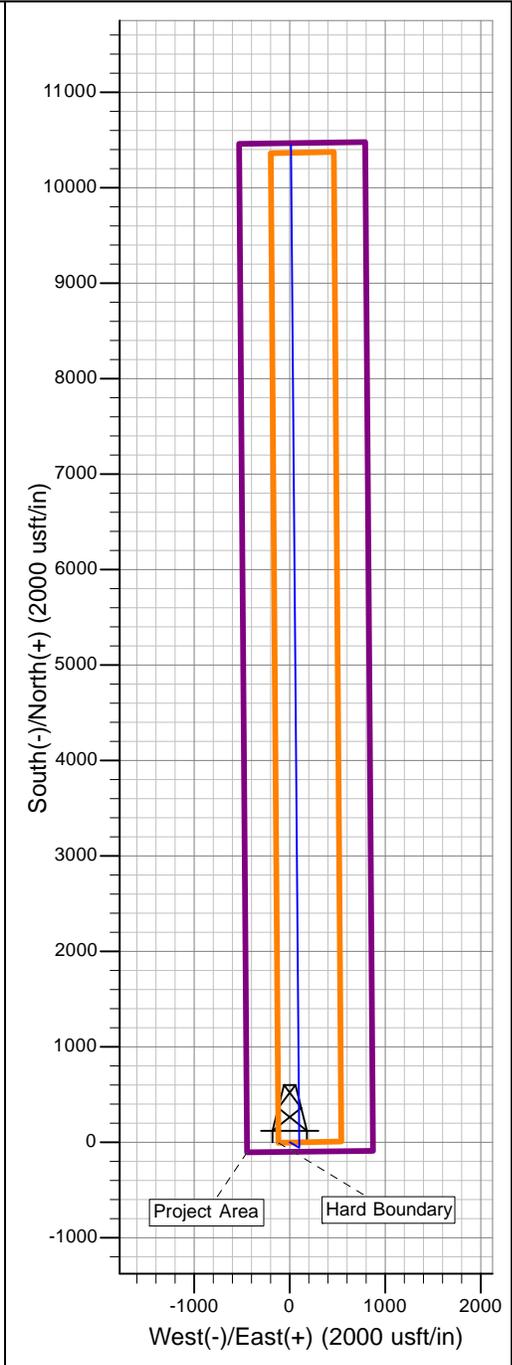
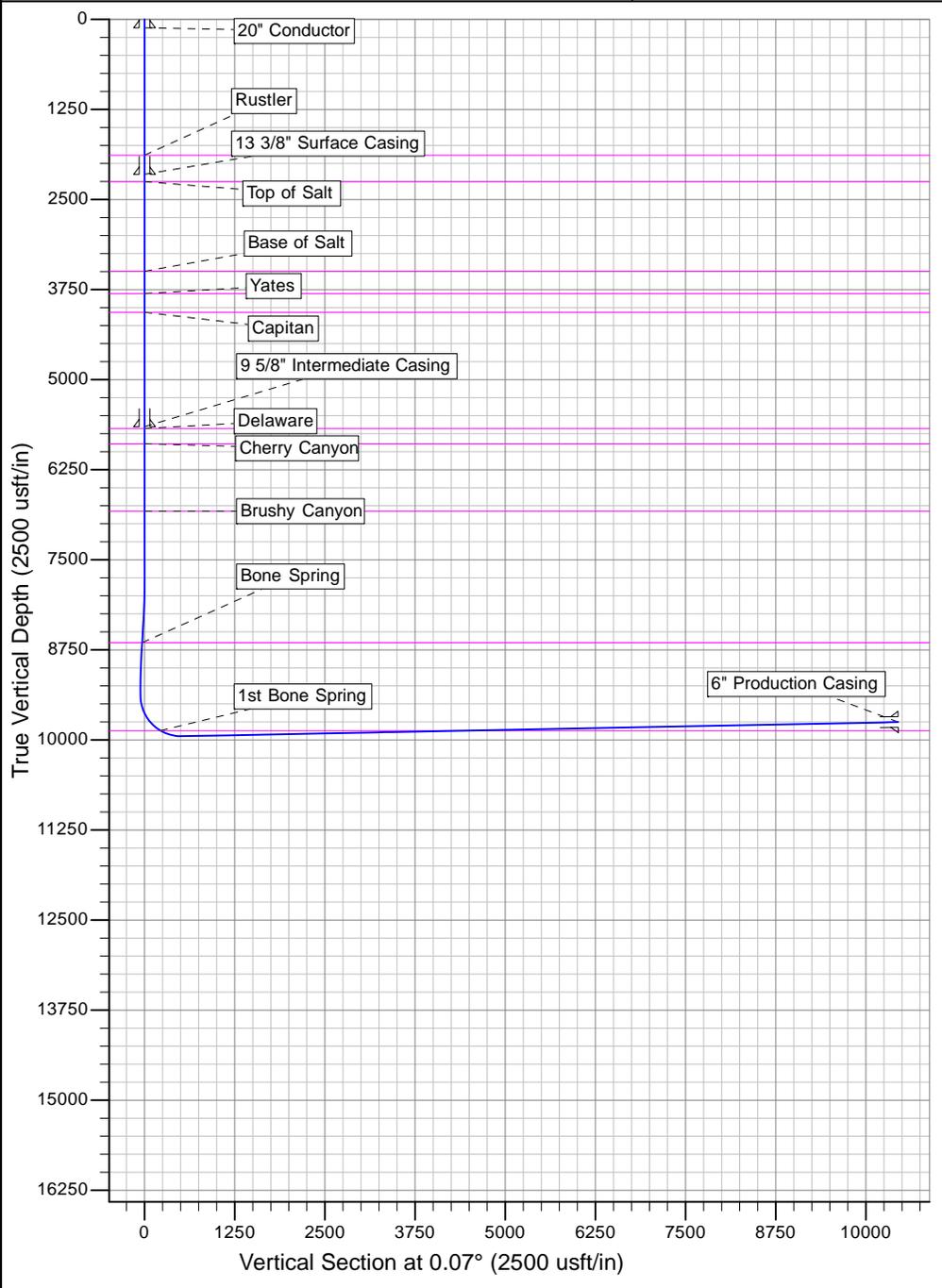


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T G M  
 Azimuths to Grid North  
 True North: -0.45°  
 Magnetic North: 6.26°

Magnetic Field  
 Strength: 47856.8snT  
 Dip Angle: 60.24°  
 Date: 10/17/2020  
 Model: IGRF2015

CASING DETAILS				FORMATION TOP DETAILS				
TVD	MD	Name	Size	TVDPath	MDPath	Formation	DipAngle	DipDir
120.0	120.0	20" Conductor	20	1885.0	1885.0	Rustler	0.00	
2150.0	2150.0	13 3/8" Surface Casing	13-3/8	2253.0	2253.0	Top of Salt	0.00	
5653.0	5653.0	9 5/8" Intermediate Casing	9-5/8	3496.0	3496.0	Base of Salt	0.00	
9754.3	20220.0	6" Production Casing	6	3806.0	3806.0	Yates	0.00	
				4067.0	4067.0	Capitan	0.00	
				5678.0	5678.0	Delaware	0.00	
				5892.0	5892.0	Cherry Canyon	0.00	
				6826.0	6826.0	Brushy Canyon	0.00	
				8652.0	8655.4	Bone Spring	0.00	
				9870.0	9973.9	1st Bone Spring	0.00	





## **Caza Operating LLC**

**Igloo 19-18 State Fed Com 11H**

**Plan: 20201016 Igloo 19-18 State Fed Com 11H - Plan 1**

## **Morcor Standard Plan**

**17 October, 2020**



**Morcor Engineering**  
Morcor Standard Plan

<b>Company:</b>	Caza Operating LLC	<b>Local Co-ordinate Reference:</b>	Well Igloo 19-18 State Fed Com 11H
<b>Project:</b>	Igloo 19-18 State Fed Com 11H	<b>TVD Reference:</b>	WELL @ 3727.0usft (Original Well Elev)
<b>Site:</b>	Igloo 19-18 State Fed Com 11H	<b>MD Reference:</b>	WELL @ 3727.0usft (Original Well Elev)
<b>Well:</b>	Igloo 19-18 State Fed Com 11H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Igloo 19-18 State Fed Com 11H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	20201016 Igloo 19-18 State Fed Com 11H - Plan 1	<b>Database:</b>	EDM 5000.1 Single User Db

<b>Project</b>	Igloo 19-18 State Fed Com 11H		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	New Mexico Eastern Zone		

<b>Site</b>	Igloo 19-18 State Fed Com 11H				
<b>Site Position:</b>		<b>Northing:</b>	565,452.03 usft	<b>Latitude:</b>	32° 33' 5.981 N
<b>From:</b>	Map	<b>Easting:</b>	800,919.61 usft	<b>Longitude:</b>	103° 29' 27.129 W
<b>Position Uncertainty:</b>	1.0 usft	<b>Slot Radius:</b>	17-1/2 "	<b>Grid Convergence:</b>	0.45 °

<b>Well</b>	Igloo 19-18 State Fed Com 11H					
<b>Well Position</b>	<b>+N/-S</b>	0.0 usft	<b>Northing:</b>	565,452.03 usft	<b>Latitude:</b>	32° 33' 5.981 N
	<b>+E/-W</b>	0.0 usft	<b>Easting:</b>	800,919.61 usft	<b>Longitude:</b>	103° 29' 27.129 W
<b>Position Uncertainty</b>	1.0 usft		<b>Wellhead Elevation:</b>	usft	<b>Ground Level:</b>	3,703.0 usft

<b>Wellbore</b>	Igloo 19-18 State Fed Com 11H				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2015	10/17/2020	6.71	60.24	47,857

<b>Design</b>	20201016 Igloo 19-18 State Fed Com 11H - Plan 1			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>
	0.0	0.0	0.0	0.07

<b>Survey Tool Program</b>	<b>Date</b>	10/17/2020		
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
0.0	20,220.0	20201016 Igloo 19-18 State Fed Com 11H	MWD	MWD - Standard



**Morcor Engineering**  
Morcor Standard Plan

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<b>Well:</b>	Igloo 19-18 State Fed Com 11H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Igloo 19-18 State Fed Com 11H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	20201016 Igloo 19-18 State Fed Com 11H - Plan 1	<b>Database:</b>	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	-3,727.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00	
100.0	0.00	0.00	100.0	-3,627.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00	
120.0	0.00	0.00	120.0	-3,607.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00	
<b>20" Conductor</b>											
200.0	0.00	0.00	200.0	-3,527.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00	
300.0	0.00	0.00	300.0	-3,427.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00	
400.0	0.00	0.00	400.0	-3,327.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00	
500.0	0.00	0.00	500.0	-3,227.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00	
600.0	0.00	0.00	600.0	-3,127.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00	
700.0	0.00	0.00	700.0	-3,027.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00	
800.0	0.00	0.00	800.0	-2,927.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00	
900.0	0.00	0.00	900.0	-2,827.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00	
1,000.0	0.00	0.00	1,000.0	-2,727.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00	
1,100.0	0.00	0.00	1,100.0	-2,627.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00	
1,200.0	0.00	0.00	1,200.0	-2,527.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00	
1,300.0	0.00	0.00	1,300.0	-2,427.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00	
1,400.0	0.00	0.00	1,400.0	-2,327.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00	
1,500.0	0.00	0.00	1,500.0	-2,227.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00	
1,600.0	0.00	0.00	1,600.0	-2,127.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00	
1,700.0	0.00	0.00	1,700.0	-2,027.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00	
1,800.0	0.00	0.00	1,800.0	-1,927.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00	
1,885.0	0.00	0.00	1,885.0	-1,842.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00	
<b>Rustler</b>											
1,900.0	0.00	0.00	1,900.0	-1,827.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00	
2,000.0	0.00	0.00	2,000.0	-1,727.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00	
2,100.0	0.00	0.00	2,100.0	-1,627.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00	
2,150.0	0.00	0.00	2,150.0	-1,577.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00	
<b>13 3/8" Surface Casing</b>											



**Morcor Engineering**  
Morcor Standard Plan

**Company:** Caza Operating LLC  
**Project:** Igloo 19-18 State Fed Com 11H  
**Site:** Igloo 19-18 State Fed Com 11H  
**Well:** Igloo 19-18 State Fed Com 11H  
**Wellbore:** Igloo 19-18 State Fed Com 11H  
**Design:** 20201016 Igloo 19-18 State Fed Com 11H - Plan 1

**Local Co-ordinate Reference:** Well Igloo 19-18 State Fed Com 11H  
**TVD Reference:** WELL @ 3727.0usft (Original Well Elev)  
**MD Reference:** WELL @ 3727.0usft (Original Well Elev)  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**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)
2,200.0	0.00	0.00	2,200.0	-1,527.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00
2,253.0	0.00	0.00	2,253.0	-1,474.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00
<b>Top of Salt</b>										
2,300.0	0.00	0.00	2,300.0	-1,427.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00
2,400.0	0.00	0.00	2,400.0	-1,327.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00
2,500.0	0.00	0.00	2,500.0	-1,227.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00
2,600.0	0.00	0.00	2,600.0	-1,127.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00
2,700.0	0.00	0.00	2,700.0	-1,027.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00
2,800.0	0.00	0.00	2,800.0	-927.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00
2,900.0	0.00	0.00	2,900.0	-827.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00
3,000.0	0.00	0.00	3,000.0	-727.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00
3,100.0	0.00	0.00	3,100.0	-627.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00
3,200.0	0.00	0.00	3,200.0	-527.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00
3,300.0	0.00	0.00	3,300.0	-427.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00
3,400.0	0.00	0.00	3,400.0	-327.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00
3,496.0	0.00	0.00	3,496.0	-231.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00
<b>Base of Salt</b>										
3,500.0	0.00	0.00	3,500.0	-227.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00
3,600.0	0.00	0.00	3,600.0	-127.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00
3,700.0	0.00	0.00	3,700.0	-27.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00
3,800.0	0.00	0.00	3,800.0	73.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00
3,806.0	0.00	0.00	3,806.0	79.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00
<b>Yates</b>										
3,900.0	0.00	0.00	3,900.0	173.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00
4,000.0	0.00	0.00	4,000.0	273.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00
4,067.0	0.00	0.00	4,067.0	340.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00
<b>Capitan</b>										
4,100.0	0.00	0.00	4,100.0	373.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00



**Morcor Engineering**  
Morcor Standard Plan

<b>Company:</b>	Caza Operating LLC	<b>Local Co-ordinate Reference:</b>	Well Igloo 19-18 State Fed Com 11H
<b>Project:</b>	Igloo 19-18 State Fed Com 11H	<b>TVD Reference:</b>	WELL @ 3727.0usft (Original Well Elev)
<b>Site:</b>	Igloo 19-18 State Fed Com 11H	<b>MD Reference:</b>	WELL @ 3727.0usft (Original Well Elev)
<b>Well:</b>	Igloo 19-18 State Fed Com 11H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Igloo 19-18 State Fed Com 11H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	20201016 Igloo 19-18 State Fed Com 11H - Plan 1	<b>Database:</b>	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)	
4,200.0	0.00	0.00	4,200.0	473.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00	
4,300.0	0.00	0.00	4,300.0	573.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00	
4,400.0	0.00	0.00	4,400.0	673.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00	
4,500.0	0.00	0.00	4,500.0	773.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00	
4,600.0	0.00	0.00	4,600.0	873.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00	
4,700.0	0.00	0.00	4,700.0	973.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00	
4,800.0	0.00	0.00	4,800.0	1,073.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00	
4,900.0	0.00	0.00	4,900.0	1,173.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00	
5,000.0	0.00	0.00	5,000.0	1,273.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00	
5,100.0	0.00	0.00	5,100.0	1,373.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00	
5,200.0	0.00	0.00	5,200.0	1,473.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00	
5,300.0	0.00	0.00	5,300.0	1,573.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00	
5,400.0	0.00	0.00	5,400.0	1,673.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00	
5,500.0	0.00	0.00	5,500.0	1,773.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00	
5,600.0	0.00	0.00	5,600.0	1,873.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00	
5,653.0	0.00	0.00	5,653.0	1,926.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00	
<b>9 5/8" Intermediate Casing</b>											
5,678.0	0.00	0.00	5,678.0	1,951.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00	
<b>Delaware</b>											
5,700.0	0.00	0.00	5,700.0	1,973.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00	
5,800.0	0.00	0.00	5,800.0	2,073.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00	
5,892.0	0.00	0.00	5,892.0	2,165.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00	
<b>Cherry Canyon</b>											
5,900.0	0.00	0.00	5,900.0	2,173.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00	
6,000.0	0.00	0.00	6,000.0	2,273.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00	
6,100.0	0.00	0.00	6,100.0	2,373.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00	
6,200.0	0.00	0.00	6,200.0	2,473.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00	



**Morcor Engineering**  
Morcor Standard Plan

**Company:** Caza Operating LLC  
**Project:** Igloo 19-18 State Fed Com 11H  
**Site:** Igloo 19-18 State Fed Com 11H  
**Well:** Igloo 19-18 State Fed Com 11H  
**Wellbore:** Igloo 19-18 State Fed Com 11H  
**Design:** 20201016 Igloo 19-18 State Fed Com 11H - Plan 1

**Local Co-ordinate Reference:** Well Igloo 19-18 State Fed Com 11H  
**TVD Reference:** WELL @ 3727.0usft (Original Well Elev)  
**MD Reference:** WELL @ 3727.0usft (Original Well Elev)  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**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)
6,300.0	0.00	0.00	6,300.0	2,573.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00
6,400.0	0.00	0.00	6,400.0	2,673.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00
6,500.0	0.00	0.00	6,500.0	2,773.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00
6,600.0	0.00	0.00	6,600.0	2,873.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00
6,700.0	0.00	0.00	6,700.0	2,973.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00
6,800.0	0.00	0.00	6,800.0	3,073.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00
6,826.0	0.00	0.00	6,826.0	3,099.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00
<b>Brushy Canyon</b>										
6,900.0	0.00	0.00	6,900.0	3,173.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00
7,000.0	0.00	0.00	7,000.0	3,273.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00
7,100.0	0.00	0.00	7,100.0	3,373.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00
7,200.0	0.00	0.00	7,200.0	3,473.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00
7,300.0	0.00	0.00	7,300.0	3,573.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00
7,400.0	0.00	0.00	7,400.0	3,673.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00
7,500.0	0.00	0.00	7,500.0	3,773.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00
7,600.0	0.00	0.00	7,600.0	3,873.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00
7,700.0	0.00	0.00	7,700.0	3,973.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00
7,800.0	0.00	0.00	7,800.0	4,073.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00
7,900.0	0.00	0.00	7,900.0	4,173.0	0.0	0.0	800,919.61	565,452.03	0.00	0.00
<b>Start Build 3.00</b>										
8,000.0	3.00	120.00	8,000.0	4,273.0	-1.3	2.3	800,921.88	565,450.72	-1.31	3.00
8,100.0	6.00	120.00	8,099.6	4,372.6	-5.2	9.1	800,928.67	565,446.80	-5.22	3.00
<b>Start 900.0 hold at 8100.0 MD</b>										
8,200.0	6.00	120.00	8,199.1	4,472.1	-10.5	18.1	800,937.72	565,441.57	-10.43	0.00
8,300.0	6.00	120.00	8,298.5	4,571.5	-15.7	27.2	800,946.78	565,436.35	-15.65	0.00
8,400.0	6.00	120.00	8,398.0	4,671.0	-20.9	36.2	800,955.83	565,431.12	-20.86	0.00
8,500.0	6.00	120.00	8,497.4	4,770.4	-26.1	45.3	800,964.88	565,425.89	-26.08	0.00



**Morcor Engineering**  
Morcor Standard Plan

**Company:** Caza Operating LLC  
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**Wellbore:** Igloo 19-18 State Fed Com 11H  
**Design:** 20201016 Igloo 19-18 State Fed Com 11H - Plan 1

**Local Co-ordinate Reference:** Well Igloo 19-18 State Fed Com 11H  
**TVD Reference:** WELL @ 3727.0usft (Original Well Elev)  
**MD Reference:** WELL @ 3727.0usft (Original Well Elev)  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**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)
8,600.0	6.00	120.00	8,596.9	4,869.9	-31.4	54.3	800,973.93	565,420.67	-31.29	0.00
8,655.4	6.00	120.00	8,652.0	4,925.0	-34.3	59.3	800,978.95	565,417.77	-34.18	0.00
<b>Bone Spring</b>										
8,700.0	6.00	120.00	8,696.3	4,969.3	-36.6	63.4	800,982.99	565,415.44	-36.51	0.00
8,800.0	6.00	120.00	8,795.8	5,068.8	-41.8	72.4	800,992.04	565,410.21	-41.72	0.00
8,900.0	6.00	120.00	8,895.3	5,168.3	-47.0	81.5	801,001.09	565,404.99	-46.94	0.00
9,000.0	6.00	120.00	8,994.7	5,267.7	-52.3	90.5	801,010.14	565,399.76	-52.15	0.00
<b>Start Drop -3.00</b>										
9,100.0	3.00	120.00	9,094.4	5,367.4	-56.2	97.3	801,016.94	565,395.84	-56.07	3.00
9,200.0	0.00	0.00	9,194.3	5,467.3	-57.5	99.6	801,019.20	565,394.53	-57.37	3.00
<b>Start 190.0 hold at 9200.0 MD</b>										
9,300.0	0.00	359.53	9,294.3	5,567.3	-57.5	99.6	801,019.20	565,394.53	-57.37	0.00
9,390.0	0.00	359.53	9,384.3	5,657.3	-57.5	99.6	801,019.20	565,394.53	-57.37	0.00
<b>Start Build 10.13</b>										
9,400.0	1.01	359.53	9,394.3	5,667.3	-57.4	99.6	801,019.20	565,394.62	-57.28	10.13
9,500.0	11.14	359.53	9,493.6	5,766.6	-46.8	99.5	801,019.12	565,405.19	-46.71	10.13
9,600.0	21.26	359.53	9,589.6	5,862.6	-19.0	99.3	801,018.89	565,433.05	-18.85	10.13
9,700.0	31.39	359.53	9,679.1	5,952.1	25.3	98.9	801,018.52	565,477.34	25.44	10.13
9,800.0	41.51	359.53	9,759.4	6,032.4	84.6	98.4	801,018.04	565,536.68	84.77	10.13
9,900.0	51.64	359.53	9,828.0	6,101.0	157.2	97.8	801,017.44	565,609.21	157.31	10.13
9,973.9	59.12	359.53	9,870.0	6,143.0	218.0	97.3	801,016.94	565,669.99	218.08	10.13
<b>1st Bone Spring</b>										
10,000.0	61.77	359.53	9,882.9	6,155.9	240.7	97.1	801,016.76	565,692.68	240.78	10.13
10,100.0	71.89	359.53	9,922.2	6,195.2	332.5	96.4	801,016.00	565,784.49	332.59	10.13
10,200.0	82.02	359.53	9,944.7	6,217.7	429.8	95.6	801,015.21	565,881.78	429.87	10.13
10,290.0	91.13	359.53	9,950.1	6,223.1	519.5	94.9	801,014.47	565,971.52	519.61	10.13
<b>Start Turn 0.00</b>										
10,300.0	91.13	359.53	9,949.9	6,222.9	529.5	94.8	801,014.39	565,981.52	529.61	0.00



**Morcor Engineering**  
Morcor Standard Plan

**Company:** Caza Operating LLC  
**Project:** Igloo 19-18 State Fed Com 11H  
**Site:** Igloo 19-18 State Fed Com 11H  
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**Wellbore:** Igloo 19-18 State Fed Com 11H  
**Design:** 20201016 Igloo 19-18 State Fed Com 11H - Plan 1

**Local Co-ordinate Reference:** Well Igloo 19-18 State Fed Com 11H  
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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)
10,400.0	91.13	359.53	9,947.9	6,220.9	629.5	94.0	801,013.57	566,081.50	629.59	0.00
10,500.0	91.13	359.53	9,945.9	6,218.9	729.4	93.1	801,012.75	566,181.47	729.56	0.00
10,600.0	91.13	359.53	9,944.0	6,217.0	829.4	92.3	801,011.93	566,281.45	829.54	0.00
10,700.0	91.13	359.53	9,942.0	6,215.0	929.4	91.5	801,011.11	566,381.43	929.52	0.00
10,800.0	91.13	359.53	9,940.0	6,213.0	1,029.4	90.7	801,010.29	566,481.41	1,029.49	0.00
10,900.0	91.13	359.53	9,938.1	6,211.1	1,129.4	89.9	801,009.47	566,581.38	1,129.47	0.00
11,000.0	91.13	359.53	9,936.1	6,209.1	1,229.3	89.0	801,008.65	566,681.36	1,229.44	0.00
11,100.0	91.13	359.53	9,934.1	6,207.1	1,329.3	88.2	801,007.83	566,781.34	1,329.42	0.00
11,200.0	91.13	359.53	9,932.1	6,205.1	1,429.3	87.4	801,007.01	566,881.32	1,429.40	0.00
11,300.0	91.13	359.53	9,930.2	6,203.2	1,529.3	86.6	801,006.19	566,981.29	1,529.37	0.00
11,400.0	91.13	359.53	9,928.2	6,201.2	1,629.2	85.8	801,005.37	567,081.27	1,629.35	0.00
11,500.0	91.13	359.53	9,926.2	6,199.2	1,729.2	84.9	801,004.55	567,181.25	1,729.32	0.00
11,600.0	91.13	359.53	9,924.2	6,197.2	1,829.2	84.1	801,003.73	567,281.22	1,829.30	0.00
11,700.0	91.13	359.53	9,922.3	6,195.3	1,929.2	83.3	801,002.91	567,381.20	1,929.28	0.00
11,800.0	91.13	359.53	9,920.3	6,193.3	2,029.1	82.5	801,002.09	567,481.18	2,029.25	0.00
11,900.0	91.13	359.53	9,918.3	6,191.3	2,129.1	81.7	801,001.27	567,581.16	2,129.23	0.00
12,000.0	91.13	359.53	9,916.4	6,189.4	2,229.1	80.8	801,000.45	567,681.13	2,229.20	0.00
12,100.0	91.13	359.53	9,914.4	6,187.4	2,329.1	80.0	800,999.63	567,781.11	2,329.18	0.00
12,200.0	91.13	359.53	9,912.4	6,185.4	2,429.1	79.2	800,998.81	567,881.09	2,429.16	0.00
12,300.0	91.13	359.53	9,910.4	6,183.4	2,529.0	78.4	800,997.99	567,981.06	2,529.13	0.00
12,400.0	91.13	359.53	9,908.5	6,181.5	2,629.0	77.6	800,997.17	568,081.04	2,629.11	0.00
12,500.0	91.13	359.53	9,906.5	6,179.5	2,729.0	76.7	800,996.35	568,181.02	2,729.08	0.00
12,600.0	91.13	359.53	9,904.5	6,177.5	2,829.0	75.9	800,995.52	568,281.00	2,829.06	0.00
12,700.0	91.13	359.53	9,902.6	6,175.6	2,928.9	75.1	800,994.70	568,380.97	2,929.04	0.00
12,800.0	91.13	359.53	9,900.6	6,173.6	3,028.9	74.3	800,993.88	568,480.95	3,029.01	0.00
12,900.0	91.13	359.53	9,898.6	6,171.6	3,128.9	73.5	800,993.06	568,580.93	3,128.99	0.00
13,000.0	91.13	359.53	9,896.6	6,169.6	3,228.9	72.6	800,992.24	568,680.90	3,228.97	0.00



**Morcor Engineering**  
Morcor Standard Plan

<b>Company:</b>	Caza Operating LLC	<b>Local Co-ordinate Reference:</b>	Well Igloo 19-18 State Fed Com 11H
<b>Project:</b>	Igloo 19-18 State Fed Com 11H	<b>TVD Reference:</b>	WELL @ 3727.0usft (Original Well Elev)
<b>Site:</b>	Igloo 19-18 State Fed Com 11H	<b>MD Reference:</b>	WELL @ 3727.0usft (Original Well Elev)
<b>Well:</b>	Igloo 19-18 State Fed Com 11H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Igloo 19-18 State Fed Com 11H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	20201016 Igloo 19-18 State Fed Com 11H - Plan 1	<b>Database:</b>	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)	
13,100.0	91.13	359.53	9,894.7	6,167.7	3,328.9	71.8	800,991.42	568,780.88	3,328.94	0.00	
13,200.0	91.13	359.53	9,892.7	6,165.7	3,428.8	71.0	800,990.60	568,880.86	3,428.92	0.00	
13,300.0	91.13	359.53	9,890.7	6,163.7	3,528.8	70.2	800,989.78	568,980.84	3,528.89	0.00	
13,400.0	91.13	359.53	9,888.8	6,161.8	3,628.8	69.4	800,988.96	569,080.81	3,628.87	0.00	
13,500.0	91.13	359.53	9,886.8	6,159.8	3,728.8	68.5	800,988.14	569,180.79	3,728.85	0.00	
13,600.0	91.13	359.53	9,884.8	6,157.8	3,828.7	67.7	800,987.32	569,280.77	3,828.82	0.00	
13,700.0	91.13	359.53	9,882.8	6,155.8	3,928.7	66.9	800,986.50	569,380.74	3,928.80	0.00	
13,800.0	91.13	359.53	9,880.9	6,153.9	4,028.7	66.1	800,985.68	569,480.72	4,028.77	0.00	
13,900.0	91.13	359.53	9,878.9	6,151.9	4,128.7	65.3	800,984.86	569,580.70	4,128.75	0.00	
14,000.0	91.13	359.53	9,876.9	6,149.9	4,228.6	64.4	800,984.04	569,680.68	4,228.73	0.00	
14,100.0	91.13	359.53	9,874.9	6,147.9	4,328.6	63.6	800,983.22	569,780.65	4,328.70	0.00	
14,200.0	91.13	359.53	9,873.0	6,146.0	4,428.6	62.8	800,982.40	569,880.63	4,428.68	0.00	
14,300.0	91.13	359.53	9,871.0	6,144.0	4,528.6	62.0	800,981.58	569,980.61	4,528.65	0.00	
14,400.0	91.13	359.53	9,869.0	6,142.0	4,628.6	61.2	800,980.76	570,080.59	4,628.63	0.00	
14,500.0	91.13	359.53	9,867.1	6,140.1	4,728.5	60.3	800,979.94	570,180.56	4,728.61	0.00	
14,600.0	91.13	359.53	9,865.1	6,138.1	4,828.5	59.5	800,979.12	570,280.54	4,828.58	0.00	
14,700.0	91.13	359.53	9,863.1	6,136.1	4,928.5	58.7	800,978.30	570,380.52	4,928.56	0.00	
14,800.0	91.13	359.53	9,861.1	6,134.1	5,028.5	57.9	800,977.48	570,480.49	5,028.53	0.00	
14,900.0	91.13	359.53	9,859.2	6,132.2	5,128.4	57.1	800,976.66	570,580.47	5,128.51	0.00	
15,000.0	91.13	359.53	9,857.2	6,130.2	5,228.4	56.2	800,975.84	570,680.45	5,228.49	0.00	
15,100.0	91.13	359.53	9,855.2	6,128.2	5,328.4	55.4	800,975.02	570,780.43	5,328.46	0.00	
15,200.0	91.13	359.53	9,853.3	6,126.3	5,428.4	54.6	800,974.20	570,880.40	5,428.44	0.00	
15,300.0	91.13	359.53	9,851.3	6,124.3	5,528.3	53.8	800,973.38	570,980.38	5,528.41	0.00	
15,400.0	91.13	359.53	9,849.3	6,122.3	5,628.3	53.0	800,972.56	571,080.36	5,628.39	0.00	
15,500.0	91.13	359.53	9,847.3	6,120.3	5,728.3	52.1	800,971.74	571,180.33	5,728.37	0.00	
15,600.0	91.13	359.53	9,845.4	6,118.4	5,828.3	51.3	800,970.92	571,280.31	5,828.34	0.00	
15,700.0	91.13	359.53	9,843.4	6,116.4	5,928.3	50.5	800,970.10	571,380.29	5,928.32	0.00	



**Morcor Engineering**  
Morcor Standard Plan

<b>Company:</b>	Caza Operating LLC	<b>Local Co-ordinate Reference:</b>	Well Igloo 19-18 State Fed Com 11H
<b>Project:</b>	Igloo 19-18 State Fed Com 11H	<b>TVD Reference:</b>	WELL @ 3727.0usft (Original Well Elev)
<b>Site:</b>	Igloo 19-18 State Fed Com 11H	<b>MD Reference:</b>	WELL @ 3727.0usft (Original Well Elev)
<b>Well:</b>	Igloo 19-18 State Fed Com 11H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Igloo 19-18 State Fed Com 11H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	20201016 Igloo 19-18 State Fed Com 11H - Plan 1	<b>Database:</b>	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)	
15,800.0	91.13	359.53	9,841.4	6,114.4	6,028.2	49.7	800,969.28	571,480.27	6,028.29	0.00	
15,900.0	91.13	359.53	9,839.4	6,112.4	6,128.2	48.9	800,968.46	571,580.24	6,128.27	0.00	
16,000.0	91.13	359.53	9,837.5	6,110.5	6,228.2	48.0	800,967.64	571,680.22	6,228.25	0.00	
16,100.0	91.13	359.53	9,835.5	6,108.5	6,328.2	47.2	800,966.82	571,780.20	6,328.22	0.00	
16,200.0	91.13	359.53	9,833.5	6,106.5	6,428.1	46.4	800,966.00	571,880.17	6,428.20	0.00	
16,300.0	91.13	359.53	9,831.6	6,104.6	6,528.1	45.6	800,965.18	571,980.15	6,528.17	0.00	
16,400.0	91.13	359.53	9,829.6	6,102.6	6,628.1	44.7	800,964.36	572,080.13	6,628.15	0.00	
16,500.0	91.13	359.53	9,827.6	6,100.6	6,728.1	43.9	800,963.54	572,180.11	6,728.13	0.00	
16,600.0	91.13	359.53	9,825.6	6,098.6	6,828.1	43.1	800,962.72	572,280.08	6,828.10	0.00	
16,700.0	91.13	359.53	9,823.7	6,096.7	6,928.0	42.3	800,961.90	572,380.06	6,928.08	0.00	
16,800.0	91.13	359.53	9,821.7	6,094.7	7,028.0	41.5	800,961.08	572,480.04	7,028.06	0.00	
16,900.0	91.13	359.53	9,819.7	6,092.7	7,128.0	40.6	800,960.26	572,580.01	7,128.03	0.00	
17,000.0	91.13	359.53	9,817.8	6,090.8	7,228.0	39.8	800,959.44	572,679.99	7,228.01	0.00	
17,100.0	91.13	359.53	9,815.8	6,088.8	7,327.9	39.0	800,958.62	572,779.97	7,327.98	0.00	
17,200.0	91.13	359.53	9,813.8	6,086.8	7,427.9	38.2	800,957.80	572,879.95	7,427.96	0.00	
17,300.0	91.13	359.53	9,811.8	6,084.8	7,527.9	37.4	800,956.98	572,979.92	7,527.94	0.00	
17,400.0	91.13	359.53	9,809.9	6,082.9	7,627.9	36.5	800,956.16	573,079.90	7,627.91	0.00	
17,500.0	91.13	359.53	9,807.9	6,080.9	7,727.8	35.7	800,955.34	573,179.88	7,727.89	0.00	
17,600.0	91.13	359.53	9,805.9	6,078.9	7,827.8	34.9	800,954.52	573,279.86	7,827.86	0.00	
17,700.0	91.13	359.53	9,803.9	6,076.9	7,927.8	34.1	800,953.70	573,379.83	7,927.84	0.00	
17,800.0	91.13	359.53	9,802.0	6,075.0	8,027.8	33.3	800,952.88	573,479.81	8,027.82	0.00	
17,900.0	91.13	359.53	9,800.0	6,073.0	8,127.8	32.4	800,952.06	573,579.79	8,127.79	0.00	
18,000.0	91.13	359.53	9,798.0	6,071.0	8,227.7	31.6	800,951.24	573,679.76	8,227.77	0.00	
18,100.0	91.13	359.53	9,796.1	6,069.1	8,327.7	30.8	800,950.42	573,779.74	8,327.74	0.00	
18,200.0	91.13	359.53	9,794.1	6,067.1	8,427.7	30.0	800,949.60	573,879.72	8,427.72	0.00	
18,300.0	91.13	359.53	9,792.1	6,065.1	8,527.7	29.2	800,948.78	573,979.70	8,527.70	0.00	
18,400.0	91.13	359.53	9,790.1	6,063.1	8,627.6	28.3	800,947.96	574,079.67	8,627.67	0.00	



**Morcor Engineering**  
Morcor Standard Plan

**Company:** Caza Operating LLC  
**Project:** Igloo 19-18 State Fed Com 11H  
**Site:** Igloo 19-18 State Fed Com 11H  
**Well:** Igloo 19-18 State Fed Com 11H  
**Wellbore:** Igloo 19-18 State Fed Com 11H  
**Design:** 20201016 Igloo 19-18 State Fed Com 11H - Plan 1

**Local Co-ordinate Reference:** Well Igloo 19-18 State Fed Com 11H  
**TVD Reference:** WELL @ 3727.0usft (Original Well Elev)  
**MD Reference:** WELL @ 3727.0usft (Original Well Elev)  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**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)
18,500.0	91.13	359.53	9,788.2	6,061.2	8,727.6	27.5	800,947.14	574,179.65	8,727.65	0.00
18,600.0	91.13	359.53	9,786.2	6,059.2	8,827.6	26.7	800,946.32	574,279.63	8,827.62	0.00
18,700.0	91.13	359.53	9,784.2	6,057.2	8,927.6	25.9	800,945.50	574,379.60	8,927.60	0.00
18,800.0	91.13	359.53	9,782.3	6,055.3	9,027.6	25.1	800,944.68	574,479.58	9,027.58	0.00
18,900.0	91.13	359.53	9,780.3	6,053.3	9,127.5	24.2	800,943.86	574,579.56	9,127.55	0.00
19,000.0	91.13	359.53	9,778.3	6,051.3	9,227.5	23.4	800,943.04	574,679.54	9,227.53	0.00
19,100.0	91.13	359.53	9,776.3	6,049.3	9,327.5	22.6	800,942.22	574,779.51	9,327.50	0.00
19,200.0	91.13	359.53	9,774.4	6,047.4	9,427.5	21.8	800,941.40	574,879.49	9,427.48	0.00
19,300.0	91.13	359.53	9,772.4	6,045.4	9,527.4	21.0	800,940.58	574,979.47	9,527.46	0.00
19,400.0	91.13	359.53	9,770.4	6,043.4	9,627.4	20.1	800,939.76	575,079.44	9,627.43	0.00
19,500.0	91.13	359.53	9,768.5	6,041.5	9,727.4	19.3	800,938.94	575,179.42	9,727.41	0.00
19,600.0	91.13	359.53	9,766.5	6,039.5	9,827.4	18.5	800,938.12	575,279.40	9,827.38	0.00
19,700.0	91.13	359.53	9,764.5	6,037.5	9,927.3	17.7	800,937.30	575,379.38	9,927.36	0.00
19,800.0	91.13	359.53	9,762.5	6,035.5	10,027.3	16.9	800,936.48	575,479.35	10,027.34	0.00
19,900.0	91.13	359.53	9,760.6	6,033.6	10,127.3	16.0	800,935.66	575,579.33	10,127.31	0.00
20,000.0	91.13	359.53	9,758.6	6,031.6	10,227.3	15.2	800,934.83	575,679.31	10,227.29	0.00
20,100.0	91.13	359.53	9,756.6	6,029.6	10,327.3	14.4	800,934.01	575,779.28	10,327.26	0.00
20,200.0	91.13	359.53	9,754.6	6,027.6	10,427.2	13.6	800,933.19	575,879.26	10,427.24	0.00
20,220.0	91.13	359.53	9,754.3	6,027.3	10,447.2	13.4	800,933.03	575,899.26	10,447.24	0.00

TD at 20220.0 - 6" Production Casing



**Morcor Engineering**

Morcor Standard Plan

<b>Company:</b>	Caza Operating LLC	<b>Local Co-ordinate Reference:</b>	Well Igloo 19-18 State Fed Com 11H
<b>Project:</b>	Igloo 19-18 State Fed Com 11H	<b>TVD Reference:</b>	WELL @ 3727.0usft (Original Well Elev)
<b>Site:</b>	Igloo 19-18 State Fed Com 11H	<b>MD Reference:</b>	WELL @ 3727.0usft (Original Well Elev)
<b>Well:</b>	Igloo 19-18 State Fed Com 11H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Igloo 19-18 State Fed Com 11H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	20201016 Igloo 19-18 State Fed Com 11H - Plan 1	<b>Database:</b>	EDM 5000.1 Single User Db

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
20,220.0	9,754.3	6" Production Casing	6	8-3/4	
5,653.0	5,653.0	9 5/8" Intermediate Casing	9-5/8	12-1/4	
120.0	120.0	20" Conductor	20	26	
2,150.0	2,150.0	13 3/8" Surface Casing	13-3/8	17-1/2	

Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,806.0	3,806.0	Yates		0.00	
4,067.0	4,067.0	Capitan		0.00	
8,655.4	8,652.0	Bone Spring		0.00	
5,678.0	5,678.0	Delaware		0.00	
2,253.0	2,253.0	Top of Salt		0.00	
1,885.0	1,885.0	Rustler		0.00	
5,892.0	5,892.0	Cherry Canyon		0.00	
9,973.9	9,870.0	1st Bone Spring		0.00	
3,496.0	3,496.0	Base of Salt		0.00	
6,826.0	6,826.0	Brushy Canyon		0.00	



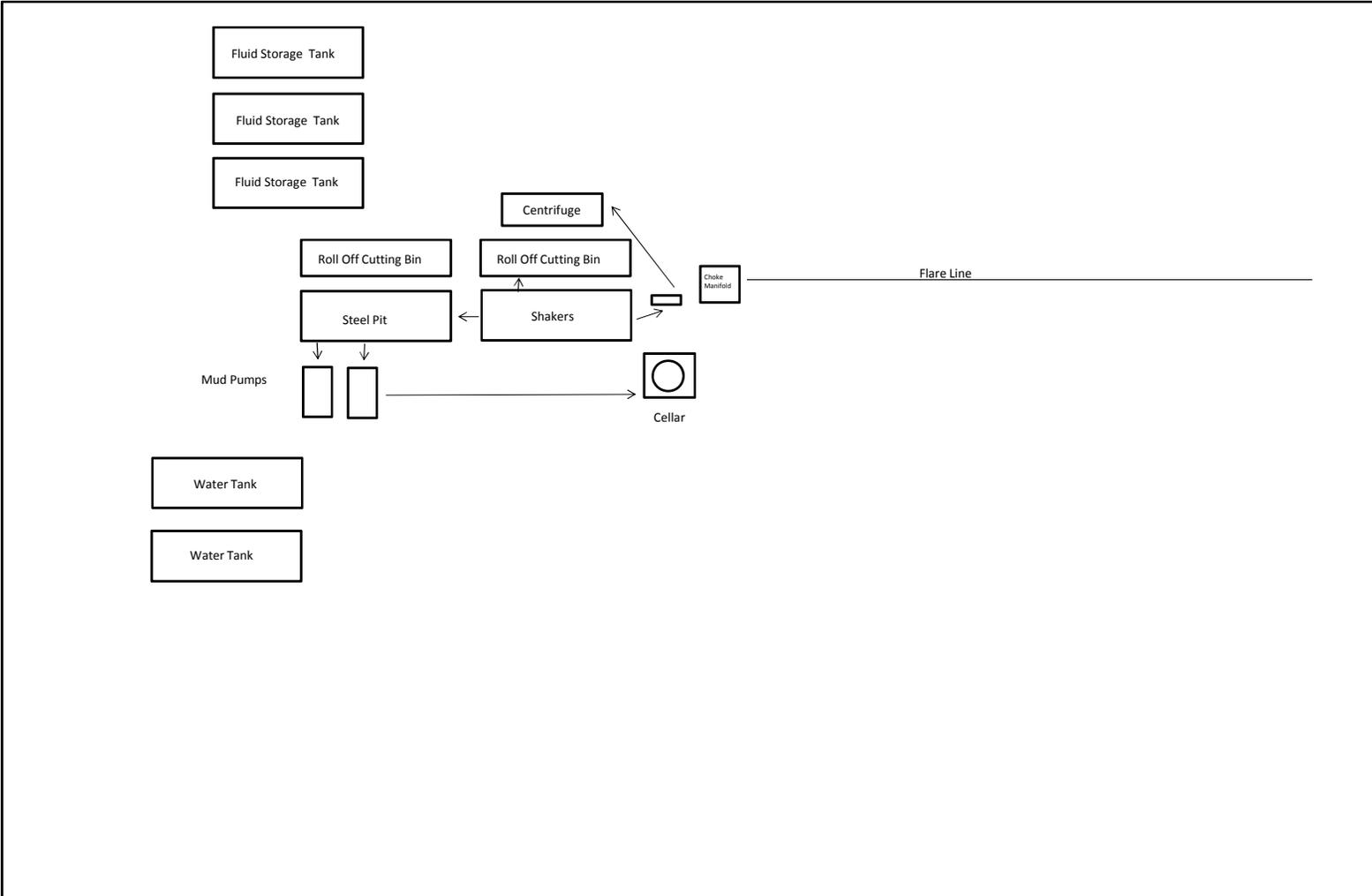
**Morcor Engineering**  
Morcor Standard Plan

<b>Company:</b>	Caza Operating LLC	<b>Local Co-ordinate Reference:</b>	Well Igloo 19-18 State Fed Com 11H
<b>Project:</b>	Igloo 19-18 State Fed Com 11H	<b>TVD Reference:</b>	WELL @ 3727.0usft (Original Well Elev)
<b>Site:</b>	Igloo 19-18 State Fed Com 11H	<b>MD Reference:</b>	WELL @ 3727.0usft (Original Well Elev)
<b>Well:</b>	Igloo 19-18 State Fed Com 11H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Igloo 19-18 State Fed Com 11H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	20201016 Igloo 19-18 State Fed Com 11H - Plan 1	<b>Database:</b>	EDM 5000.1 Single User Db

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
7,900.0	7,900.0	0.0	0.0	Start Build 3.00	
8,100.0	8,099.6	-5.2	9.1	Start 900.0 hold at 8100.0 MD	
9,000.0	8,994.7	-52.3	90.5	Start Drop -3.00	
9,200.0	9,194.3	-57.5	99.6	Start 190.0 hold at 9200.0 MD	
9,390.0	9,384.3	-57.5	99.6	Start Build 10.13	
10,290.0	9,950.1	519.5	94.9	Start Turn 0.00	
20,220.0	9,754.3	10,447.2	13.4	TD at 20220.0	

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_

### Closed Loop Diagram Design Plan



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<sup>3</sup> 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.

**United States Department of the Interior**  
**Bureau of Land Management**  
 CARLSBAD FIELD OFFICE  
 620 E. GREENE  
 CARLSBAD, NM 88220 -6292  
 Phone: (575) 234-5972

Receipt

No: 4838333

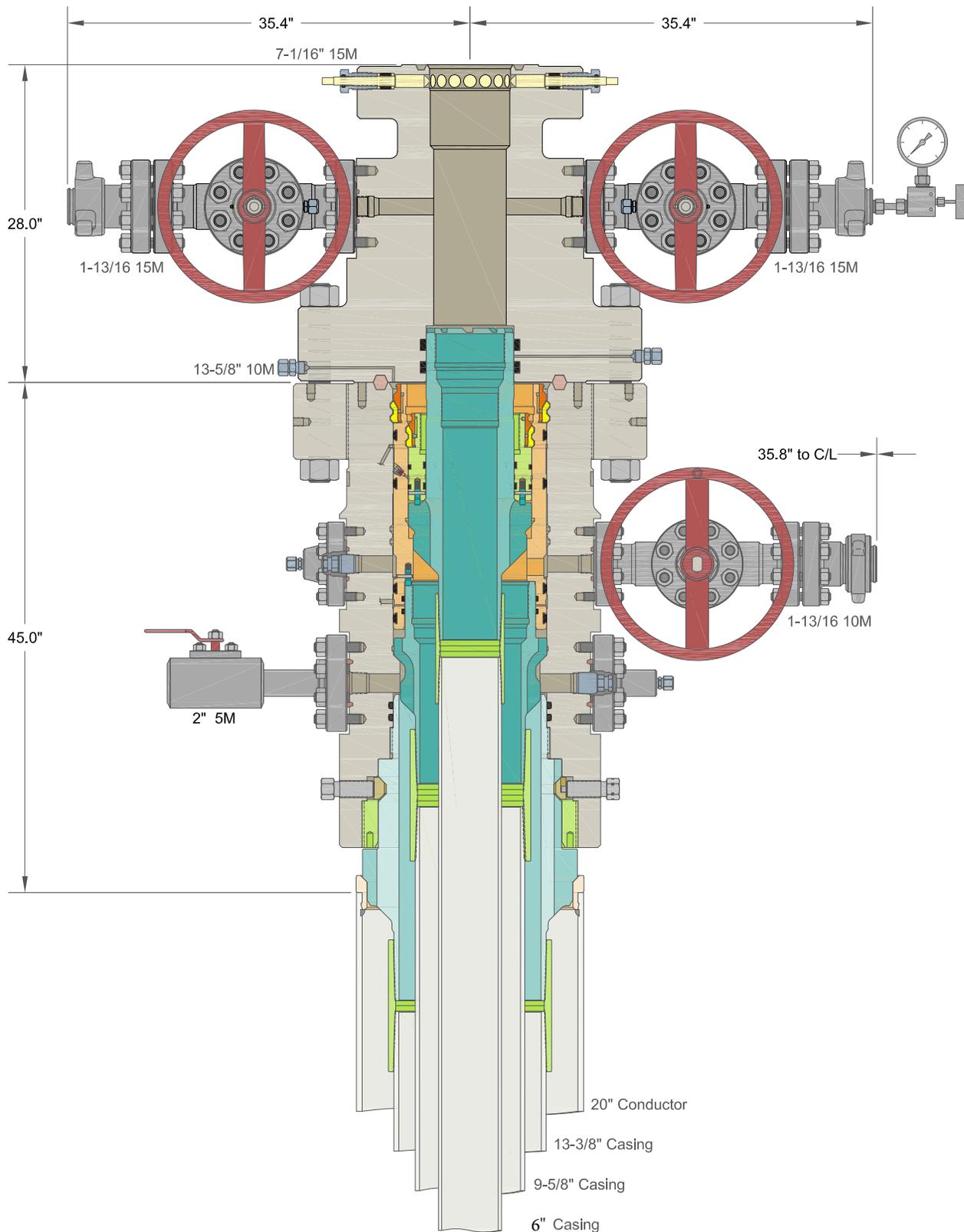
<b>Transaction #:</b> 4966395	
<b>Date of Transaction:</b> 11/17/2020	
CUSTOMER:	
CAZA OPERATING LLC 200 N LORAIN ST STE 1550 MIDLAND, TX 79701-4765 US	

LINE #	QTY	DESCRIPTION	REMARKS	UNIT PRICE	TOTAL
1	1.00	OIL & GAS / APPLICATION FOR PERMIT TO DRILL (APD) / APD FEE	IGLOO 19-18 STATE FED COM 10H	- n/a -	7770.00
2	1.00	OIL & GAS / APPLICATION FOR PERMIT TO DRILL (APD) / APD FEE - BW ALLOCATION	IGLOO 19-18 STATE FED COM 10H	- n/a -	2590.00
3	1.00	OIL & GAS / APPLICATION FOR PERMIT TO DRILL (APD) / APD FEE	IGLOO 19-18 STATE FED COM 11H	- n/a -	7770.00
4	1.00	OIL & GAS / APPLICATION FOR PERMIT TO DRILL (APD) / APD FEE - BW ALLOCATION	IGLOO 19-18 STATE FED COM 11H	- n/a -	2590.00
<b>TOTAL:</b>					<b>\$20,720.00</b>

PAYMENT INFORMATION			
1	AMOUNT:	20720.00	POSTMARKED: 11/16/2020
	TYPE:	CHECK	RECEIVED: 11/16/2020
	CHECK NO:	54814	
	NAME:	CAZA OPERATING LLC 200 N LORAIN ST STE 1550 MIDLAND TX 79701-4765 US	

REMARKS

This receipt was generated by the automated BLM Collections and Billing System and is a paper representation of a portion of the official electronic record contained therein.



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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	



# SUPO Data Report

05/12/2022

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

APD ID: 10400063695

Submission Date: 12/07/2020

Highlighted data reflects the most recent changes

Operator Name: CAZA OPERATING LLC

Well Name: IGLOO 19-18 STATE FED COM

Well Number: 11H

[Show Final Text](#)

Well Type: OIL WELL

Well Work Type: Drill

## Section 1 - Existing Roads

Will existing roads be used? YES

Existing Road Map:

IGLOO\_19\_18\_STATE\_FED\_COM\_11H\_\_\_VICINITY\_AND\_EXISTING\_ROAD\_MAP\_20201207163404.pdf

Existing Road Purpose: ACCESS,FLUID TRANSPORT

Row(s) Exist? NO

ROW ID(s)

ID:

Do the existing roads need to be improved? NO

Existing Road Improvement Description:

Existing Road Improvement Attachment:

## Section 2 - New or Reconstructed Access Roads

Will new roads be needed? NO

## Section 3 - Location of Existing Wells

Existing Wells Map? YES

Attach Well map:

**Operator Name:** CAZA OPERATING LLC

**Well Name:** IGLOO 19-18 STATE FED COM

**Well Number:** 11H

IGLOO\_19\_18\_STATE\_FED\_COM\_11H\_\_\_1\_MILE\_RADIUS\_MAP\_20201207163523.pdf

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

Submit or defer a Proposed Production Facilities plan? SUBMIT

**Production Facilities description:** Existing Igloo Central Tank Battery on State Land. 3 phase metered separator, FWKO, heater treater and 3-500bbl steel tanks will be added to the existing CTB.

**Production Facilities map:**

IGLOO\_19\_18\_STATE\_FED\_COM\_11H\_\_\_PRODUCTION\_FACILITY\_20201207163558.pdf

### Section 5 - Location and Types of Water Supply

#### Water Source Table

**Water source type:** GW WELL

**Water source use type:** SURFACE CASING  
INTERMEDIATE/PRODUCTION CASING  
STIMULATION

**Source latitude:** 32.47519

**Source longitude:** -103.56869

**Source datum:** NAD83

**Water source permit type:** PRIVATE CONTRACT

**Water source transport method:** TRUCKING

**Source land ownership:** PRIVATE

**Source transportation land ownership:** PRIVATE

**Water source volume (barrels):** 400000

**Source volume (acre-feet):** 51.55723853

**Source volume (gal):** 16800000

**Water source and transportation**

IGLOO\_19\_18\_STATE\_FED\_COM\_11H\_\_\_WATER\_SUPPLY\_MAP\_20201207163759.pdf

**Water source comments:** T21S R33E Section 1 Lot 2

**New water well?** N

#### New Water Well Info

**Well latitude:**

**Well Longitude:**

**Well datum:**

**Operator Name:** CAZA OPERATING LLC

**Well Name:** IGLOO 19-18 STATE FED COM

**Well Number:** 11H

**Well target aquifer:**

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

**Est thickness of aquifer:**

**Aquifer comments:**

**Aquifer documentation:**

**Well depth (ft):**

**Well casing type:**

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

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

**New water well casing?**

**Used casing source:**

**Drilling method:**

**Drill material:**

**Grout material:**

**Grout depth:**

**Casing length (ft.):**

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

**Well Production type:**

**Completion Method:**

**Water well additional information:**

**State appropriation permit:**

**Additional information attachment:**

**Section 6 - Construction Materials**

**Using any construction materials:** NO

**Construction Materials description:**

**Construction Materials source location**

**Section 7 - Methods for Handling**

**Waste type:** DRILLING

**Waste content description:** drill cuttings

**Amount of waste:** 1063410 pounds

**Waste disposal frequency :** Daily

**Safe containment description:** roll off bins

**Safe containmant attachment:**

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

**Disposal type description:**

**Disposal location description:** R360 commercial facility

**Waste type:** SEWAGE

**Waste content description:** onsite housing sewage

**Amount of waste:** 300 gallons

**Waste disposal frequency :** Daily

<b>Operator Name:</b> CAZA OPERATING LLC	<b>Well Name:</b> IGLOO 19-18 STATE FED COM	<b>Well Number:</b> 11H
--	---	-------------------------

**Safe containment description:** closed septic system

**Safe containmant attachment:**

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

**Disposal type description:**

**Disposal location description:** Hobbs Waste Water Management

**Waste type:** GARBAGE

**Waste content description:** onsite housing trash

**Amount of waste:** 100 pounds

**Waste disposal frequency :** Daily

**Safe containment description:** steel trash trailer

**Safe containmant attachment:**

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

**Disposal type description:**

**Disposal location description:** State Approved Eunice Landfill

**Reserve Pit**

**Reserve Pit being used?** NO

**Temporary disposal of produced water into reserve pit?** NO

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

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

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

**Reserve pit liner**

**Reserve pit liner specifications and installation description**

**Cuttings Area**

**Cuttings Area being used?** NO

**Are you storing cuttings on location?** N

**Description of cuttings location**

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

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

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

**WCuttings area liner**

**Operator Name:** CAZA OPERATING LLC

**Well Name:** IGLOO 19-18 STATE FED COM

**Well Number:** 11H

**Cuttings area liner specifications and installation description**

**Section 8 - Ancillary**

**Are you requesting any Ancillary Facilities?:** N

**Ancillary Facilities**

**Comments:**

**Section 9 - Well Site**

**Well Site Layout Diagram:**

IGLOO\_19\_18\_STATE\_FED\_COM\_11H\_\_\_WELL\_LOCATION\_MAP\_20201207164209.pdf

IGLOO\_19\_18\_STATE\_FED\_COM\_11H\_\_\_Rig\_Layout\_20201207164242.pdf

**Comments:**

**Section 10 - Plans for Surface**

**Type of disturbance:** No New Surface Disturbance    **Multiple Well Pad Name:** Igloo 19 State

**Multiple Well Pad Number:** 1H

**Recontouring**

**Drainage/Erosion control construction:** none required, existing multi-well pad on state land (fee/fee/fed)

**Drainage/Erosion control reclamation:** none required, existing multi-well pad on state land (fee/fee/fed)

<b>Well pad proposed disturbance (acres):</b>	<b>Well pad interim reclamation (acres):</b> 0	<b>Well pad long term disturbance (acres):</b> 0
<b>Road proposed disturbance (acres):</b>	<b>Road interim reclamation (acres):</b> 0	<b>Road long term disturbance (acres):</b> 0
<b>Powerline proposed disturbance (acres):</b>	<b>Powerline interim reclamation (acres):</b> 0	<b>Powerline long term disturbance (acres):</b> 0
<b>Pipeline proposed disturbance (acres):</b>	<b>Pipeline interim reclamation (acres):</b> 0	<b>Pipeline long term disturbance (acres):</b> 0
<b>Other proposed disturbance (acres):</b>	<b>Other interim reclamation (acres):</b> 0	<b>Other long term disturbance (acres):</b> 0
<b>Total proposed disturbance: 0</b>	<b>Total interim reclamation: 0</b>	<b>Total long term disturbance: 0</b>

**Disturbance Comments:**

**Reconstruction method:** none required, existing multi-well pad on state land (fee/fee/fed)

**Topsoil redistribution:** none required, existing multi-well pad on state land (fee/fee/fed)

**Soil treatment:** none required, existing multi-well pad on state land (fee/fee/fed)

**Existing Vegetation at the well pad:** sage brush and native grasses

<b>Operator Name:</b> CAZA OPERATING LLC	<b>Well Number:</b> 11H
<b>Well Name:</b> IGLOO 19-18 STATE FED COM	

**Existing Vegetation at the well pad**

**Existing Vegetation Community at the road:** sage brush and native grasses

**Existing Vegetation Community at the road**

**Existing Vegetation Community at the pipeline:** sage brush and native grasses

**Existing Vegetation Community at the pipeline**

**Existing Vegetation Community at other disturbances:** sage brush and native grasses

**Existing Vegetation Community at other disturbances**

**Non native seed used?** N

**Non native seed description:**

**Seedling transplant description:**

**Will seedlings be transplanted for this project?** N

**Seedling transplant description**

**Will seed be harvested for use in site reclamation?** N

**Seed harvest description:**

**Seed harvest description attachment:**

**Seed**

**Seed Table**

<b>Seed Summary</b>	
<b>Seed Type</b>	<b>Pounds/Acre</b>

**Total pounds/Acre:**

**Seed reclamation**

**Operator Contact/Responsible Official**

**First Name:** STEVE

**Last Name:** MORRIS

**Phone:** (985)415-9729

**Email:** steve.morris@morcorengineering.com

**Seedbed prep:** none required, existing multi-well pad on state land (fee/fee/fed)

**Seed BMP:** none required, existing multi-well pad on state land (fee/fee/fed)

**Operator Name:** CAZA OPERATING LLC

**Well Name:** IGLOO 19-18 STATE FED COM

**Well Number:** 11H

**Seed method:** none required, existing multi-well pad on state land (fee/fee/fed)

**Existing invasive species?** N

**Existing invasive species treatment description:**

**Existing invasive species treatment**

**Weed treatment plan description:** none required, existing multi-well pad on state land (fee/fee/fed)

**Weed treatment plan**

**Monitoring plan description:** none required, existing multi-well pad on state land (fee/fee/fed)

**Monitoring plan**

**Success standards:** none required, existing multi-well pad on state land (fee/fee/fed)

**Pit closure description:** no pits

**Pit closure attachment:**

**Section 11 - Surface**

**Disturbance type:** WELL PAD

**Describe:**

**Surface Owner:** STATE GOVERNMENT

**Other surface owner description:**

**BIA Local Office:**

**BOR Local Office:**

**COE Local Office:**

**DOD Local Office:**

**NPS Local Office:**

**State Local Office:** HOBBS NMOCD

**Military Local Office:**

**USFWS Local Office:**

**Other Local Office:**

**USFS Region:**

**USFS Forest/Grassland:**

**USFS Ranger District:**

**Operator Name:** CAZA OPERATING LLC

**Well Name:** IGLOO 19-18 STATE FED COM

**Well Number:** 11H

**Section 12 - Other**

**Right of Way needed?** N

**Use APD as ROW?**

**ROW Type(s):**

**ROW**

**SUPO Additional Information:**

**Use a previously conducted onsite?** N

**Previous Onsite information:**

**Other SUPO**

IGLOO\_19\_18\_STATE\_FED\_COM\_11H\_\_\_C\_129\_Gas\_Capture\_Plan\_20201207174057.pdf

IGLOO\_19\_18\_STATE\_FED\_COM\_11H\_\_\_Closed\_Loop\_Diagram\_Design\_Plan\_20201207174057.pdf

IGLOO\_19\_18\_STATE\_FED\_COM\_11H\_\_\_Closed\_Loop\_Design\_Operating\_and\_Closure\_Plan\_20201207174058.pdf

IGLOO\_19\_18\_STATE\_FED\_COM\_11H\_\_\_APD\_RECEIPT\_20201207174058.pdf

IGLOO\_19\_18\_STATE\_FED\_COM\_11H\_\_\_VICINITY\_MAP\_20201207174100.pdf

IGLOO\_19\_18\_STATE\_FED\_COM\_11H\_\_\_WELL\_LOCATION\_MAP\_20201207174104.pdf

IGLOO\_19\_18\_STATE\_FED\_COM\_11H\_\_\_AS\_BUILT\_PLAT\_20201207174105.pdf

IGLOO\_19\_18\_STATE\_FED\_COM\_11H\_\_\_LOCATION\_VERIFICATION\_MAP\_20201207174118.pdf

**United States Department of the Interior**  
**Bureau of Land Management**  
 CARLSBAD FIELD OFFICE  
 620 E. GREENE  
 CARLSBAD, NM 88220 -6292  
 Phone: (575) 234-5972

Receipt

No: 4838333

<b>Transaction #:</b> 4966395	
<b>Date of Transaction:</b> 11/17/2020	
CUSTOMER:	
CAZA OPERATING LLC 200 N LORAIN ST STE 1550 MIDLAND, TX 79701-4765 US	

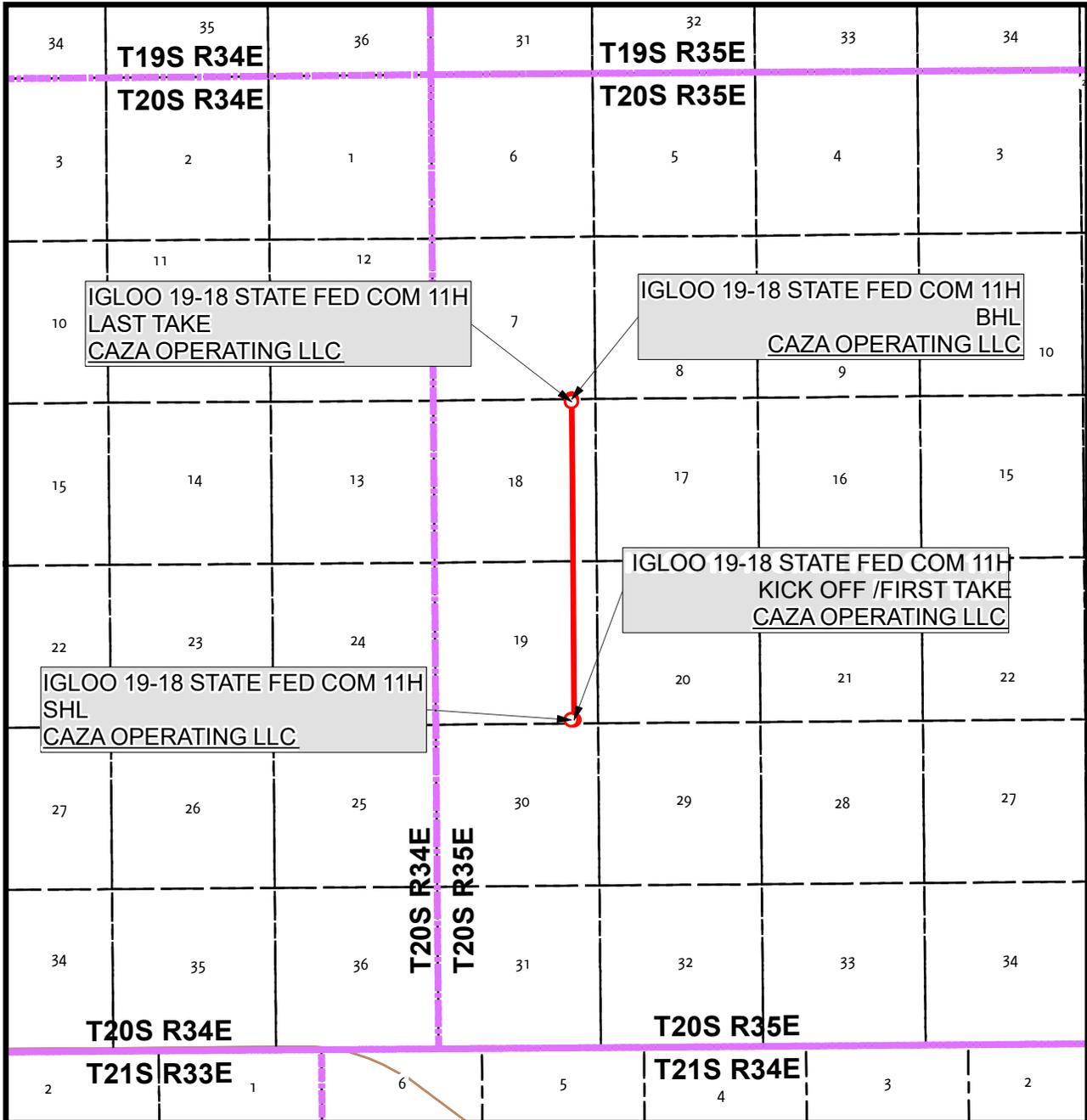
LINE #	QTY	DESCRIPTION	REMARKS	UNIT PRICE	TOTAL
1	1.00	OIL & GAS / APPLICATION FOR PERMIT TO DRILL (APD) / APD FEE	IGLOO 19-18 STATE FED COM 10H	- n/a -	7770.00
2	1.00	OIL & GAS / APPLICATION FOR PERMIT TO DRILL (APD) / APD FEE - BW ALLOCATION	IGLOO 19-18 STATE FED COM 10H	- n/a -	2590.00
3	1.00	OIL & GAS / APPLICATION FOR PERMIT TO DRILL (APD) / APD FEE	IGLOO 19-18 STATE FED COM 11H	- n/a -	7770.00
4	1.00	OIL & GAS / APPLICATION FOR PERMIT TO DRILL (APD) / APD FEE - BW ALLOCATION	IGLOO 19-18 STATE FED COM 11H	- n/a -	2590.00
<b>TOTAL:</b>					<b>\$20,720.00</b>

PAYMENT INFORMATION			
1	AMOUNT:	20720.00	POSTMARKED: 11/16/2020
	TYPE:	CHECK	RECEIVED: 11/16/2020
	CHECK NO:	54814	
	NAME:	CAZA OPERATING LLC 200 N LORAIN ST STE 1550 MIDLAND TX 79701-4765 US	

REMARKS

This receipt was generated by the automated BLM Collections and Billing System and is a paper representation of a portion of the official electronic record contained therein.

# VICINITY MAP



SEC. 19 TWP. 20-S RGE. 35-E  
 SURVEY: N.M.P.M.  
 COUNTY: LEA  
 OPERATOR: CAZA OPERATING LLC  
 DESCRIPTION: 100' FSL & 872' FEL  
 ELEVATION: 3703'  
 LEASE: IGLOO 19-18 STATE FED COM  
 U.S.G.S. TOPOGRAPHIC MAP: MONUMENT SW, NM.

1" = 1 MILE



SHEET 3 OF 3

PREPARED BY:  
 R-SQUARED GLOBAL, LLC  
 1309 LOUISVILLE AVENUE, MONROE, LA 71201  
 318-323-6900 OFFICE  
 JOB No. R4021\_011

LEGEND

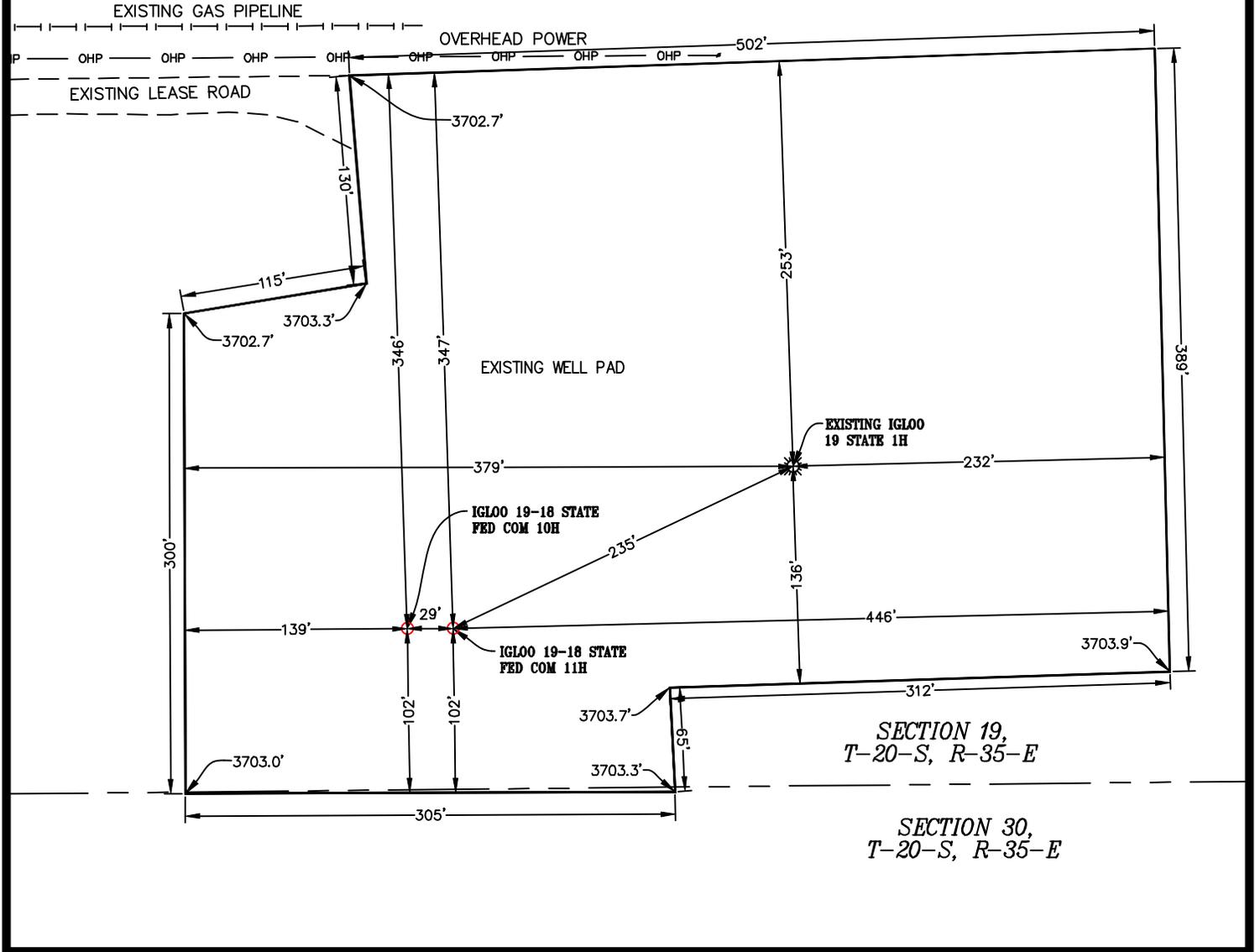
- PROPOSED WELL PAD —————
- OVERHEAD POWER LINE ——— OHP ———
- EXISTING LEASE ROAD - - - - -
- EXISTING PIPELINE | | | | |
- SECTION LINE — — — — —
- EXISTING FENCE — x — x —

# WELL LOCATION MAP

IGLOO 19-18 STATE FED COM  
 SEC. 19 & 30, TWP. 20-S, RGE. 35-E  
 SURVEY: N.M.P.M.  
 COUNTY: LEA  
 OPERATOR: CAZA OPERATING, LLC  
 U.S.G.S. TOPOGRAPHIC MAP: MONUMENT SW, N.M.

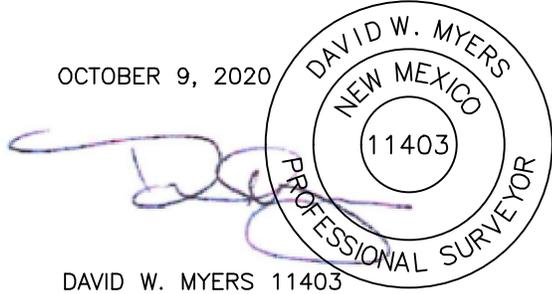


IGLOO 19-18 STATE FED COM 10H CAZA OPERATING, LLC 101' FSL 900' FEL, SECTION 19 NAD 83, SPCS NM EAST X: 800891.03' / Y: 565451.94' LAT: 32.55166191N / LON: 103.49096182W NAD 27, SPCS NM EAST X: 759709.59' / Y: 565389.52' LAT: 32.55153812N / LON: 103.49047477W ELEVATION = 3,704'	IGLOO 19-18 STATE FED COM 11H CAZA OPERATING, LLC 100' FSL 872' FEL, SECTION 19 NAD 83, SPCS NM EAST X: 800919.61' / Y: 565452.03' LAT: 32.55166154N / LON: 103.49086905W NAD 27, SPCS NM EAST X: 759738.17' / Y: 565389.62' LAT: 32.55153775N / LON: 103.49038201W ELEVATION = 3,703'
---	---



NOTE:  
 THIS IS NOT A BOUNDARY SURVEY,  
 APPARENT PROPERTY CORNERS AND  
 PROPERTY LINES ARE SHOWN FOR  
 INFORMATION ONLY. BOUNDARY DATA SHOWN  
 IS FROM STATE OF NEW MEXICO OIL  
 CONSERVATION DIVISION FORM C-102  
 INCLUDED IN THIS SUBMITTAL.

OCTOBER 9, 2020



DAVID W. MYERS 11403

50' 0' 50' 100'

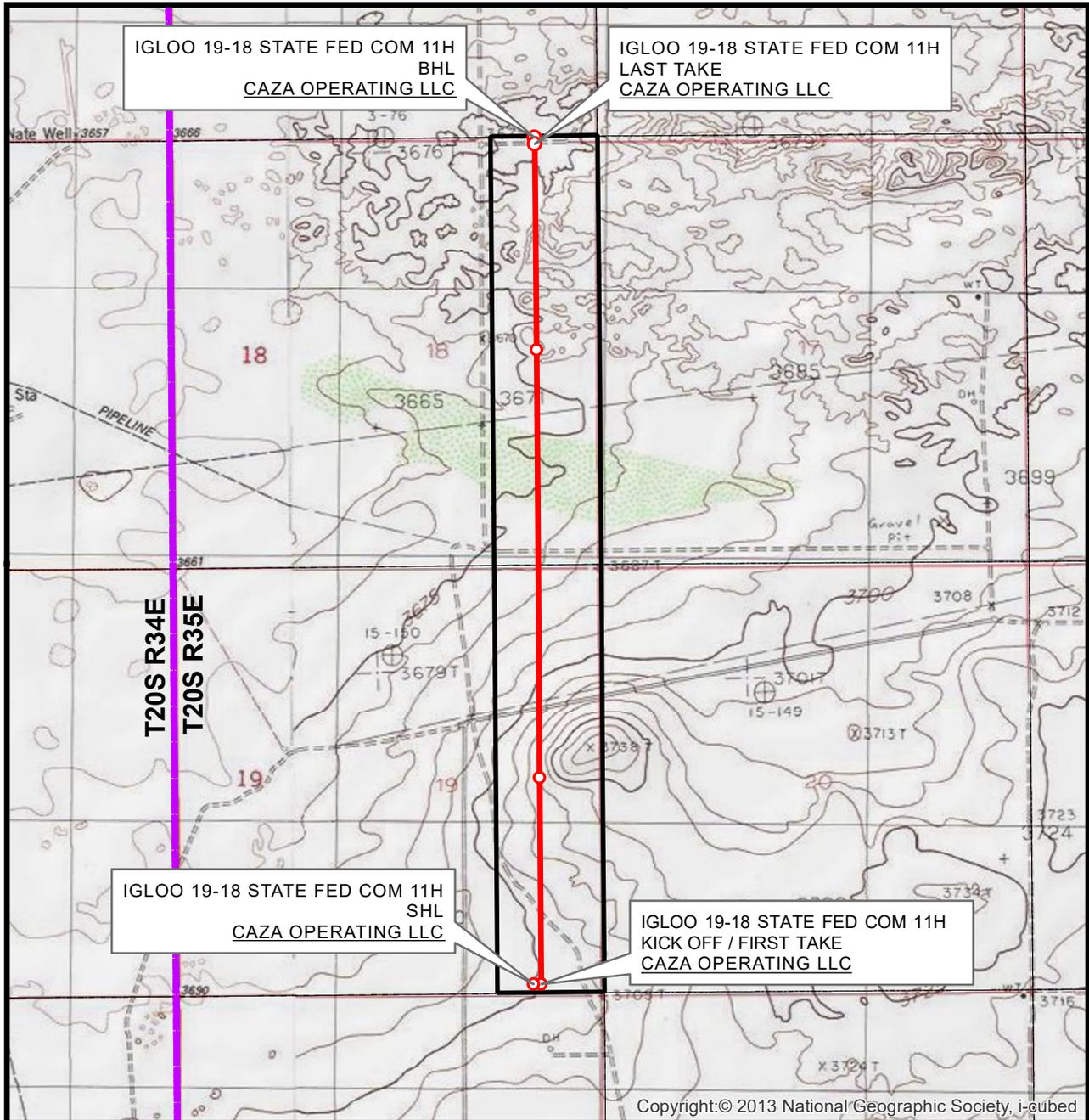
SCALE: 1" = 100'

SHEET 4 OF 5

PREPARED BY:  
 R-SQUARED GLOBAL, LLC  
 1309 LOUISVILLE AVENUE,  
 MONROE, LA 71201  
 318-323-6900 OFFICE  
 JOB No. R4021\_011



# LOCATION VERIFICATION MAP



SEC. 19 TWP. 20-S RGE. 35-E  
 SURVEY: N.M.P.M.  
 COUNTY: LEA  
 OPERATOR: CAZA OPERATING LLC  
 DESCRIPTION: 100' FSL & 872' FEL  
 ELEVATION: 3703'  
 LEASE: IGLOO 19-18 STATE FED COM  
 U.S.G.S. TOPOGRAPHIC MAP: MONUMENT SW, NM.

1" = 2,000'  
 CONTOUR INTERVAL = 5'



SHEET 2 OF 3

PREPARED BY:  
 R-SQUARED GLOBAL, LLC  
 1309 LOUISVILLE AVENUE, MONROE, LA 71201  
 318-323-6900 OFFICE  
 JOB No. R4021\_011



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

# PWD Data Report

05/12/2022

**APD ID:** 10400063695

**Submission Date:** 12/07/2020

**Operator Name:** CAZA OPERATING LLC

**Well Name:** IGLOO 19-18 STATE FED COM

**Well Number:** 11H

**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

Would you like to utilize Lined Pit PWD options? N

**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**

**Pit liner description:**

**Pit liner manufacturers**

**Precipitated solids disposal:**

**Decribe precipitated solids disposal:**

**Precipitated solids disposal**

**Lined pit precipitated solids disposal schedule:**

**Lined pit precipitated solids disposal schedule**

**Lined pit reclamation description:**

**Lined pit reclamation**

**Leak detection system description:**

**Leak detection system**

**Operator Name:** CAZA OPERATING LLC

**Well Name:** IGLOO 19-18 STATE FED COM

**Well Number:** 11H

**Lined pit Monitor description:**

Lined pit Monitor

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

**Section 3 - Unlined**

Would you like to utilize Unlined Pit PWD options? N

**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

Precipitated solids disposal:

Describe precipitated solids disposal:

Precipitated solids disposal

Unlined pit precipitated solids disposal schedule:

Unlined pit precipitated solids disposal schedule

Unlined pit reclamation description:

Unlined pit reclamation

Unlined pit Monitor description:

Unlined pit Monitor

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

Beneficial use user

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

State

Unlined Produced Water Pit Estimated

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

**Operator Name:** CAZA OPERATING LLC

**Well Name:** IGLOO 19-18 STATE FED COM

**Well Number:** 11H

**Is the reclamation bond a rider under the BLM bond?**

**Unlined pit bond number:**

**Unlined pit bond amount:**

**Additional bond information**

**Section 4 -**

**Would you like to utilize Injection PWD options?** N

**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**

**Underground Injection Control (UIC) Permit?**

**UIC Permit**

**Section 5 - Surface**

**Would you like to utilize Surface Discharge PWD options?** N

**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 -**

**Would you like to utilize Other PWD options?** N

**Produced Water Disposal (PWD) Location:**

**PWD surface owner:**

**PWD disturbance (acres):**

**Other PWD discharge volume (bbl/day):**

**Operator Name:** CAZA OPERATING LLC

**Well Name:** IGLOO 19-18 STATE FED COM

**Well Number:** 11H

**Other PWD type description:**

**Other PWD type**

**Have other regulatory requirements been met?**

**Other regulatory requirements**



# Bond Info Data

05/12/2022

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

**APD ID:** 10400063695

**Submission Date:** 12/07/2020

Highlighted data reflects the most recent changes  
[Show Final Text](#)

**Operator Name:** CAZA OPERATING LLC

**Well Name:** IGLOO 19-18 STATE FED COM

**Well Number:** 11H

**Well Type:** OIL WELL

**Well Work Type:** Drill

## Bond

**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**

**Reclamation bond number:**

**Reclamation bond amount:**

**Reclamation bond rider amount:**

**Additional reclamation bond information**

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

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

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

WELL LOCATION AND ACREAGE DEDICATION PLAT

<sup>1</sup> API Number <b>30-025-50389</b>		<sup>2</sup> Pool Code <b>37580</b>		<sup>3</sup> Pool Name <b>LEA BONE SPRING; SOUTH</b>	
<sup>4</sup> Property Code <b>313780</b>		<sup>5</sup> Property Name <b>IGLOO 19-18 STATE FED COM</b>			<sup>6</sup> Well Number <b>11H</b>
<sup>7</sup> OGRID No. <b>249099</b>		<sup>8</sup> Operator Name <b>CAZA OPERATING LLC</b>			<sup>9</sup> Elevation <b>3703'</b>

<sup>10</sup> Surface Location

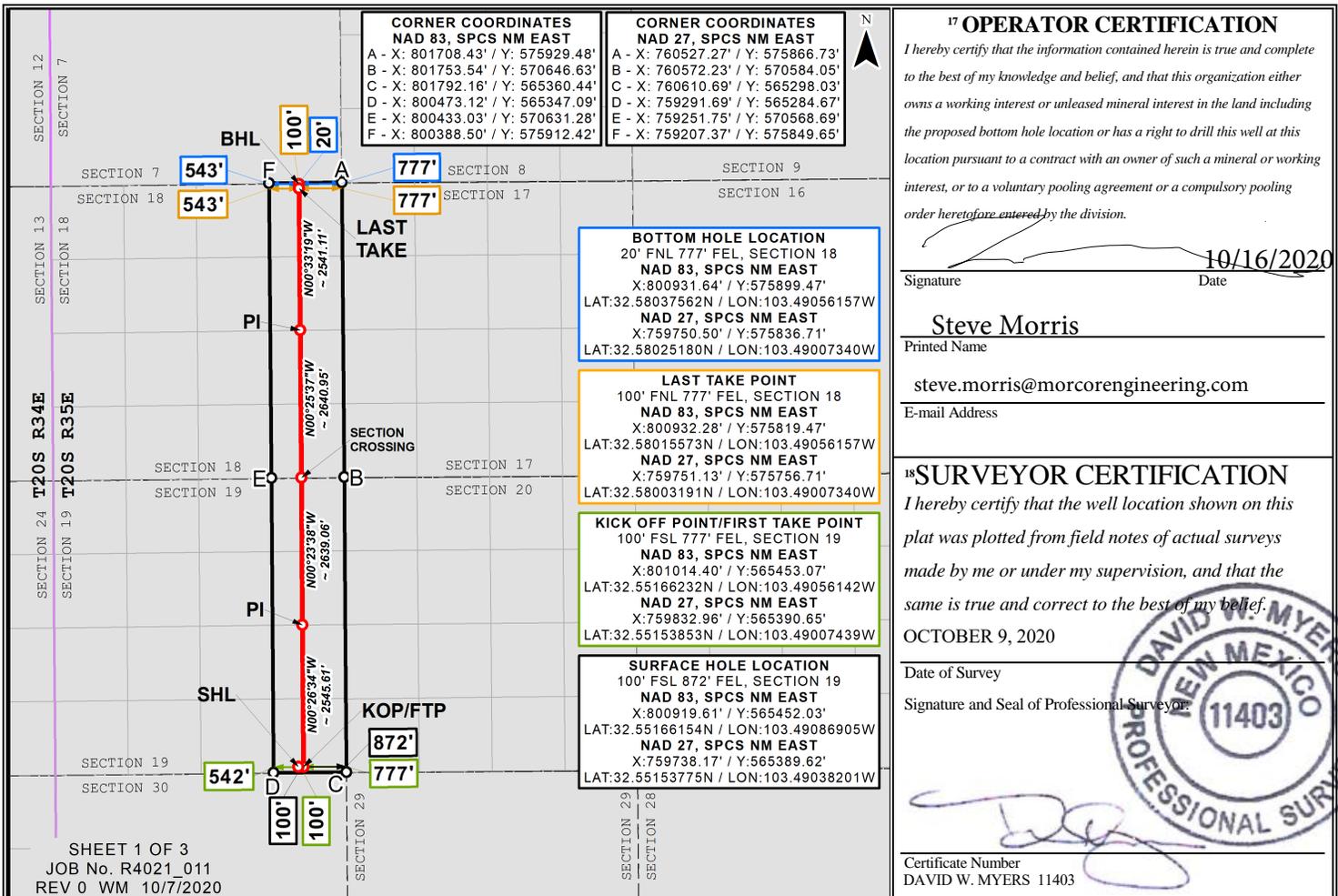
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
P	19	20S	35E		100	SOUTH	872	EAST	LEA

<sup>11</sup> 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
A	18	20S	35E		20	NORTH	777	EAST	LEA

<sup>12</sup> Dedicated Acres <b>320.0</b>	<sup>13</sup> Joint or Infill	<sup>14</sup> Consolidation Code	<sup>15</sup> Order No.
---	-------------------------------	----------------------------------	-------------------------

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.



Distances/areas relative to NAD 83 Combined Scale Factor: 0.99981205 Convergence Angle: 00°26'57.22000"

State of New Mexico  
Energy, Minerals and Natural Resources Department

Submit Electronically  
Via E-permitting

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

## NATURAL GAS MANAGEMENT PLAN

This Natural Gas Management Plan must be submitted with each Application for Permit to Drill (APD) for a new or recompleted well.

### Section 1 – Plan Description Effective May 25, 2021

**I. Operator:** Caza Operating LLC **OGRID:** 249099 **Date:** 6 / 17 / 2022

**II. Type:**  Original  Amendment due to  19.15.27.9.D(6)(a) NMAC  19.15.27.9.D(6)(b) NMAC  Other.

If Other, please describe: \_\_\_\_\_

**III. Well(s):** Provide the following information for each new or recompleted well or set of wells proposed to be drilled or proposed to be recompleted from a single well pad or connected to a central delivery point.

Well Name	API	ULSTR	Footages	Anticipated Oil BBL/D	Anticipated Gas MCF/D	Anticipated Produced Water BBL/D
Igloo 19-18 State Fed Com 11H	30-025-50389	P-19-20S-35E	100FSL 872FEL	750	1200	800

**IV. Central Delivery Point Name:** Sioux 25-36 State Fed CTB [See 19.15.27.9(D)(1) NMAC]

**V. Anticipated Schedule:** Provide the following information for each new or recompleted well or set of wells proposed to be drilled or proposed to be recompleted from a single well pad or connected to a central delivery point.

Well Name	API	Spud Date	TD Reached Date	Completion Commencement Date	Initial Flow Back Date	First Production Date
Igloo 19-18 State Fed Com 11H	30-025-50389	4/01/2023	05/01/2023	05/02/2023	05/15/2023	05/25/2023

**VI. Separation Equipment:**  Attach a complete description of how Operator will size separation equipment to optimize gas capture.

**VII. Operational Practices:**  Attach a complete description of the actions Operator will take to comply with the requirements of Subsection A through F of 19.15.27.8 NMAC.

**VIII. Best Management Practices:**  Attach a complete description of Operator’s best management practices to minimize venting during active and planned maintenance.

**Section 2 – Enhanced Plan**

**EFFECTIVE APRIL 1, 2022**

Beginning April 1, 2022, an operator that is not in compliance with its statewide natural gas capture requirement for the applicable reporting area must complete this section.

Operator certifies that it is not required to complete this section because Operator is in compliance with its statewide natural gas capture requirement for the applicable reporting area.

**IX. Anticipated Natural Gas Production:**

Well	API	Anticipated Average Natural Gas Rate MCF/D	Anticipated Volume of Natural Gas for the First Year MCF

**X. Natural Gas Gathering System (NGGS):**

Operator	System	ULSTR of Tie-in	Anticipated Gathering Start Date	Available Maximum Daily Capacity of System Segment Tie-in

**XI. Map.**  Attach an accurate and legible map depicting the location of the well(s), the anticipated pipeline route(s) connecting the production operations to the existing or planned interconnect of the natural gas gathering system(s), and the maximum daily capacity of the segment or portion of the natural gas gathering system(s) to which the well(s) will be connected.

**XII. Line Capacity.** The natural gas gathering system  will  will not have capacity to gather 100% of the anticipated natural gas production volume from the well prior to the date of first production.

**XIII. Line Pressure.** Operator  does  does not anticipate that its existing well(s) connected to the same segment, or portion, of the natural gas gathering system(s) described above will continue to meet anticipated increases in line pressure caused by the new well(s).

Attach Operator’s plan to manage production in response to the increased line pressure.

**XIV. Confidentiality:**  Operator asserts confidentiality pursuant to Section 71-2-8 NMSA 1978 for the information provided in Section 2 as provided in Paragraph (2) of Subsection D of 19.15.27.9 NMAC, and attaches a full description of the specific information for which confidentiality is asserted and the basis for such assertion.

### Section 3 - Certifications

Effective May 25, 2021

Operator certifies that, after reasonable inquiry and based on the available information at the time of submittal:

Operator will be able to connect the well(s) to a natural gas gathering system in the general area with sufficient capacity to transport one hundred percent of the anticipated volume of natural gas produced from the well(s) commencing on the date of first production, taking into account the current and anticipated volumes of produced natural gas from other wells connected to the pipeline gathering system; or

Operator will not be able to connect to a natural gas gathering system in the general area with sufficient capacity to transport one hundred percent of the anticipated volume of natural gas produced from the well(s) commencing on the date of first production, taking into account the current and anticipated volumes of produced natural gas from other wells connected to the pipeline gathering system.

*If Operator checks this box, Operator will select one of the following:*

**Well Shut-In.**  Operator will shut-in and not produce the well until it submits the certification required by Paragraph (4) of Subsection D of 19.15.27.9 NMAC; or

**Venting and Flaring Plan.**  Operator has attached a venting and flaring plan that evaluates and selects one or more of the potential alternative beneficial uses for the natural gas until a natural gas gathering system is available, including:

- (a) power generation on lease;
- (b) power generation for grid;
- (c) compression on lease;
- (d) liquids removal on lease;
- (e) reinjection for underground storage;
- (f) reinjection for temporary storage;
- (g) reinjection for enhanced oil recovery;
- (h) fuel cell production; and
- (i) other alternative beneficial uses approved by the division.

### Section 4 - Notices

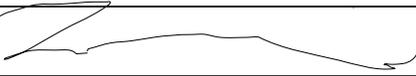
1. If, at any time after Operator submits this Natural Gas Management Plan and before the well is spud:

(a) Operator becomes aware that the natural gas gathering system it planned to connect the well(s) to has become unavailable or will not have capacity to transport one hundred percent of the production from the well(s), no later than 20 days after becoming aware of such information, Operator shall submit for OCD's approval a new or revised venting and flaring plan containing the information specified in Paragraph (5) of Subsection D of 19.15.27.9 NMAC; or

(b) Operator becomes aware that it has, cumulatively for the year, become out of compliance with its baseline natural gas capture rate or natural gas capture requirement, no later than 20 days after becoming aware of such information, Operator shall submit for OCD's approval a new or revised Natural Gas Management Plan for each well it plans to spud during the next 90 days containing the information specified in Paragraph (2) of Subsection D of 19.15.27.9 NMAC, and shall file an update for each Natural Gas Management Plan until Operator is back in compliance with its baseline natural gas capture rate or natural gas capture requirement.

2. OCD may deny or conditionally approve an APD if Operator does not make a certification, fails to submit an adequate venting and flaring plan which includes alternative beneficial uses for the anticipated volume of natural gas produced, or if OCD determines that Operator will not have adequate natural gas takeaway capacity at the time a well will be spud.

I certify that, after reasonable inquiry, the statements in and attached to this Natural Gas Management Plan are true and correct to the best of my knowledge and acknowledge that a false statement may be subject to civil and criminal penalties under the Oil and Gas Act.

Signature: 
Printed Name: Steve Morris
Title: Engineer
E-mail Address: steve.morris@morcorengineering.com
Date: 06/17/2022
Phone: 985-415-9729
<b>OIL CONSERVATION DIVISION</b> <b>(Only applicable when submitted as a standalone form)</b>
Approved By:
Title:
Approval Date:
Conditions of Approval:

**Natural Gas Management Plan****Items VI-VIII****VI. Separation Equipment: Attach a complete description of how Operator will size separation equipment to optimize gas capture.**

- Separation equipment will be sized to provide adequate separation for anticipated rates.
- Adequate separation relates to retention time for Liquid – Liquid separation and velocity for Gas-Liquid separation.
- Collection systems are appropriately sized to handle facility production rates on all (3) phases.
- Ancillary equipment and metering is selected to be serviced without flow interruptions or the need to release gas from the well.

**VII. Operational Practices: Attach a complete description of the actions Operator will take to comply with the requirements of Subsection A through F 19.15.27.8 NMAC.****Drilling Operations**

- All flare stacks will be properly sized. The flare stacks will be located at a minimum 100' from the nearest surface hole location on the pad.
- All natural gas produced during drilling operations will be flared, unless there is an equipment malfunction and/or to avoid risk of an immediate and substantial adverse impact on safety and the environment, at which point the gas will be vented.

**Completions/Recompletions Operations**

- New wells will not be flowed back until they are connected to a properly sized gathering system.
- The facility will be built/sized for maximum anticipated flowrates and pressures to minimize waste.
- For flowback operations, multiple stages of separation will be used as well as excess VRU and blowers to make sure waste is minimized off the storage tanks and facility.
- During initial flowback, the well stream will be routed to separation equipment.
- At an existing facility, when necessary, post separation natural gas will be flared until it meets pipeline specifications, at which point it will be turned into a collection system.
- At a new facility, post separation natural gas will be vented until storage tanks can safely function, at which point it will be flared until it meets pipeline spec.

**Production Operations**

- Weekly AVOs will be performed on all facilities.
- All flares will be equipped with auto-ignition systems and continuous pilot operations.
- After a well is stabilized from liquid unloading, the well will be turned back into the collection system.
- All plunger lift systems will be optimized to limit the amount of waste.
- All tanks will have automatic gauging equipment installed.
- Leaking thief hatches found during AVOs will be cleaned and properly re-sealed.

**Performance Standards**

- Production equipment will be designed to handle maximum anticipated rates and pressure.
- All flared gas will be combusted in a flare stack that is properly sized and designed to ensure proper combustion.
- Weekly AVOs will be performed on all wells and facilities that produce more than 60 Mcfd.

**Measurement & Estimation**

- All volume that is flared and vented that is not measured will be estimated.
- All measurement equipment for flared volumes will conform to API 14.10.
- No meter bypasses will be installed.

- When metering is not practical due to low pressure/low rate, the vented or flared volume will be estimated.

**VIII. Best Management Practices: Attach a complete description of Operator's best management practices to minimize venting during active and planned maintenance.**

- During downhole well maintenance, Caza will use best management practices to vent as minimally as possible.
- Prior to the commencement of any maintenance, the tank or vessel will be isolated from the rest of the facilities.
- All valves upstream of the equipment will be closed and isolated.
- After equipment has been isolated, the equipment will be blown down to as low a pressure as possible into the collection system.
- If the equipment being maintained cannot be relieved into the collection system, it shall be released to a tank where the vapor can either be captured or combusted if possible.
- After downhole well maintenance, natural gas will be flared until it reaches pipeline specification.

**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 Rd., Aztec, NM 87410  
 Phone:(505) 334-6178 Fax:(505) 334-6170

**District IV**  
 1220 S. St Francis Dr., Santa Fe, NM 87505  
 Phone:(505) 476-3470 Fax:(505) 476-3462

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

CONDITIONS

Action 120262

**CONDITIONS**

Operator: CAZA OPERATING, LLC 200 N Loraine St Midland, TX 79701	OGRID: 249099
	Action Number: 120262
	Action Type: [C-101] BLM - Federal/Indian Land Lease (Form 3160-3)

**CONDITIONS**

Created By	Condition	Condition Date
pkautz	Will require a File As Drilled C-102 and a Directional Survey with the C-104	7/28/2022
pkautz	Once the well is spud, to prevent ground water contamination through whole or partial conduits from the surface, the operator shall drill without interruption through the fresh water zone or zones and shall immediately set in cement the water protection string	7/28/2022
pkautz	Oil base muds are not to be used until fresh water zones are cased and cemented providing isolation from the oil or diesel. This includes synthetic oils. Oil based mud, drilling fluids and solids must be contained in a steel closed loop system	7/28/2022
pkautz	Cement is required to circulate on both surface and intermediate1 strings of casing	7/28/2022