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

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RECEIVED

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.
NMNM020979

6. If Indian, Allotee or Tribe Name

1a. Type of work: ☑ DRILL ☐ REENTER

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

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

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

8. Lease Name and Well No.
IGLOO 19-24 STATE FED COM
14H (326170)

2. Name of Operator
CAZA OPERATING LLC (249099)

9. API Well No.
30-025-46412

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

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

10. Field and Pool, or Exploratory
LEA / BONE SPRING SOUTH 37580

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*
At surface SWSE / 450 FSL / 2514 FEL / LAT 32.552615 / LONG -103.496198
At proposed prod. zone SWSW / 460 FSL / 280 FWL / LAT 32.552619 / LONG -103.521417

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*	12. County or Parish	13. State
22.6 miles	LEA	NM

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any)	16. No of acres in lease	17. Spacing Unit dedicated to this well
450 feet	320	240

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.	19. Proposed Depth	20. BLM/BIA Bond No. in file
50 feet	9628 feet / 17418 feet	FED: NMB000471

21. Elevations (Show whether DF, KDB, RT, GL, etc.)	22. Approximate date work will start*	23. Estimated duration
3693 feet	05/30/2018	35 days

24. Attachments

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

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

25. Signature	Name *(Printed/Typed)*	Date
(Electronic Submission)	Tony B Sam / Ph: (432)682-7424	03/13/2018

Title
VP Operations

Approved by *(Signature)*	Name *(Printed/Typed)*	Date
(Electronic Submission)	Cody Layton / Ph: (575)234-5959	09/26/2019

Title	Office
Assistant Field Manager Lands & Minerals	CARLSBAD

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

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

GCP Rec 10/4/19

APPROVED WITH CONDITIONS

10/04/19

(Continued on page 2)

*(Instructions on page 2)

Approval Date: 09/26/2019

INSTRUCTIONS

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

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

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

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

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

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

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

NOTICES

The Privacy Act of 1974 and regulation in 43 CFR 2.48(d) provide that you be furnished the following information in connection with information required by this application.
AUTHORITY: 30 U.S.C. 181 et seq., 25 U.S.C. 396; 43 CFR 3160
PRINCIPAL PURPOSES: The information will be used to: (1) process and evaluate your application for a permit to drill a new oil, gas, or service wen or to reenter a plugged and abandoned well; and (2) document, for administrative use, information for the management, disposal and use of National Resource Lands and resources including (a) analyzing your proposal to discover and extract the Federal or Indian resources encountered; (b) reviewing procedures and equipment and the projected impact on the land involved; and (c) evaluating the effects of the proposed operation on the surface and subsurface water and other environmental impacts.
ROUTINE USE: Information from the record and/or the record win be transferred to appropriate Federal, State, and local or foreign agencies, when relevant to civil, criminal or regulatory investigations or prosecution, in connection with congressional inquiries and for regulatory responsibilities.
EFFECT OF NOT PROVIDING INFORMATION: Filing of this application and disclosure of the information is mandatory only if you elect to initiate a drilling or reentry operation on an oil and gas lease.

The Paperwork Reduction Act of 1995 requires us to inform you that:
The BLM conects this information to anow evaluation of the technical, safety, and environmental factors involved with drilling for oil and/or gas on Federal and Indian oil and gas leases. This information will be used to analyze and approve applications. Response to this request is mandatory only if the operator elects to initiate drilling or reentry operations on an oil and gas lease. The BLM would like you to know that you do not have to respond to this or any other Federal agency-sponsored information collection unless it displays a currently valid OMB control number.

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

(Continued on page 3)

Additional Operator Remarks

Location of Well

1. SHL: SWSE / 450 FSL / 2514 FEL / TWSP: 20S / RANGE: 35E / SECTION: 19 / LAT: 32.552615 / LONG: -103.496198 (TVD: 0 feet, MD: 0 feet)
   PPP: SESE / 450 FSL / 0 FEL / TWSP: 20S / RANGE: 35E / SECTION: 24 / LAT: 32.552617 / LONG: -103.505174 (TVD: 9805 feet, MD: 12410 feet)
   BHL: SWSW / 460 FSL / 280 FWL / TWSP: 20S / RANGE: 34E / SECTION: 24 / LAT: 32.552619 / LONG: -103.521417 (TVD: 9628 feet, MD: 17418 feet)

BLM Point of Contact

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

Approval Date: 09/26/2019

Review and Appeal Rights

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

PECOS DISTRICT DRILLING
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	**Caza Operating, LLC.**
LEASE NO.:	**NMNM-020979**
WELL NAME & NO.:	**Igloo 19-24 State Fed Com 14H**
SURFACE HOLE FOOTAGE:	**0450' FSL & 2514' FEL**
BOTTOM HOLE FOOTAGE	**0460' FSL & 0280' FWL Sec. 24, T. 20 S., R 34 E.**
LOCATION:	**Section 19, T. 20 S., R 35 E., NMPM**
COUNTY:	**County, New Mexico**

Communitization Agreement

- The operator will submit a Communitization Agreement to the Carlsbad Field Office, 620 E Greene St. Carlsbad, New Mexico 88220, 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.

A. DRILLING OPERATIONS 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)

☐ **Lea County**
Call the Hobbs Field Station, 414 West Taylor, Hobbs NM 88240, (575) 3933612

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

2. 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. **If the drilling rig is removed without approval – an Incident of Non-Compliance will be written and will be a "Major" violation.**

3. 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 is located, this does not include the dog house or stairway area.

4. **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.**

B. CASING

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.

Centralizers required on surface casing per Onshore Order 2.III.B.1.f.

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.

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.

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

Capitan Reef
Possible of water flows in the Salado.
Possible lost circulation in the Red beds, Rustler, Capitan Reef, Delaware and Bone Spring.

1. The **13-3/8** inch surface casing shall be set at approximately **1881** feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt) and cemented to the surface. **If salt is encountered, set casing at least 25 feet above the salt.**

    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 is to include the lead cement slurry.**

    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.

Formation below the 13-3/8" shoe to be tested according to Onshore Order 2.III.B.1.i. Test to be done as a mud equivalency test using the mud weight necessary for the pore pressure of the formation below the shoe and the mud weight for the bottom of the hole. Report results to BLM office.

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.**

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

Operator has proposed DV tool at depth of 3900', but will adjust cement proportionately if moved. DV tool shall be set a minimum of 50' below previous shoe and a minimum of 200' above current shoe. Operator shall submit sundry if DV tool depth cannot be set in this range. If an ECP is used, it is to be set a minimum of 50' below the shoe to provide cement across the shoe. If it cannot be set below the shoe, a CBL shall be run to verify cement coverage.

a. First stage to DV tool:___

☒ Cement to circulate. If cement does not circulate, contact the appropriate BLM office before proceeding with second stage cement job. Operator should have plans as to how they will achieve circulation on the next stage. **Excess calculates to negative 22% - Additional cement will be required.**

b. Second stage above DV tool:

☐ Cement to surface. If cement does not circulate, contact the appropriate BLM office. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to Capitan Reef.**

Formation below the 9-5/8" shoe to be tested according to Onshore Order 2.III.B.1.i. Test to be done as a mud equivalency test using the mud weight necessary for the pore pressure of the formation below the shoe (not the mud weight required to prevent dissolving the salt formation) and the mud weight for the bottom of the hole. Report results to BLM office.

Centralizers required on horizontal leg, must be type for horizontal service and a minimum of one every other joint.

3. The minimum required fill of cement behind the **5-1/2** inch production casing is:

☐ Cement should tie-back at least **50 feet above the Capitan Reef** (Top of Capitan Reef estimated at 4570'). Operator shall provide method of verification.

4. 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.

C. 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 53.

2. Variance approved to use flex line from BOP to choke manifold. 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.** If the BLM inspector questions the

straightness of the hose, a BLM engineer will be contacted and will review in the field or via picture supplied by inspector to determine if changes are required (operator shall expect delays if this occurs).

3. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be psi. **5M system requires an HCR valve, remote kill line and annular to match. The remote kill line is to be installed prior to testing the system and tested to stack pressure.**

4. The appropriate BLM office shall be notified a minimum of 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).

    a. The tests shall be done by an independent service company utilizing a test plug **not a cup or J-packer**.

    b. 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.

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

    d. 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.**

e. 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.

D. DRILL STEM TEST

If drill stem tests are performed, Onshore Order 2.III.D shall be followed.

E. 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.

JAM 090619

AFMSS

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

Operator Certification Data Report

09/26/2019

Operator Certification

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

NAME: Tony B Sam **Signed on:** 03/13/2018

Title: VP Operations

Street Address: 200 N. Loraine Street, Suite 1550

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

Phone: (432)682-7424

Email address: steve.morris@morcorengineering.com

Field Representative

Representative Name: Kevin Garrett

Street Address: 200 N. Lorraine St #1550

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

Phone: (432)556-8508

Email address: kgarrett@cazapetro.com

AFMSS

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

Application Data Report

09/26/2019

APD ID: 10400027887 **Submission Date:** 03/13/2018

Operator Name: CAZA OPERATING LLC

Well Name: IGLOO 19-24 STATE FED COM **Well Number:** 14H

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

[redacted]

Show Final Text

Section 1 - General

APD ID: 10400027887 **Tie to previous NOS?** N **Submission Date:** 03/13/2018

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

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

Lease number: NMNM020979 **Lease Acres:** 320

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

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

Agreement number:

Agreement name:

Keep application confidential? NO

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

Operator letter of designation:

Operator Info

Operator Organization Name: CAZA OPERATING LLC

Operator Address: 200 N. Loraine Street, Suite 1550 **Zip:** 79701

Operator PO Box:

Operator City: Midland **State:** TX

Operator Phone: (432)682-7424

Operator Internet Address:

Section 2 - Well Information

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

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

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

Well Name: IGLOO 19-24 STATE FED COM **Well Number:** 14H **Well API Number:**

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

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

Operator Name: CAZA OPERATING LLC

Well Name: IGLOO 19-24 STATE FED COM **Well Number:** 14H

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

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

Type of Well Pad: MULTIPLE WELL **Multiple Well Pad Name:** IGLOO 19-24 STATE FED COM **Number:** 12H

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

Well Work Type: Drill

Well Type: OIL WELL

Describe Well Type:

Well sub-Type: INFILL

Describe sub-type:

Distance to town: 22.6 Miles **Distance to nearest well:** 50 FT **Distance to lease line:** 450 FT

Reservoir well spacing assigned acres Measurement: 240 Acres

Well plat: IGLOO_19_24_STATE_FED_COM_14H_C_102_signed_20180205071630.pdf

Well work start Date: 05/30/2018 **Duration:** 35 DAYS

Section 3 - Well Location Table

Survey Type: RECTANGULAR

Describe Survey Type:

Datum: NAD83 **Vertical Datum:** NAVD88

Survey number: 33494 **Reference Datum:**

	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD
SHL Leg #1	450	FSL	2514	FEL	20S	35E	19	Aliquot SWSE	32.552615	-103.496198	LEA	NEW MEXICO	NEW MEXICO	S	STATE	3693	0	0
KOP Leg #1	450	FSL	2514	FEL	20S	35E	19	Aliquot SWSE	32.552615	-103.496198	LEA	NEW MEXICO	NEW MEXICO	S	STATE	-5628	9321	9321
PPP Leg #1	450	FSL	0	FEL	20S	35E	24	Aliquot SESE	32.552617	-103.505174	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 020979	-6112	12410	9805

Operator Name: CAZA OPERATING LLC

Well Name: IGLOO 19-24 STATE FED COM **Well Number:** 14H

	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD
EXIT Leg #1	460	FSL	280	FWL	20S	35E	24	Aliquot SWSW	32.552619	-103.521417	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 123525	-5935	17418	9628
BHL Leg #1	460	FSL	280	FWL	20S	34E	24	Aliquot SWSW	32.552619	-103.521417	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 123525	-5935	17418	9628

APD ID: 10400027887 **Submission Date:** 03/13/2018

Operator Name: CAZA OPERATING LLC

Well Name: IGLOO 19-24 STATE FED COM **Well Number:** 14H

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

Show Final Text

Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
1	QUATERNARY	3693	0	0		USEABLE WATER	N
2	RUSTLER	1862	1831	1857		NONE	N
3	BASE OF SALT	252	3441	3441		NONE	N
4	YATES	-64	3757	3757		NONE	N
5	CAPITAN REEF	-346	4039	4039		USEABLE WATER	N
6	DELAWARE	-1873	5566	5566		NATURAL GAS,OIL	N
7	CHERRY CANYON	-2085	5778	5778		NATURAL GAS,OIL	N
8	BRUSHY CANYON	-3143	6836	6836		NATURAL GAS,OIL	N
9	BONE SPRING	-4895	8588	8588		NATURAL GAS,OIL	N
10	BONE SPRING 1ST	-6115	9808	9908		NATURAL GAS,OIL	Y

Section 2 - Blowout Prevention

Pressure Rating (PSI): 5M **Rating Depth:** 15000

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

Requesting Variance? YES

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

Testing Procedure: Minimum Working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the 13-3/8 inch casing shoe shall be 5000 (5M) psi. 5M system requires an HCR valve, remote kill line and annular to match. The remote kill line is to be installed prior to testing the system and tested to stack pressure. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips the minimum wait time before

cut-off is eight hours after bumping the pug. BOP/BOPE testing can begin after cut-off or once cement reaches 500PSI compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified). The tests shall be done by an independent service company utilizing a test plug not a cup or J-packer. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to Onshore Order 2 with the pressure not to exceed 70% of the burst rating for the casing. Any test against the casing must meet the WOC time for water basin (18 hours) or potash (24 hours) or 500 pounds compressive strength, whichever is greater prior to initiating the test (see casing segment as lead cement may be critical item). a. The results of the test shall be reported to the appropriate BLM office. b. All Tests are required to be recorded on a calibrated test chart. A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office. c. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug.

Choke Diagram Attachment:

Igloo_19_24_State_Fed_Com_14H_Choke_Schematic_20190326195308.pdf

Igloo_19_24_State_Fed_Com_14H_Coflex_Test_20190326195311.pdf

Igloo_19_24_State_Fed_Com_14H_Coflex_Hose_Cert_20190326195310.pdf

BOP Diagram Attachment:

Igloo_19_24_State_Fed_Com_14H_BOP_Schematic_20190326195320.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	3693	3573	120	H-40	94	SLIM LINE HIGH PERFORMANCE						
2	SURFACE	17.5	13.375	NEW	API	N	0	1881	0	1881	3693	1812	1881	J-55	54.5	ST&C	1.3	1.8	DRY	5.01	DRY	8.32
3	INTERMEDIATE	12.25	9.625	NEW	API	N	0	3900	0	3900	3693	-207	3900	J-55	40	LT&C	1.27	1.35	DRY	2.35	DRY	2.84
4	INTERMEDIATE	12.25	9.625	NEW	API	N	3900	5542	3900	5542	-207	-1849	1642	HCL-80	40	LT&C	1.47	1.96	DRY	12.47	DRY	13.95
5	PRODUCTION	8.75	5.5	NEW	API	N	0	17418	0	9883	3693	-5913	17418	P-110	17	BUTT	1.7	2.28	DRY	3.38	DRY	3.25

Casing Attachments

Operator Name: CAZA OPERATING LLC

Well Name: IGLOO 19-24 STATE FED COM **Well Number:** 14H

Casing Attachments

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

IGLOO_19_24_STATE_FED_COM_14H_Casing_and_Cement_20180313080236.pdf

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

IGLOO_19_24_STATE_FED_COM_14H_Casing_and_Cement_20180313080245.pdf

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Operator Name: CAZA OPERATING LLC

Well Name: IGLOO 19-24 STATE FED COM **Well Number:** 14H

Casing Attachments

Casing ID: 4 **String Type:** INTERMEDIATE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

IGLOO_19_24_STATE_FED_COM_14H_Casing_and_Cement_20180313080254.pdf

Casing ID: 5 **String Type:** PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

IGLOO_19_24_STATE_FED_COM_14H_Casing_and_Cement_20180313080303.pdf

Section 4 - Cement

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
CONDUCTOR	Lead		0	120	100	1.93	13.5	190	5	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	Lead		0	1581	815	1.93	13.5	1573	100	Class C	+ 4% bwoc Bentonite II + 2% bwoc Calcium Chloride + 0.25 lbs/sack

Operator Name: CAZA OPERATING LLC

Well Name: IGLOO 19-24 STATE FED COM **Well Number:** 14H

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
											Cello Flake + 0.005% bwoc Static Free + 0.005 gps FP- 6L
SURFACE	Tail		1581	1881	166	1.34	14.8	222	50	Class C	1.5% bwoc Calcium Chloride + 0.005 lbs/sack Static Free + 0.005 gps FP-6L
INTERMEDIATE	Lead	3900	0	3900	1265	1.93	13.5	2442	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	Lead	3900	3900	5042	370	1.93	13.5	715	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		5042	5542	235	1.33	14.8	313	100	Class C	CaCl2
PRODUCTION	Lead		0	9900	2347	2.13	11.9	5001	100	Class H	(50:50) + Poz (Fly Ash) + 10% bwoc Bentonite II + 5% bwow Sodium Chloride + 5 lbs/sack LCM-1 + 0.005 lbs/sack Static Free + 0.005 gps FP-6L
PRODUCTION	Tail		9900	17418	3244	1.62	13.5	3798	100	Class H	(15:61:11) Poz (Fly Ash):Class H Cement:CSE-2 + 4% bwow Sodium Chloride

Operator Name: CAZA OPERATING LLC

Well Name: IGLOO 19-24 STATE FED COM **Well Number:** 14H

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	1881	SPUD MUD	8.4	8.9	62.8	0.1	9.5	2	0	0	
1881	5542	SALT SATURATED	9.2	10	75	0.1	9.5	2	150000	18	
5542	9883	SALT SATURATED	8.6	9.2	71	0.4	9.5	6	125000	18	Cut Brine

Operator Name: CAZA OPERATING LLC

Well Name: IGLOO 19-24 STATE FED COM **Well Number:** 14H

Section 6 - Test, Logging, Coring

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

no production tests

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

DS,GR,MWD,MUDLOG

Coring operation description for the well:

no coring

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 4000 **Anticipated Surface Pressure:** 1842.9

Anticipated Bottom Hole Temperature(F): 165

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

Describe:

Contingency Plans geoharzards description:

Contingency Plans geohazards attachment:

Hydrogen Sulfide drilling operations plan required? NO

Hydrogen sulfide drilling operations plan:

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

Igloo_19___24_State_Fed_Com_14H_Plot_20180313093715.pdf

Igloo_19___24_State_Fed_Com_14H_Directional_Plan_20180313093831.pdf

Other proposed operations facets description:

Colflex cert
1 Mile Radius Circles
Interim Reclamation Plat
Gas Capture Plan

Other proposed operations facets attachment:

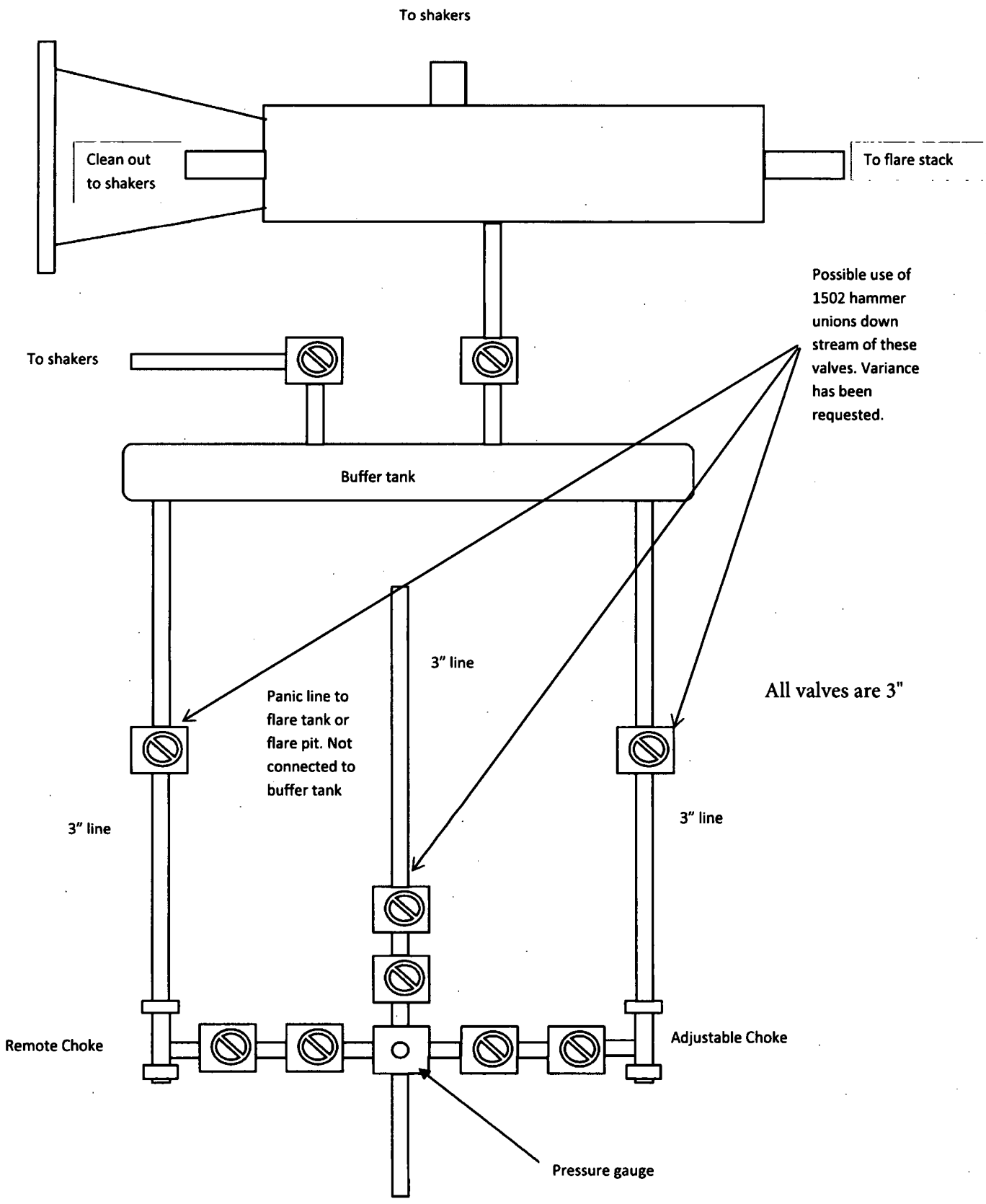
Igloo_19_24_State_Fed_Com_14H_Coflex_Test_20180312074758.pdf

Igloo_19_24_State_Fed_Com_14H_1_Mile_Circles_20180313092420.pdf

IGLOO_19_24_STATE_FED_COM_14H_Interim_Reclamation_Plat_20180313093406.pdf

Igloo_19_24_State_Fed_Com_14H_Gas_Capture_Plan_20190326200138.pdf

Other Variance attachment:


To shakers
Clean out to shakers
To flare stack
Possible use of 1502 hammer unions down stream of these valves. Variance has been requested.
To shakers
Buffer tank
3" line
Panic line to flare tank or flare pit. Not connected to buffer tank
All valves are 3"
3" line
3" line
Remote Choke
Adjustable Choke
Pressure gauge

In a Lesser Prairie-Chicken section.

13 3/8	surface csg in a	16	inch hole.	Design Factors			SURFACE	
Segment	#/ft	Grade	Coupling	Joint	Collapse	Burst	Length	Weight
"A"	54.50	J 55	ST&C	5.01	1.3	0.95	1,881	102,515
"B"							0	0
w/8.4#/g mud, 30min Sfc Csg Test psig: 1,090			Tail Cmt	does not	circ to sfc.	Totals:	1,881	102,515

Comparison of Proposed to Minimum Required Cement Volumes

Hole Size	Annular Volume	1 Stage Cmt Sx	1 Stage CuFt Cmt	Min Cu Ft	1 Stage % Excess	Drilling Mud Wt	Calc MASP	Req'd BOPE	Min Dist Hole-Cplg
16	0.4206	981	1795	898	100	8.90	1660	2M	0.81

Burst Frac Gradient(s) for Segment(s) A, B = 1.45, b All > 0.70,

9 5/8	casing inside the	13 3/8		Design Factors			INTERMEDIATE	
Segment	#/ft	Grade	Coupling	Joint	Collapse	Burst	Length	Weight
"A"	40.00	J 55	LT&C	2.35	1.27	0.85	3,900	156,000
"B"	40.00	HCL 80	LT&C	12.74	1.47	1.23	1,642	65,680
w/8.4#/g mud, 30min Sfc Csg Test psig: 1,063						Totals:	5,542	221,680

The cement volume(s) are intended to achieve a top of 0 ft from surface or a 1881 overlap.

Hole Size	Annular Volume	1 Stage Cmt Sx	1 Stage CuFt Cmt	Min Cu Ft	1 Stage % Excess	Drilling Mud Wt	Calc MASP	Req'd BOPE	Min Dist Hole-Cplg
12 1/4	0.3132	1730	3685	1848	99	10.00	2498	3M	0.81
Setting Depths for D V Tool(s):		4000					sum of sx	Σ CuFt	Σ%excess
excess cmt by stage % :		343	9				1815	3690	100

Class 'C' tail cmt yld > 1.35

Burst Frac Gradient(s) for Segment(s): A, B, C, D = 1.01, b, c, d All > 0.70, OK.

5 1/2	casing inside the	9 5/8		Design Factors			PRODUCTION	
Segment	#/ft	Grade	Coupling	Body	Collapse	Burst	Length	Weight
"A"	17.00	P 110	BUTT	3.25	1.7	2.28	9,321	158,457
"B"	17.00	P 110	BUTT	7.82	1.45	2.28	8,097	137,649
w/8.4#/g mud, 30min Sfc Csg Test psig: 2,051						Totals:	17,418	296,106
B Segment Design Factors would be:				57.13	1.60	if it were a vertical wellbore.		

No Pilot Hole Planned	MTD	Max VTD	Csg VD	Curve KOP	Dogleg°	Severity°	MEOC
	17418	9883	9883	9321	92	10	10221

The cement volume(s) are intended to achieve a top of 0 ft from surface or a 5542 overlap.

Hole Size	Annular Volume	1 Stage Cmt Sx	1 Stage CuFt Cmt	Min Cu Ft	1 Stage % Excess	Drilling Mud Wt	Calc MASP	Req'd BOPE	Min Dist Hole-Cplg
8 3/4	0.2526	3764	7800	4451	75	9.10			1.35

Class 'H' tail cmt yld > 1.20

In a Lesser Prairie-Chicken section.

13 3/8 surface csg in a 16 inch hole. **Design Factors** SURFACE

Segment	#/ft	Grade	Coupling	Joint	Collapse	Burst	Length	Weight
"A"	54.50	J 55	ST&C	5.01	1.3	0.95	1,881	102,515
"B"							**0**	**0**
w/8.4#/g mud, 30min Sfc Csg Test psig: 1,090			**Tail Cmt**	**does not**	**circ to sfc.**	Totals:	1,881	102,515

Comparison of Proposed to Minimum Required Cement Volumes

Hole Size	Annular Volume	1 Stage Cmt Sx	1 Stage CuFt Cmt	Min Cu Ft	1 Stage % Excess	Drilling Mud Wt	Calc MASP	Req'd BOPE	Min Dist Hole-Cplg
16	0.4206	**981**	1795	**898**	100	**8.90**	1660	**2M**	0.81

Burst Frac Gradient(s) for Segment(s) A, B = 1.45, b All > 0.70,

9 5/8 casing inside the 13 3/8 **Design Factors** INTERMEDIATE

Segment	#/ft	Grade	Coupling	Joint	Collapse	Burst	Length	Weight
"A"	40.00	J 55	LT&C	2.35	1.27	0.85	3,900	156,000
"B"	**40.00**	**HCL 80**	**LT&C**	12.74	**1.47**	**1.23**	**1,642**	**65,680**
w/8.4#/g mud, 30min Sfc Csg Test psig: 1,063						Totals:	5,542	221,680

The cement volume(s) are intended to achieve a top of 0 ft from surface or a 1881 overlap.

Hole Size	Annular Volume	1 Stage Cmt Sx	1 Stage CuFt Cmt	Min Cu Ft	1 Stage % Excess	Drilling Mud Wt	Calc MASP	Req'd BOPE	Min Dist Hole-Cplg
12 1/4	0.3132	**1730**	3685	**1848**	99	**10.00**	2498	**3M**	0.81
Setting Depths for D V Tool(s):		**4000**					sum of sx	Σ CuFt	Σ%excess
excess cmt by stage % :		**343**	9				1815	3690	100

Class 'C' tail cmt yld > 1.35

Burst Frac Gradient(s) for Segment(s): A, B, C, D = 1.01, b, c, d All > 0.70, OK.

5 1/2 casing inside the 9 5/8 **Design Factors** PRODUCTION

Segment	#/ft	Grade	Coupling	Body	Collapse	Burst	Length	Weight
"A"	17.00	P 110	BUTT	3.25	1.7	2.28	9,321	158,457
"B"	**17.00**	**P 110**	**BUTT**	7.82	**1.45**	**2.28**	**8,097**	**137,649**
w/8.4#/g mud, 30min Sfc Csg Test psig: 2,051						Totals:	17,418	296,106
B Segment Design Factors would be:				57.13	1.60	if it were a vertical wellbore.		

No Pilot Hole Planned	MTD	Max VTD	Csg VD	Curve KOP	Dogleg°	Severity°	MEOC
	17418	9883	9883	9321	92	10	10221

The cement volume(s) are intended to achieve a top of 0 ft from surface or a 5542 overlap.

Hole Size	Annular Volume	1 Stage Cmt Sx	1 Stage CuFt Cmt	Min Cu Ft	1 Stage % Excess	Drilling Mud Wt	Calc MASP	Req'd BOPE	Min Dist Hole-Cplg
8 3/4	0.2526	**3764**	7800	**4451**	75	**9.10**			1.35

Class 'H' tail cmt yld > 1.20

In a Lesser Prairie-Chicken section.

13 3/8	surface csg in a	16	inch hole.	Design Factors			SURFACE	
Segment	**#/ft**	**Grade**	**Coupling**	**Joint**	**Collapse**	**Burst**	**Length**	**Weight**
"A"	54.50	J 55	ST&C	5.01	1.3	0.95	1,881	102,515
"B"							**0**	**0**
w/8.4#/g mud, 30min Sfc Csg Test psig:	1,090	**Tail Cmt**	**does not**	**circ to sfc.**		Totals:	1,881	102,515

Comparison of Proposed to Minimum Required Cement Volumes

Hole Size	Annular Volume	1 Stage Cmt Sx	1 Stage CuFt Cmt	Min Cu Ft	1 Stage % Excess	Drilling Mud Wt	Calc MASP	Req'd BOPE	Min Dist Hole-Cplg
16	0.4206	**981**	1795	**898**	100	**8.90**	1660	**2M**	0.81

Burst Frac Gradient(s) for Segment(s) A, B = 1.45, b All > 0.70,

9 5/8	casing inside the	13 3/8		Design Factors			INTERMEDIATE	
Segment	**#/ft**	**Grade**	**Coupling**	**Joint**	**Collapse**	**Burst**	**Length**	**Weight**
"A"	40.00	J 55	LT&C	2.35	1.27	0.85	3,900	156,000
"B"	**40.00**	**HCL 80**	**LT&C**	12.74	**1.47**	**1.23**	**1,642**	**65,680**
w/8.4#/g mud, 30min Sfc Csg Test psig:	1,063					Totals:	5,542	221,680

The cement volume(s) are intended to achieve a top of 0 ft from surface or a 1881 overlap.

Hole Size	Annular Volume	1 Stage Cmt Sx	1 Stage CuFt Cmt	Min Cu Ft	1 Stage % Excess	Drilling Mud Wt	Calc MASP	Req'd BOPE	Min Dist Hole-Cplg
12 1/4	0.3132	**1730**	3685	**1848**	99	**10.00**	2498	**3M**	0.81
Setting Depths for D V Tool(s):		**4000**					sum of sx	Σ CuFt	Σ%excess
excess cmt by stage % :		**343**	**9**				1815	3690	100

Class 'C' tail cmt yld > 1.35

Burst Frac Gradient(s) for Segment(s): A, B, C, D = 1.01, b, c, d All > 0.70, OK.

5 1/2	casing inside the	9 5/8		Design Factors			PRODUCTION	
Segment	**#/ft**	**Grade**	**Coupling**	**Body**	**Collapse**	**Burst**	**Length**	**Weight**
"A"	17.00	P 110	BUTT	3.25	1.7	2.28	9,321	158,457
"B"	**17.00**	**P 110**	**BUTT**	7.82	**1.45**	**2.28**	**8,097**	**137,649**
w/8.4#/g mud, 30min Sfc Csg Test psig:	2,051					Totals:	17,418	296,106
B	Segment Design Factors would be:			57.13	1.60	if it were a vertical wellbore.		

No Pilot Hole Planned	MTD	Max VTD	Csg VD	Curve KOP	Dogleg°	Severity°	MEOC
	17418	9883	9883	9321	92	10	10221

The cement volume(s) are intended to achieve a top of 0 ft from surface or a 5542 overlap.

Hole Size	Annular Volume	1 Stage Cmt Sx	1 Stage CuFt Cmt	Min Cu Ft	1 Stage % Excess	Drilling Mud Wt	Calc MASP	Req'd BOPE	Min Dist Hole-Cplg
8 3/4	0.2526	**3764**	7800	**4451**	75	**9.10**			1.35

Class 'H' tail cmt yld > 1.20

Project: Igloo 19 - 24 State Fed Com 14I
Site: Igloo 19 - 24 State Fed Com 14I
Well: Igloo 19 - 24 State Fed Com 14I
Wellbore: Igloo 19 - 24 State Fed Com 14I
Design: Igloo 19 - 24 State Fed Com 14I

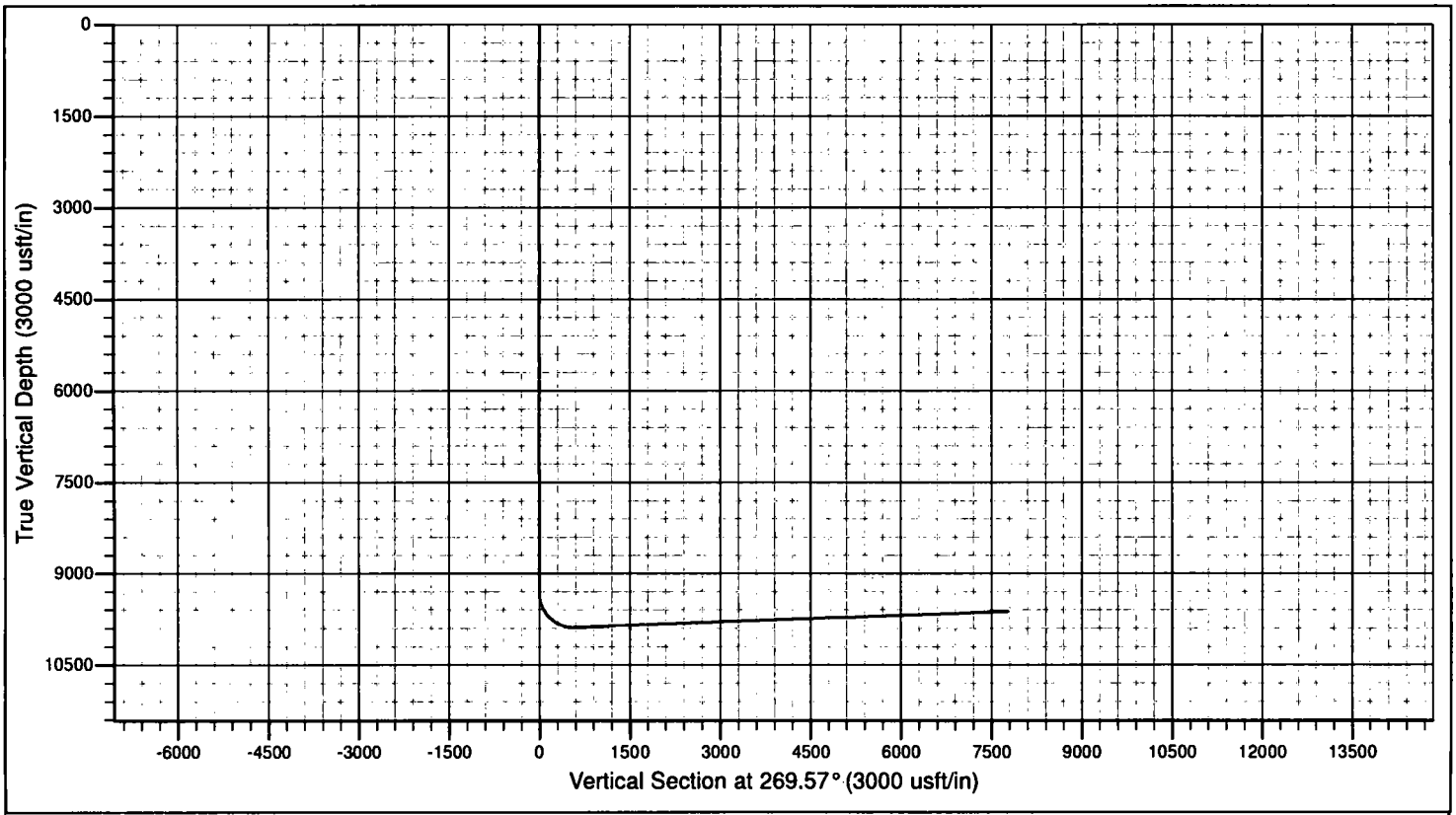
Caza Petroleum

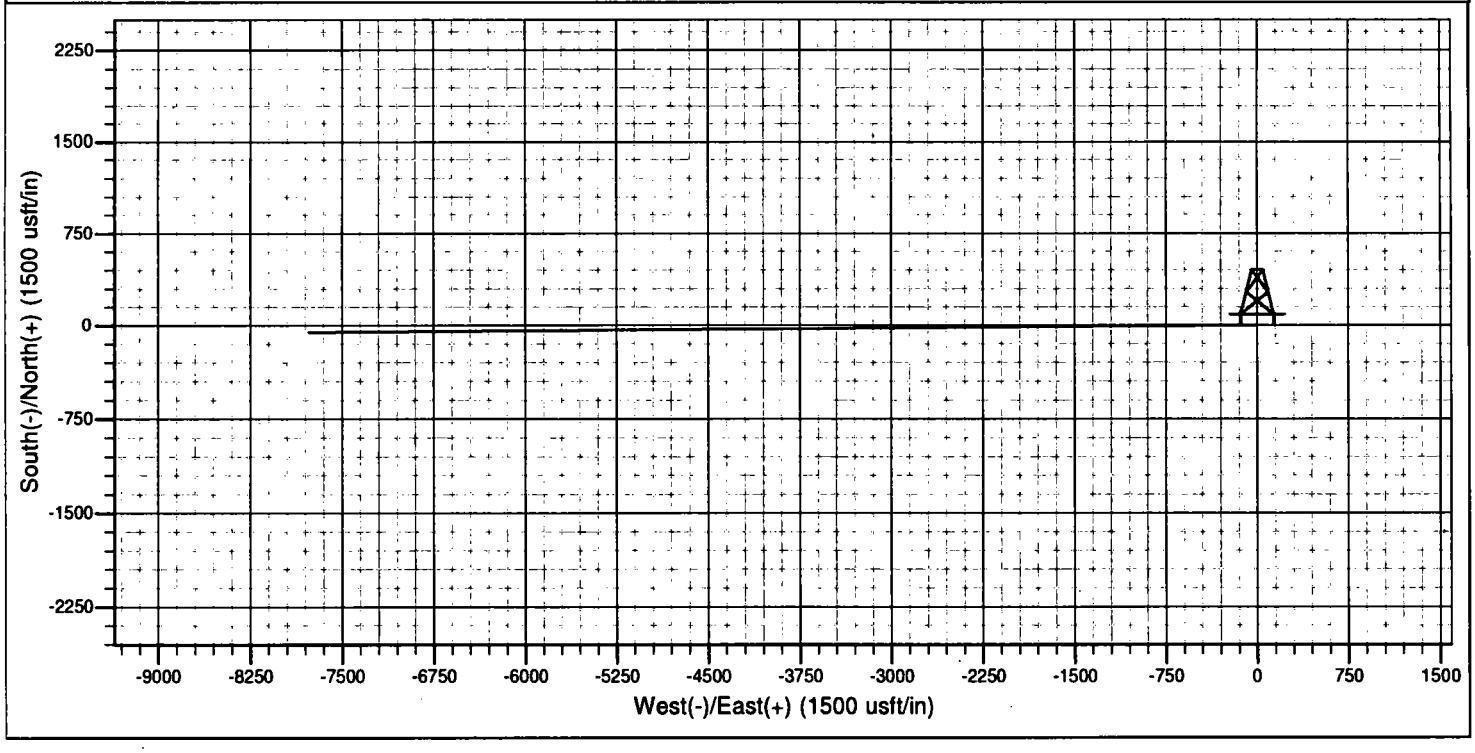
Azimuths to Grid North
True North: -0.45°
Magnetic North: 6.29°

Magnetic Field
Strength: 48143.6snT
Dip Angle: 60.33°
Date: 03/13/2018
Model: IGRF2010

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Site Igloo 19 - 24 State Fed Com 14H, Grid North
Vertical (TVD) Reference: WELL @ 3715.0usft (Original Well Elev)
Section (VS) Reference: Slot - (0.0N, 0.0E)
Measured Depth Reference: WELL @ 3715.0usft (Original Well Elev)
Calculation Method: Minimum Curvature





Caza Petroleum

Caza Operating LLC

Igloo 19-24 State Fed Com 14H
Igloo 19-24 State Fed Com 14H
Igloo 19-24 State Fed Com 14H
Igloo 19-24 State Fed Com 14H

Plan: 190911 Igloo 19-24 State Fed Com 14H

Morcor Standard Plan

17 September, 2019

Company:	Caza Operating LLC	**Local Co-ordinate Reference:**	Well Igloo 19-24 State Fed Com 14H
Project:	Igloo 19-24 State Fed Com 14H	**TVD Reference:**	WELL @ 3715.0usft (Original Well Elev)
Site:	Igloo 19-24 State Fed Com 14H	**MD Reference:**	WELL @ 3715.0usft (Original Well Elev)
Well:	Igloo 19-24 State Fed Com 14H	**North Reference:**	Grid
Wellbore:	Igloo 19-24 State Fed Com 14H	**Survey Calculation Method:**	Minimum Curvature
Design:	190911 Igloo 19-24 State Fed Com 14H	**Database:**	EDM 5000.1 Single User Db

Project Igloo 19-24 State Fed Com 14H

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

Site Igloo 19-24 State Fed Com 14H

Site Position:		**Northing:**	565,785.90 usft	**Latitude:**	32° 33' 9.378 N
From:	Map	**Easting:**	799,725.00 usft	**Longitude:**	103° 29' 41.054 W
Position Uncertainty:	1.0 usft	**Slot Radius:**	17-1/2 "	**Grid Convergence:**	0.45 °

Well Igloo 19-24 State Fed Com 14H

Well Position	**+N/-S**	0.0 usft	**Northing:**	565,785.90 usft	**Latitude:**	32° 33' 9.413 N
	+E/-W	0.0 usft	**Easting:**	799,275.00 usft	**Longitude:**	103° 29' 46.311 W
Position Uncertainty		1.0 usft	**Wellhead Elevation:**	usft	**Ground Level:**	3,693.0 usft

Wellbore Igloo 19-24 State Fed Com 14H

Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF2010	8/26/2019	6.55	60.29	47,998

Design 190911 Igloo 19-24 State Fed Com 14H

Audit Notes:

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

Vertical Section:	**Depth From (TVD) (usft)**	**+N/-S (usft)**	**+E/-W (usft)**	**Direction (°)**
	0.0	0.0	0.0	277.84

Survey Tool Program **Date** 9/17/2019

From (usft)	**To (usft)**	**Survey (Wellbore)**	**Tool Name**	**Description**
0.0	19,280.0	190911 Igloo 19-24 State Fed Com 14H (I	MWD	MWD - Standard

Company:	Caza Operating LLC	**Local Co-ordinate Reference:**	Well Igloo 19-24 State Fed Com 14H
Project:	Igloo 19-24 State Fed Com 14H	**TVD Reference:**	WELL @ 3715.0usft (Original Well Elev)
Site:	Igloo 19-24 State Fed Com 14H	**MD Reference:**	WELL @ 3715.0usft (Original Well Elev)
Well:	Igloo 19-24 State Fed Com 14H	**North Reference:**	Grid
Wellbore:	Igloo 19-24 State Fed Com 14H	**Survey Calculation Method:**	Minimum Curvature
Design:	190911 Igloo 19-24 State Fed Com 14H	**Database:**	EDM 5000.1 Single User Db

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	Easting (usft)	Northing (usft)	V. Sec (usft)	DLeg (°/100usft)
0.0	0.00	0.00	0.0	-3,715.0	0.0	0.0	799,275.00	565,785.90	0.00	0.00
100.0	0.00	0.00	100.0	-3,615.0	0.0	0.0	799,275.00	565,785.90	0.00	0.00
120.0	0.00	0.00	120.0	-3,595.0	0.0	0.0	799,275.00	565,785.90	0.00	0.00
20" Conductor										
200.0	0.00	0.00	200.0	-3,515.0	0.0	0.0	799,275.00	565,785.90	0.00	0.00
300.0	0.00	0.00	300.0	-3,415.0	0.0	0.0	799,275.00	565,785.90	0.00	0.00
400.0	0.00	0.00	400.0	-3,315.0	0.0	0.0	799,275.00	565,785.90	0.00	0.00
500.0	0.00	0.00	500.0	-3,215.0	0.0	0.0	799,275.00	565,785.90	0.00	0.00
600.0	0.00	0.00	600.0	-3,115.0	0.0	0.0	799,275.00	565,785.90	0.00	0.00
700.0	0.00	0.00	700.0	-3,015.0	0.0	0.0	799,275.00	565,785.90	0.00	0.00
800.0	0.00	0.00	800.0	-2,915.0	0.0	0.0	799,275.00	565,785.90	0.00	0.00
900.0	0.00	0.00	900.0	-2,815.0	0.0	0.0	799,275.00	565,785.90	0.00	0.00
1,000.0	0.00	0.00	1,000.0	-2,715.0	0.0	0.0	799,275.00	565,785.90	0.00	0.00
1,100.0	0.00	0.00	1,100.0	-2,615.0	0.0	0.0	799,275.00	565,785.90	0.00	0.00
1,200.0	0.00	0.00	1,200.0	-2,515.0	0.0	0.0	799,275.00	565,785.90	0.00	0.00
1,300.0	0.00	0.00	1,300.0	-2,415.0	0.0	0.0	799,275.00	565,785.90	0.00	0.00
1,400.0	0.00	0.00	1,400.0	-2,315.0	0.0	0.0	799,275.00	565,785.90	0.00	0.00
1,500.0	0.00	0.00	1,500.0	-2,215.0	0.0	0.0	799,275.00	565,785.90	0.00	0.00
1,600.0	0.00	0.00	1,600.0	-2,115.0	0.0	0.0	799,275.00	565,785.90	0.00	0.00
Start Build 4.25										
1,700.0	4.25	8.00	1,699.9	-2,015.1	3.7	0.5	799,275.52	565,789.57	-0.01	4.25
1,800.0	8.50	8.00	1,799.3	-1,915.7	14.7	2.1	799,277.06	565,800.56	-0.04	4.25
Start 8200.0 hold at 1800.0 MD										
1,858.4	8.50	8.00	1,857.0	-1,858.0	23.2	3.3	799,278.26	565,809.11	-0.06	0.00
Rustler										
1,867.5	8.50	8.00	1,866.0	-1,849.0	24.5	3.4	799,278.45	565,810.44	-0.07	0.00
13 3/8" Surface Casing										
1,900.0	8.50	8.00	1,898.2	-1,816.8	29.3	4.1	799,279.12	565,815.20	-0.08	0.00

Company:	Caza Operating LLC	**Local Co-ordinate Reference:**	Well Igloo 19-24 State Fed Com 14H
Project:	Igloo 19-24 State Fed Com 14H	**TVD Reference:**	WELL @ 3715.0usft (Original Well Elev)
Site:	Igloo 19-24 State Fed Com 14H	**MD Reference:**	WELL @ 3715.0usft (Original Well Elev)
Well:	Igloo 19-24 State Fed Com 14H	**North Reference:**	Grid
Wellbore:	Igloo 19-24 State Fed Com 14H	**Survey Calculation Method:**	Minimum Curvature
Design:	190911 Igloo 19-24 State Fed Com 14H	**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)
2,000.0	8.50	8.00	1,997.1	-1,717.9	43.9	6.2	799,281.18	565,829.84	-0.12	0.00
2,059.6	8.50	8.00	2,056.0	-1,659.0	52.7	7.4	799,282.40	565,838.56	-0.15	0.00
Top of Salt										
2,100.0	8.50	8.00	2,096.0	-1,619.0	58.6	8.2	799,283.23	565,844.48	-0.16	0.00
2,200.0	8.50	8.00	2,194.9	-1,520.1	73.2	10.3	799,285.29	565,859.11	-0.20	0.00
2,300.0	8.50	8.00	2,293.8	-1,421.2	87.8	12.3	799,287.35	565,873.75	-0.24	0.00
2,400.0	8.50	8.00	2,392.7	-1,322.3	102.5	14.4	799,289.40	565,888.39	-0.28	0.00
2,500.0	8.50	8.00	2,491.6	-1,223.4	117.1	16.5	799,291.46	565,903.02	-0.32	0.00
2,600.0	8.50	8.00	2,590.5	-1,124.5	131.8	18.5	799,293.52	565,917.66	-0.36	0.00
2,700.0	8.50	8.00	2,689.4	-1,025.6	146.4	20.6	799,295.57	565,932.30	-0.40	0.00
2,800.0	8.50	8.00	2,788.3	-926.7	161.0	22.6	799,297.63	565,946.93	-0.44	0.00
2,900.0	8.50	8.00	2,887.2	-827.8	175.7	24.7	799,299.69	565,961.57	-0.48	0.00
3,000.0	8.50	8.00	2,986.1	-728.9	190.3	26.7	799,301.75	565,976.21	-0.52	0.00
3,100.0	8.50	8.00	3,085.0	-630.0	204.9	28.8	799,303.80	565,990.85	-0.57	0.00
3,200.0	8.50	8.00	3,183.9	-531.1	219.6	30.9	799,305.86	566,005.48	-0.61	0.00
3,300.0	8.50	8.00	3,282.8	-432.2	234.2	32.9	799,307.92	566,020.12	-0.65	0.00
3,400.0	8.50	8.00	3,381.7	-333.3	248.9	35.0	799,309.97	566,034.76	-0.69	0.00
3,486.3	8.50	8.00	3,467.0	-248.0	261.5	36.7	799,311.75	566,047.38	-0.72	0.00
Base of Salt										
3,500.0	8.50	8.00	3,480.6	-234.4	263.5	37.0	799,312.03	566,049.39	-0.73	0.00
3,600.0	8.50	8.00	3,579.5	-135.5	278.1	39.1	799,314.09	566,064.03	-0.77	0.00
3,700.0	8.50	8.00	3,678.4	-36.6	292.8	41.1	799,316.15	566,078.67	-0.81	0.00
3,800.0	8.50	8.00	3,777.3	62.3	307.4	43.2	799,318.20	566,093.31	-0.85	0.00
3,805.8	8.50	8.00	3,783.0	68.0	308.2	43.3	799,318.32	566,094.15	-0.85	0.00
Yates										
3,900.0	8.50	8.00	3,876.2	161.2	322.0	45.3	799,320.26	566,107.94	-0.89	0.00
4,000.0	8.50	8.00	3,975.1	260.1	336.7	47.3	799,322.32	566,122.58	-0.93	0.00

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Wellbore:	Igloo 19-24 State Fed Com 14H	**Survey Calculation Method:**	Minimum Curvature
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Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	Easting (usft)	Northing (usft)	V. Sec (usft)	DLeg (°/100usft)
4,090.9	8.50	8.00	4,065.0	350.0	350.0	49.2	799,324.19	566,135.88	-0.97	0.00
Capitan										
4,100.0	8.50	8.00	4,074.0	359.0	351.3	49.4	799,324.37	566,137.22	-0.97	0.00
4,200.0	8.50	8.00	4,172.9	457.9	366.0	51.4	799,326.43	566,151.85	-1.01	0.00
4,300.0	8.50	8.00	4,271.8	556.8	380.6	53.5	799,328.49	566,166.49	-1.05	0.00
4,400.0	8.50	8.00	4,370.7	655.7	395.2	55.5	799,330.55	566,181.13	-1.09	0.00
4,500.0	8.50	8.00	4,469.6	754.6	409.9	57.6	799,332.60	566,195.77	-1.13	0.00
4,600.0	8.50	8.00	4,568.5	853.5	424.5	59.7	799,334.66	566,210.40	-1.17	0.00
4,700.0	8.50	8.00	4,667.4	952.4	439.1	61.7	799,336.72	566,225.04	-1.21	0.00
4,800.0	8.50	8.00	4,766.3	1,051.3	453.8	63.8	799,338.77	566,239.68	-1.25	0.00
4,900.0	8.50	8.00	4,865.2	1,150.2	468.4	65.8	799,340.83	566,254.31	-1.29	0.00
5,000.0	8.50	8.00	4,964.1	1,249.1	483.1	67.9	799,342.89	566,268.95	-1.33	0.00
5,100.0	8.50	8.00	5,063.0	1,348.0	497.7	69.9	799,344.95	566,283.59	-1.37	0.00
5,200.0	8.50	8.00	5,161.9	1,446.9	512.3	72.0	799,347.00	566,298.23	-1.41	0.00
5,300.0	8.50	8.00	5,260.8	1,545.8	527.0	74.1	799,349.06	566,312.86	-1.45	0.00
5,400.0	8.50	8.00	5,359.7	1,644.7	541.6	76.1	799,351.12	566,327.50	-1.49	0.00
5,500.0	8.50	8.00	5,458.6	1,743.6	556.2	78.2	799,353.17	566,342.14	-1.53	0.00
5,593.4	8.50	8.00	5,551.0	1,836.0	569.9	80.1	799,355.10	566,355.81	-1.57	0.00
9 5/8" Intermediate Casing										
5,600.0	8.50	8.00	5,557.5	1,842.5	570.9	80.2	799,355.23	566,356.77	-1.57	0.00
5,634.9	8.50	8.00	5,592.0	1,877.0	576.0	80.9	799,355.95	566,361.88	-1.59	0.00
Delaware										
5,700.0	8.50	8.00	5,656.4	1,941.4	585.5	82.3	799,357.29	566,371.41	-1.61	0.00
5,800.0	8.50	8.00	5,755.3	2,040.3	600.1	84.3	799,359.35	566,386.05	-1.65	0.00
5,849.2	8.50	8.00	5,804.0	2,089.0	607.4	85.4	799,360.36	566,393.25	-1.67	0.00
Cherry Canyon										
5,900.0	8.50	8.00	5,854.2	2,139.2	614.8	86.4	799,361.40	566,400.68	-1.70	0.00

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Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	Easting (usft)	Northing (usft)	V. Sec (usft)	DLeg (°/100usft)
6,000.0	8.50	8.00	5,953.1	2,238.1	629.4	88.5	799,363.46	566,415.32	-1.74	0.00
6,100.0	8.50	8.00	6,052.0	2,337.0	644.1	90.5	799,365.52	566,429.96	-1.78	0.00
6,200.0	8.50	8.00	6,150.9	2,435.9	658.7	92.6	799,367.57	566,444.60	-1.82	0.00
6,300.0	8.50	8.00	6,249.8	2,534.8	673.3	94.6	799,369.63	566,459.23	-1.86	0.00
6,400.0	8.50	8.00	6,348.7	2,633.7	688.0	96.7	799,371.69	566,473.87	-1.90	0.00
6,500.0	8.50	8.00	6,447.6	2,732.6	702.6	98.7	799,373.75	566,488.51	-1.94	0.00
6,600.0	8.50	8.00	6,546.5	2,831.5	717.2	100.8	799,375.80	566,503.14	-1.98	0.00
6,700.0	8.50	8.00	6,645.4	2,930.4	731.9	102.9	799,377.86	566,517.78	-2.02	0.00
6,800.0	8.50	8.00	6,744.3	3,029.3	746.5	104.9	799,379.92	566,532.42	-2.06	0.00
6,900.0	8.50	8.00	6,843.2	3,128.2	761.2	107.0	799,381.97	566,547.06	-2.10	0.00
6,919.0	8.50	8.00	6,862.0	3,147.0	763.9	107.4	799,382.36	566,549.83	-2.11	0.00
Brushy Canyon										
7,000.0	8.50	8.00	6,942.1	3,227.1	775.8	109.0	799,384.03	566,561.69	-2.14	0.00
7,100.0	8.50	8.00	7,041.1	3,326.1	790.4	111.1	799,386.09	566,576.33	-2.18	0.00
7,200.0	8.50	8.00	7,140.0	3,425.0	805.1	113.1	799,388.14	566,590.97	-2.22	0.00
7,300.0	8.50	8.00	7,238.9	3,523.9	819.7	115.2	799,390.20	566,605.60	-2.26	0.00
7,400.0	8.50	8.00	7,337.8	3,622.8	834.3	117.3	799,392.26	566,620.24	-2.30	0.00
7,500.0	8.50	8.00	7,436.7	3,721.7	849.0	119.3	799,394.32	566,634.88	-2.34	0.00
7,600.0	8.50	8.00	7,535.6	3,820.6	863.6	121.4	799,396.37	566,649.52	-2.38	0.00
7,700.0	8.50	8.00	7,634.5	3,919.5	878.3	123.4	799,398.43	566,664.15	-2.42	0.00
7,800.0	8.50	8.00	7,733.4	4,018.4	892.9	125.5	799,400.49	566,678.79	-2.46	0.00
7,900.0	8.50	8.00	7,832.3	4,117.3	907.5	127.5	799,402.54	566,693.43	-2.50	0.00
8,000.0	8.50	8.00	7,931.2	4,216.2	922.2	129.6	799,404.60	566,708.06	-2.54	0.00
8,100.0	8.50	8.00	8,030.1	4,315.1	936.8	131.7	799,406.66	566,722.70	-2.58	0.00
8,200.0	8.50	8.00	8,129.0	4,414.0	951.4	133.7	799,408.72	566,737.34	-2.62	0.00
8,300.0	8.50	8.00	8,227.9	4,512.9	966.1	135.8	799,410.77	566,751.98	-2.66	0.00
8,400.0	8.50	8.00	8,326.8	4,611.8	980.7	137.8	799,412.83	566,766.61	-2.70	0.00

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8,500.0	8.50	8.00	8,425.7	4,710.7	995.3	139.9	799,414.89	566,781.25	-2.74	0.00
8,600.0	8.50	8.00	8,524.6	4,809.6	1,010.0	141.9	799,416.94	566,795.89	-2.79	0.00
8,690.4	8.50	8.00	8,614.0	4,899.0	1,023.2	143.8	799,418.80	566,809.12	-2.82	0.00
Bone Spring										
8,700.0	8.50	8.00	8,623.5	4,908.5	1,024.6	144.0	799,419.00	566,810.52	-2.83	0.00
8,800.0	8.50	8.00	8,722.4	5,007.4	1,039.3	146.1	799,421.06	566,825.16	-2.87	0.00
8,900.0	8.50	8.00	8,821.3	5,106.3	1,053.9	148.1	799,423.12	566,839.80	-2.91	0.00
9,000.0	8.50	8.00	8,920.2	5,205.2	1,068.5	150.2	799,425.17	566,854.43	-2.95	0.00
9,100.0	8.50	8.00	9,019.1	5,304.1	1,083.2	152.2	799,427.23	566,869.07	-2.99	0.00
9,200.0	8.50	8.00	9,118.0	5,403.0	1,097.8	154.3	799,429.29	566,883.71	-3.03	0.00
9,300.0	8.50	8.00	9,216.9	5,501.9	1,112.4	156.3	799,431.34	566,898.35	-3.07	0.00
9,400.0	8.50	8.00	9,315.8	5,600.8	1,127.1	158.4	799,433.40	566,912.98	-3.11	0.00
9,500.0	8.50	8.00	9,414.7	5,699.7	1,141.7	160.5	799,435.46	566,927.62	-3.15	0.00
9,600.0	8.50	8.00	9,513.6	5,798.6	1,156.4	162.5	799,437.52	566,942.26	-3.19	0.00
9,700.0	8.50	8.00	9,612.5	5,897.5	1,171.0	164.6	799,439.57	566,956.89	-3.23	0.00
9,800.0	8.50	8.00	9,711.4	5,996.4	1,185.6	166.6	799,441.63	566,971.53	-3.27	0.00
9,900.0	8.50	8.00	9,810.3	6,095.3	1,200.3	168.7	799,443.69	566,986.17	-3.31	0.00
9,924.0	8.50	8.00	9,834.0	6,119.0	1,203.8	169.2	799,444.18	566,989.68	-3.32	0.00
1st Bone Spring Sand										
10,000.0	8.50	8.00	9,909.2	6,194.2	1,214.9	170.7	799,445.74	567,000.81	-3.35	0.00
Start Drop -4.25										
10,100.0	4.25	8.00	10,008.6	6,293.6	1,225.9	172.3	799,447.29	567,011.80	-3.38	4.25
10,200.0	0.00	0.00	10,108.5	6,393.5	1,229.6	172.8	799,447.80	567,015.47	-3.39	4.25
Start 120.0 hold at 10200.0 MD										
10,300.0	0.00	0.00	10,208.5	6,493.5	1,229.6	172.8	799,447.80	567,015.47	-3.39	0.00
10,320.0	0.00	0.00	10,228.5	6,513.5	1,229.6	172.8	799,447.80	567,015.47	-3.39	0.00
Start Build 11.10										
10,400.0	8.88	269.60	10,308.1	6,593.1	1,229.5	166.6	799,441.62	567,015.43	2.73	11.10

Company:	Caza Operating LLC	**Local Co-ordinate Reference:**	Well Igloo 19-24 State Fed Com 14H
Project:	Igloo 19-24 State Fed Com 14H	**TVD Reference:**	WELL @ 3715.0usft (Original Well Elev)
Site:	Igloo 19-24 State Fed Com 14H	**MD Reference:**	WELL @ 3715.0usft (Original Well Elev)
Well:	Igloo 19-24 State Fed Com 14H	**North Reference:**	Grid
Wellbore:	Igloo 19-24 State Fed Com 14H	**Survey Calculation Method:**	Minimum Curvature
Design:	190911 Igloo 19-24 State Fed Com 14H	**Database:**	EDM 5000.1 Single User Db

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	Easting (usft)	Northing (usft)	V. Sec (usft)	DLeg (°/100usft)
10,500.0	19.98	269.60	10,404.8	6,689.8	1,229.4	141.7	799,416.74	567,015.25	27.35	11.10
10,588.5	29.79	269.60	10,485.0	6,770.0	1,229.1	104.6	799,379.56	567,014.99	64.15	11.10
2nd Bone Spring Sand										
10,600.0	31.07	269.60	10,494.9	6,779.9	1,229.1	98.7	799,373.72	567,014.95	69.93	11.10
10,700.0	42.17	269.60	10,575.1	6,860.1	1,228.6	39.2	799,314.16	567,014.54	128.87	11.10
10,800.0	53.27	269.60	10,642.2	6,927.2	1,228.1	-34.7	799,240.30	567,014.02	201.98	11.10
10,900.0	64.37	269.60	10,693.9	6,978.9	1,227.5	-120.1	799,154.88	567,013.42	286.52	11.10
11,000.0	75.46	269.60	10,728.2	7,013.2	1,226.9	-213.9	799,061.11	567,012.77	379.32	11.10
11,100.0	86.56	269.60	10,743.8	7,028.8	1,226.2	-312.5	798,962.49	567,012.08	476.92	11.10
11,150.0	92.11	269.60	10,744.4	7,029.4	1,225.8	-362.5	798,912.52	567,011.73	526.38	11.10
Start Turn 0.00										
11,200.0	92.11	269.60	10,742.6	7,027.6	1,225.5	-412.4	798,862.55	567,011.38	575.83	0.00
11,300.0	92.11	269.60	10,738.9	7,023.9	1,224.8	-512.4	798,762.62	567,010.69	674.73	0.00
11,400.0	92.11	269.60	10,735.2	7,020.2	1,224.1	-612.3	798,662.69	567,009.99	773.63	0.00
11,500.0	92.11	269.60	10,731.5	7,016.5	1,223.4	-712.2	798,562.76	567,009.29	872.53	0.00
11,600.0	92.11	269.60	10,727.8	7,012.8	1,222.7	-812.2	798,462.83	567,008.59	971.43	0.00
11,700.0	92.11	269.60	10,724.2	7,009.2	1,222.0	-912.1	798,362.90	567,007.90	1,070.33	0.00
11,800.0	92.11	269.60	10,720.5	7,005.5	1,221.3	-1,012.0	798,262.98	567,007.20	1,169.23	0.00
11,900.0	92.11	269.60	10,716.8	7,001.8	1,220.6	-1,112.0	798,163.05	567,006.50	1,268.12	0.00
12,000.0	92.11	269.60	10,713.1	6,998.1	1,219.9	-1,211.9	798,063.12	567,005.80	1,367.02	0.00
12,100.0	92.11	269.60	10,709.4	6,994.4	1,219.2	-1,311.8	797,963.19	567,005.10	1,465.92	0.00
12,200.0	92.11	269.60	10,705.7	6,990.7	1,218.5	-1,411.7	797,863.26	567,004.41	1,564.82	0.00
12,300.0	92.11	269.60	10,702.1	6,987.1	1,217.8	-1,511.7	797,763.33	567,003.71	1,663.72	0.00
12,400.0	92.11	269.60	10,698.4	6,983.4	1,217.1	-1,611.6	797,663.40	567,003.01	1,762.62	0.00
12,500.0	92.11	269.60	10,694.7	6,979.7	1,216.4	-1,711.5	797,563.47	567,002.31	1,861.52	0.00
12,600.0	92.11	269.60	10,691.0	6,976.0	1,215.7	-1,811.5	797,463.54	567,001.62	1,960.42	0.00
12,700.0	92.11	269.60	10,687.3	6,972.3	1,215.0	-1,911.4	797,363.61	567,000.92	2,059.32	0.00

Company:	Caza Operating LLC	**Local Co-ordinate Reference:**	Well Igloo 19-24 State Fed Com 14H
Project:	Igloo 19-24 State Fed Com 14H	**TVD Reference:**	WELL @ 3715.0usft (Original Well Elev)
Site:	Igloo 19-24 State Fed Com 14H	**MD Reference:**	WELL @ 3715.0usft (Original Well Elev)
Well:	Igloo 19-24 State Fed Com 14H	**North Reference:**	Grid
Wellbore:	Igloo 19-24 State Fed Com 14H	**Survey Calculation Method:**	Minimum Curvature
Design:	190911 Igloo 19-24 State Fed Com 14H	**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)
12,800.0	92.11	269.60	10,683.7	6,968.7	1,214.3	-2,011.3	797,263.68	567,000.22	2,158.22	0.00
12,900.0	92.11	269.60	10,680.0	6,965.0	1,213.6	-2,111.3	797,163.75	566,999.52	2,257.12	0.00
13,000.0	92.11	269.60	10,676.3	6,961.3	1,212.9	-2,211.2	797,063.82	566,998.83	2,356.02	0.00
13,100.0	92.11	269.60	10,672.6	6,957.6	1,212.2	-2,311.1	796,963.89	566,998.13	2,454.92	0.00
13,200.0	92.11	269.60	10,668.9	6,953.9	1,211.5	-2,411.0	796,863.96	566,997.43	2,553.82	0.00
13,300.0	92.11	269.60	10,665.2	6,950.2	1,210.8	-2,511.0	796,764.03	566,996.73	2,652.72	0.00
13,400.0	92.11	269.60	10,661.6	6,946.6	1,210.1	-2,610.9	796,664.10	566,996.04	2,751.62	0.00
13,500.0	92.11	269.60	10,657.9	6,942.9	1,209.4	-2,710.8	796,564.17	566,995.34	2,850.52	0.00
13,600.0	92.11	269.60	10,654.2	6,939.2	1,208.7	-2,810.8	796,464.24	566,994.64	2,949.42	0.00
13,700.0	92.11	269.60	10,650.5	6,935.5	1,208.0	-2,910.7	796,364.31	566,993.94	3,048.32	0.00
13,800.0	92.11	269.60	10,646.8	6,931.8	1,207.3	-3,010.6	796,264.38	566,993.24	3,147.22	0.00
13,900.0	92.11	269.60	10,643.2	6,928.2	1,206.6	-3,110.5	796,164.45	566,992.55	3,246.12	0.00
14,000.0	92.11	269.60	10,639.5	6,924.5	1,205.9	-3,210.5	796,064.52	566,991.85	3,345.02	0.00
14,100.0	92.11	269.60	10,635.8	6,920.8	1,205.3	-3,310.4	795,964.59	566,991.15	3,443.92	0.00
14,200.0	92.11	269.60	10,632.1	6,917.1	1,204.6	-3,410.3	795,864.66	566,990.45	3,542.82	0.00
14,300.0	92.11	269.60	10,628.4	6,913.4	1,203.9	-3,510.3	795,764.73	566,989.76	3,641.72	0.00
14,400.0	92.11	269.60	10,624.7	6,909.7	1,203.2	-3,610.2	795,664.80	566,989.06	3,740.62	0.00
14,500.0	92.11	269.60	10,621.1	6,906.1	1,202.5	-3,710.1	795,564.87	566,988.36	3,839.52	0.00
14,600.0	92.11	269.60	10,617.4	6,902.4	1,201.8	-3,810.1	795,464.94	566,987.66	3,938.42	0.00
14,700.0	92.11	269.60	10,613.7	6,898.7	1,201.1	-3,910.0	795,365.01	566,986.97	4,037.32	0.00
14,800.0	92.11	269.60	10,610.0	6,895.0	1,200.4	-4,009.9	795,265.08	566,986.27	4,136.21	0.00
14,900.0	92.11	269.60	10,606.3	6,891.3	1,199.7	-4,109.8	795,165.15	566,985.57	4,235.11	0.00
15,000.0	92.11	269.60	10,602.7	6,887.7	1,199.0	-4,209.8	795,065.22	566,984.87	4,334.01	0.00
15,100.0	92.11	269.60	10,599.0	6,884.0	1,198.3	-4,309.7	794,965.29	566,984.18	4,432.91	0.00
15,200.0	92.11	269.60	10,595.3	6,880.3	1,197.6	-4,409.6	794,865.36	566,983.48	4,531.81	0.00
15,300.0	92.11	269.60	10,591.6	6,876.6	1,196.9	-4,509.6	794,765.43	566,982.78	4,630.71	0.00
15,400.0	92.11	269.60	10,587.9	6,872.9	1,196.2	-4,609.5	794,665.50	566,982.08	4,729.61	0.00

Company:	Caza Operating LLC	**Local Co-ordinate Reference:**	Well Igloo 19-24 State Fed Com 14H
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Site:	Igloo 19-24 State Fed Com 14H	**MD Reference:**	WELL @ 3715.0usft (Original Well Elev)
Well:	Igloo 19-24 State Fed Com 14H	**North Reference:**	Grid
Wellbore:	Igloo 19-24 State Fed Com 14H	**Survey Calculation Method:**	Minimum Curvature
Design:	190911 Igloo 19-24 State Fed Com 14H	**Database:**	EDM 5000.1 Single User Db

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	Easting (usft)	Northing (usft)	V. Sec (usft)	DLeg (°/100usft)
15,500.0	92.11	269.60	10,584.2	6,869.2	1,195.5	-4,709.4	794,565.57	566,981.38	4,828.51	0.00
15,600.0	92.11	269.60	10,580.6	6,865.6	1,194.8	-4,809.4	794,465.64	566,980.69	4,927.41	0.00
15,700.0	92.11	269.60	10,576.9	6,861.9	1,194.1	-4,909.3	794,365.71	566,979.99	5,026.31	0.00
15,800.0	92.11	269.60	10,573.2	6,858.2	1,193.4	-5,009.2	794,265.78	566,979.29	5,125.21	0.00
15,900.0	92.11	269.60	10,569.5	6,854.5	1,192.7	-5,109.1	794,165.85	566,978.59	5,224.11	0.00
16,000.0	92.11	269.60	10,565.8	6,850.8	1,192.0	-5,209.1	794,065.93	566,977.90	5,323.01	0.00
16,100.0	92.11	269.60	10,562.2	6,847.2	1,191.3	-5,309.0	793,966.00	566,977.20	5,421.91	0.00
16,200.0	92.11	269.60	10,558.5	6,843.5	1,190.6	-5,408.9	793,866.07	566,976.50	5,520.81	0.00
16,300.0	92.11	269.60	10,554.8	6,839.8	1,189.9	-5,508.9	793,766.14	566,975.80	5,619.71	0.00
16,400.0	92.11	269.60	10,551.1	6,836.1	1,189.2	-5,608.8	793,666.21	566,975.11	5,718.61	0.00
16,500.0	92.11	269.60	10,547.4	6,832.4	1,188.5	-5,708.7	793,566.28	566,974.41	5,817.51	0.00
16,600.0	92.11	269.60	10,543.7	6,828.7	1,187.8	-5,808.7	793,466.35	566,973.71	5,916.41	0.00
16,700.0	92.11	269.60	10,540.1	6,825.1	1,187.1	-5,908.6	793,366.42	566,973.01	6,015.31	0.00
16,800.0	92.11	269.60	10,536.4	6,821.4	1,186.4	-6,008.5	793,266.49	566,972.32	6,114.21	0.00
16,900.0	92.11	269.60	10,532.7	6,817.7	1,185.7	-6,108.4	793,166.56	566,971.62	6,213.11	0.00
17,000.0	92.11	269.60	10,529.0	6,814.0	1,185.0	-6,208.4	793,066.63	566,970.92	6,312.01	0.00
17,100.0	92.11	269.60	10,525.3	6,810.3	1,184.3	-6,308.3	792,966.70	566,970.22	6,410.91	0.00
17,200.0	92.11	269.60	10,521.7	6,806.7	1,183.6	-6,408.2	792,866.77	566,969.52	6,509.81	0.00
17,300.0	92.11	269.60	10,518.0	6,803.0	1,182.9	-6,508.2	792,766.84	566,968.83	6,608.71	0.00
17,400.0	92.11	269.60	10,514.3	6,799.3	1,182.2	-6,608.1	792,666.91	566,968.13	6,707.61	0.00
17,500.0	92.11	269.60	10,510.6	6,795.6	1,181.5	-6,708.0	792,566.98	566,967.43	6,806.51	0.00
17,600.0	92.11	269.60	10,506.9	6,791.9	1,180.8	-6,808.0	792,467.05	566,966.73	6,905.41	0.00
17,700.0	92.11	269.60	10,503.2	6,788.2	1,180.1	-6,907.9	792,367.12	566,966.04	7,004.30	0.00
17,800.0	92.11	269.60	10,499.6	6,784.6	1,179.4	-7,007.8	792,267.19	566,965.34	7,103.20	0.00
17,900.0	92.11	269.60	10,495.9	6,780.9	1,178.7	-7,107.7	792,167.26	566,964.64	7,202.10	0.00
18,000.0	92.11	269.60	10,492.2	6,777.2	1,178.0	-7,207.7	792,067.33	566,963.94	7,301.00	0.00
18,100.0	92.11	269.60	10,488.5	6,773.5	1,177.3	-7,307.6	791,967.40	566,963.25	7,399.90	0.00

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Site:	Igloo 19-24 State Fed Com 14H	**MD Reference:**	WELL @ 3715.0usft (Original Well Elev)
Well:	Igloo 19-24 State Fed Com 14H	**North Reference:**	Grid
Wellbore:	Igloo 19-24 State Fed Com 14H	**Survey Calculation Method:**	Minimum Curvature
Design:	190911 Igloo 19-24 State Fed Com 14H	**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)
18,200.0	92.11	269.60	10,484.8	6,769.8	1,176.6	-7,407.5	791,867.47	566,962.55	7,498.80	0.00
18,300.0	92.11	269.60	10,481.2	6,766.2	1,176.0	-7,507.5	791,767.54	566,961.85	7,597.70	0.00
18,400.0	92.11	269.60	10,477.5	6,762.5	1,175.3	-7,607.4	791,667.61	566,961.15	7,696.60	0.00
18,500.0	92.11	269.60	10,473.8	6,758.8	1,174.6	-7,707.3	791,567.68	566,960.46	7,795.50	0.00
18,600.0	92.11	269.60	10,470.1	6,755.1	1,173.9	-7,807.2	791,467.75	566,959.76	7,894.40	0.00
18,700.0	92.11	269.60	10,466.4	6,751.4	1,173.2	-7,907.2	791,367.82	566,959.06	7,993.30	0.00
18,800.0	92.11	269.60	10,462.7	6,747.7	1,172.5	-8,007.1	791,267.89	566,958.36	8,092.20	0.00
18,900.0	92.11	269.60	10,459.1	6,744.1	1,171.8	-8,107.0	791,167.96	566,957.66	8,191.10	0.00
19,000.0	92.11	269.60	10,455.4	6,740.4	1,171.1	-8,207.0	791,068.03	566,956.97	8,290.00	0.00
19,100.0	92.11	269.60	10,451.7	6,736.7	1,170.4	-8,306.9	790,968.10	566,956.27	8,388.90	0.00
19,200.0	92.11	269.60	10,448.0	6,733.0	1,169.7	-8,406.8	790,868.17	566,955.57	8,487.80	0.00
19,280.0	92.11	269.60	10,445.1	6,730.1	1,169.1	-8,486.8	790,788.23	566,955.01	8,566.92	0.00

TD at 19280.0 - 5 1/2" Production Casing

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,867.5	1,866.0	13 3/8" Surface Casing	13-3/8	17-1/2
19,280.0	10,445.1	5 1/2" Production Casing	5-1/2	8-3/4
5,593.4	5,551.0	9 5/8" Intermediate Casing	9-5/8	12-1/4
120.0	120.0	20" Conductor	20	26

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Wellbore:	Igloo 19-24 State Fed Com 14H	**Survey Calculation Method:**	Minimum Curvature
Design:	190911 Igloo 19-24 State Fed Com 14H	**Database:**	EDM 5000.1 Single User Db

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,858.4	1,857.0	Rustler		0.00	
4,090.9	4,065.0	Capitan		0.00	
5,849.2	5,804.0	Cherry Canyon		0.00	
9,924.0	9,834.0	1st Bone Spring Sand		0.00	
10,588.5	10,485.0	2nd Bone Spring Sand		0.00	
3,805.8	3,783.0	Yates		0.00	
5,634.9	5,592.0	Delaware		0.00	
8,690.4	8,614.0	Bone Spring		0.00	
6,919.0	6,862.0	Brushy Canyon		0.00	
2,059.6	2,056.0	Top of Salt		0.00	
3,486.3	3,467.0	Base of Salt		0.00	

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
1,600.0	1,600.0	0.0	0.0	Start Build 4.25
1,800.0	1,799.3	14.7	2.1	Start 8200.0 hold at 1800.0 MD
10,000.0	9,909.2	1,214.9	170.7	Start Drop -4.25
10,200.0	10,108.5	1,229.6	172.8	Start 120.0 hold at 10200.0 MD
10,320.0	10,228.5	1,229.6	172.8	Start Build 11.10
11,150.0	10,744.4	1,225.8	-362.5	Start Turn 0.00
19,280.0	10,445.1	1,169.1	-8,486.8	TD at 19280.0

Checked By: _____ Approved By: _____ Date: _____

Project: Igloo 19-24 State Fed Com 14H
Site: Igloo 19-24 State Fed Com 14H
Well: Igloo 19-24 State Fed Com 14H
Wellbore: Igloo 19-24 State Fed Com 14H
Design: 190911 Igloo 19-24 State Fed Com 14H

Caza Petroleum

Azimuths to Grid North
True North: -0.45°
Magnetic North: 6.10°

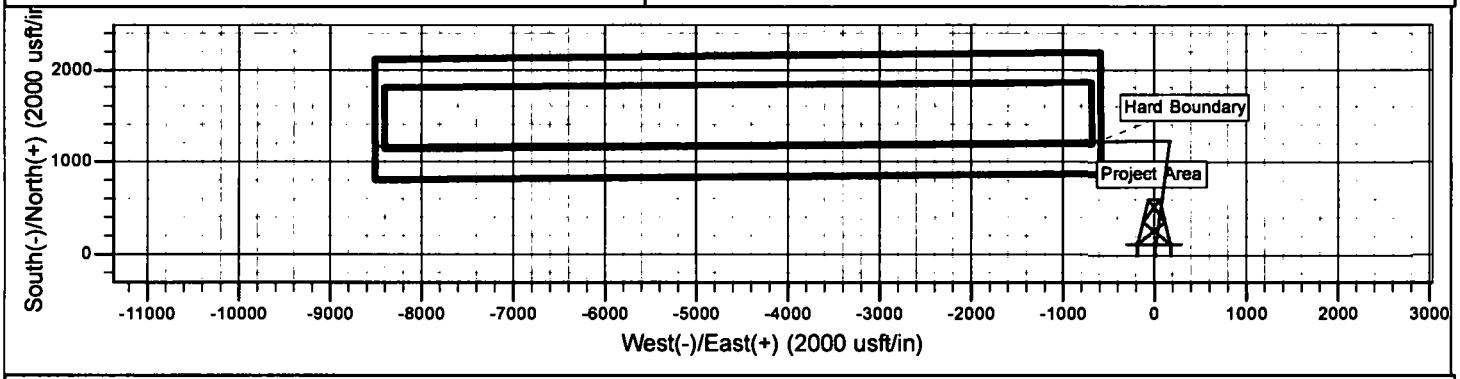
Magnetic Field
Strength: 47997.8snT
Dip Angle: 60.29°
Date: 8/26/2019
Model: IGRF2010

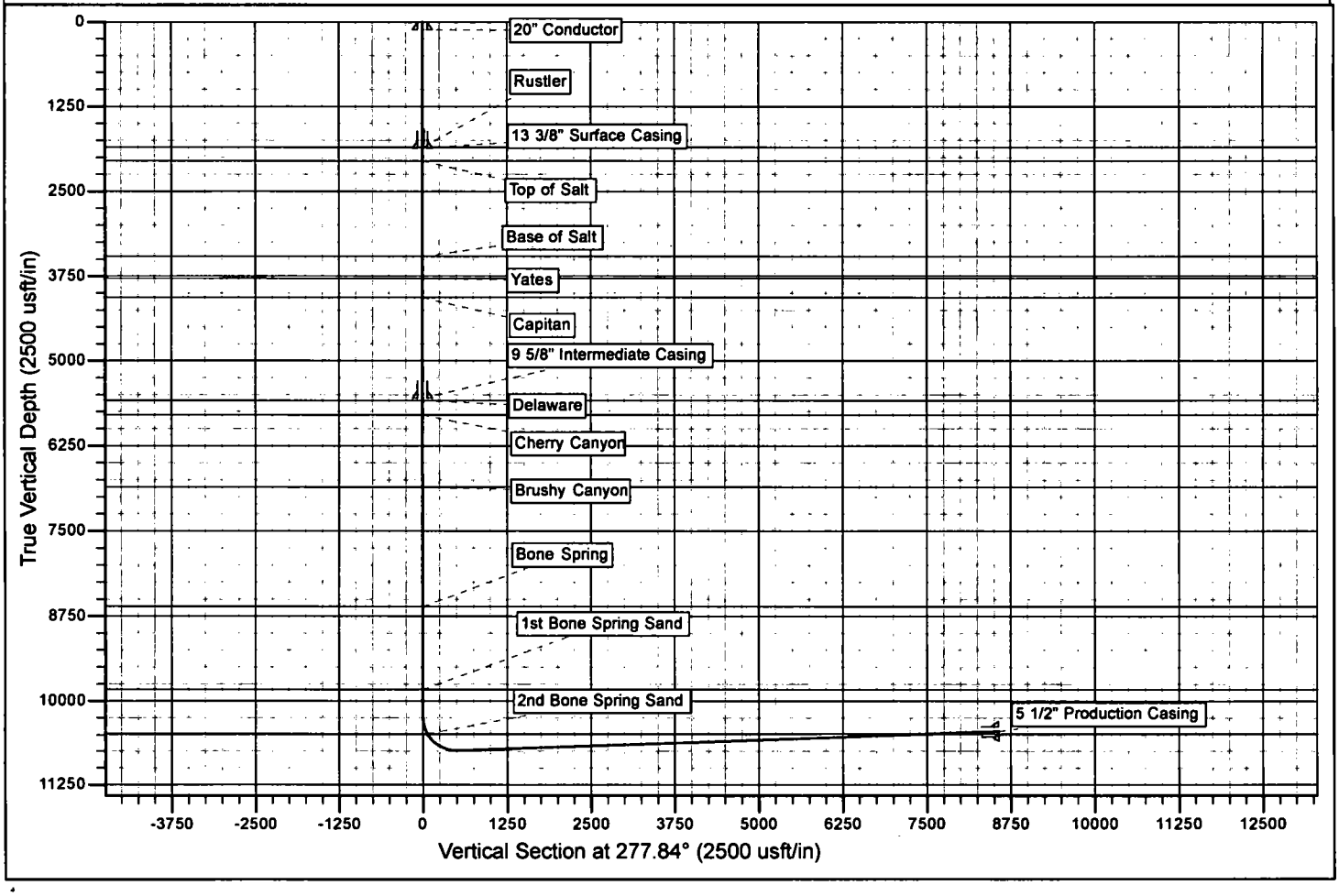
CASING DETAILS

TVD	MD	Name	Size
120.0	120.0	20" Conductor	20
1866.0	1867.5	13 3/8" Surface Casing	13-3/8
5551.0	5593.4	9 5/8" Intermediate Casing	9-5/8
10445.1	19280.0	5 1/2" Production Casing	5-1/2

FORMATION TOP DETAILS

TVDPath	MDPath	Formation	DipAngle	DipDir
1857.0	1858.4	Rustler	0.00	
2056.0	2059.6	Top of Salt	0.00	
3467.0	3486.3	Base of Salt	0.00	
3783.0	3805.8	Yates	0.00	
4065.0	4090.9	Capitan	0.00	
5592.0	5634.9	Delaware	0.00	
5804.0	5849.2	Cherry Canyon	0.00	
6862.0	6919.0	Brushy Canyon	0.00	
8614.0	8690.4	Bone Spring	0.00	
9834.0	9924.0	1st Bone Spring Sand	0.00	
10485.0	10588.5	2nd Bone Spring Sand	0.00	





APD ID: 10400027887 **Submission Date:** 03/13/2018

Operator Name: CAZA OPERATING LLC

Well Name: IGLOO 19-24 STATE FED COM **Well Number:** 14H

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

[redacted]

Show Final Text

Section 1 - Existing Roads

Will existing roads be used? YES

Existing Road Map:

IGLOO_19_24_STATE_FED_COM_14H_Existing_Road_Map_20180205071604.pdf

Existing Road Purpose: ACCESS **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:

Igloo_19_24_State_Fed_Com_14H_1_Mile_Circles_20180313093930.pdf

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

Submit or defer a Proposed Production Facilities plan? SUBMIT

Production Facilities description: Existing production facility will have 3 tanks, 1 separator and 1 heater added to it.

Production Facilities map:

Igloo_19_24_State_Fed_Com_14H_Production_Facility_Map_20180313094310.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: 32.52175 **Source longitude:** -103.52479

Source datum: NAD83

Water source permit type: PRIVATE CONTRACT

Water source transport method: TRUCKING

Source land ownership: PRIVATE

Source transportation land ownership: FEDERAL

Water source volume (barrels): 320000 **Source volume (acre-feet):** 41.245792

Source volume (gal): 13440000

Water source and transportation map:

Igloo_19_24_State_Fed_Com_14H_Water_Supply_Map_20180313094732.pdf

Water source comments:

New water well? NO

New Water Well Info

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

Operator Name: CAZA OPERATING LLC

Well Name: IGLOO 19-24 STATE FED COM **Well Number:** 14H

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 attachment:

Section 7 - Methods for Handling Waste

Waste type: DRILLING

Waste content description: Drill Cuttings

Amount of waste: 1163640 pounds

Waste disposal frequency : Daily

Safe containment description: roll off bins

Safe containmant attachment:

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

Disposal type description:

Disposal location description: R360 commercial disposal facility

Reserve Pit

Reserve Pit being used? NO

Temporary disposal of produced water into reserve pit?

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

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

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

Reserve pit liner

Reserve pit liner specifications and installation description

Cuttings Area

Cuttings Area being used? NO

Are you storing cuttings on location? NO

Description of cuttings location

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

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

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

WCuttings area liner

Cuttings area liner specifications and installation description

Section 8 - Ancillary Facilities

Are you requesting any Ancillary Facilities?: NO

Ancillary Facilities attachment:

Comments:

Section 9 - Well Site Layout

Well Site Layout Diagram:

Igloo_19_24_State_Fed_Com_14H_Wellsite_Layout_20180313095459.pdf

Comments:

Operator Name: CAZA OPERATING LLC

Well Name: IGLOO 19-24 STATE FED COM **Well Number:** 14H

Section 10 - Plans for Surface Reclamation

Type of disturbance: No New Surface Disturbance **Multiple Well Pad Name:** IGLOO 19-24 STATE FED COM

Multiple Well Pad Number: 12H

Recontouring attachment:

Drainage/Erosion control construction: Per BLM instructions as identified during onsite

Drainage/Erosion control reclamation: Per BLM instructions as identified during onsite

Well pad proposed disturbance (acres): 0

Road proposed disturbance (acres): 0

Powerline proposed disturbance (acres): 0

Pipeline proposed disturbance (acres): 0

Other proposed disturbance (acres): 0

Total proposed disturbance: 0

Well pad interim reclamation (acres):

Road interim reclamation (acres):

Powerline interim reclamation (acres): 0

Pipeline interim reclamation (acres):

Other interim reclamation (acres):

Total interim reclamation:

Well pad long term disturbance (acres):

Road long term disturbance (acres):

Powerline long term disturbance (acres): 0

Pipeline long term disturbance (acres):

Other long term disturbance (acres):

Total long term disturbance:

Disturbance Comments:

Reconstruction method: Interim reclamation as identified during onsite

Topsoil redistribution: Interim reclamation as identified during onsite

Soil treatment: Interim reclamation as identified during onsite

Existing Vegetation at the well pad: Sage brush and native grasses

Existing Vegetation at the well pad attachment:

Existing Vegetation Community at the road: Sage brush and native grasses

Existing Vegetation Community at the road attachment:

Existing Vegetation Community at the pipeline: Sage brush and native grasses

Existing Vegetation Community at the pipeline attachment:

Existing Vegetation Community at other disturbances: Sage brush and native grasses

Existing Vegetation Community at other disturbances attachment:

Non native seed used? NO

Non native seed description:

Seedling transplant description:

Will seedlings be transplanted for this project? NO

Operator Name: CAZA OPERATING LLC

Well Name: IGLOO 19-24 STATE FED COM **Well Number:** 14H

Seedling transplant description attachment:

Will seed be harvested for use in site reclamation? NO

Seed harvest description:

Seed harvest description attachment:

Seed Management

Seed Table

Seed type:

Seed source:

Seed name:

Source name:

Source address:

Source phone:

Seed cultivar:

Seed use location:

PLS pounds per acre:

Proposed seeding season:

Seed Summary

Seed Type	Pounds/Acre

Total pounds/Acre:

Seed reclamation attachment:

Operator Contact/Responsible Official Contact Info

First Name: Kevin **Last Name:** Garrett

Phone: (432)682-7424 **Email:** kgarrett@cazapetro.com

Seedbed prep: Harrow

Seed BMP: Per BLM instructions

Seed method: Broadcast followed by a drag chain

Existing invasive species? NO

Existing invasive species treatment description:

Existing invasive species treatment attachment:

Weed treatment plan description: Spray for cheat grass

Weed treatment plan attachment:

Monitoring plan description: Visual inspection in spring and late fall

Monitoring plan attachment:

Operator Name: CAZA OPERATING LLC

Well Name: IGLOO 19-24 STATE FED COM **Well Number:** 14H

Success standards: 80% coverage by 2nd growing season of native species with less than 5% invasive species

Pit closure description: No pits to be used

Pit closure attachment:

Section 11 - Surface Ownership

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, NM

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

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

Section 12 - Other Information

Right of Way needed? NO **Use APD as ROW?**

ROW Type(s):

ROW Applications

SUPO Additional Information:

Use a previously conducted onsite? YES

Previous Onsite information: Igloo 19-24 State Fed Com 12H

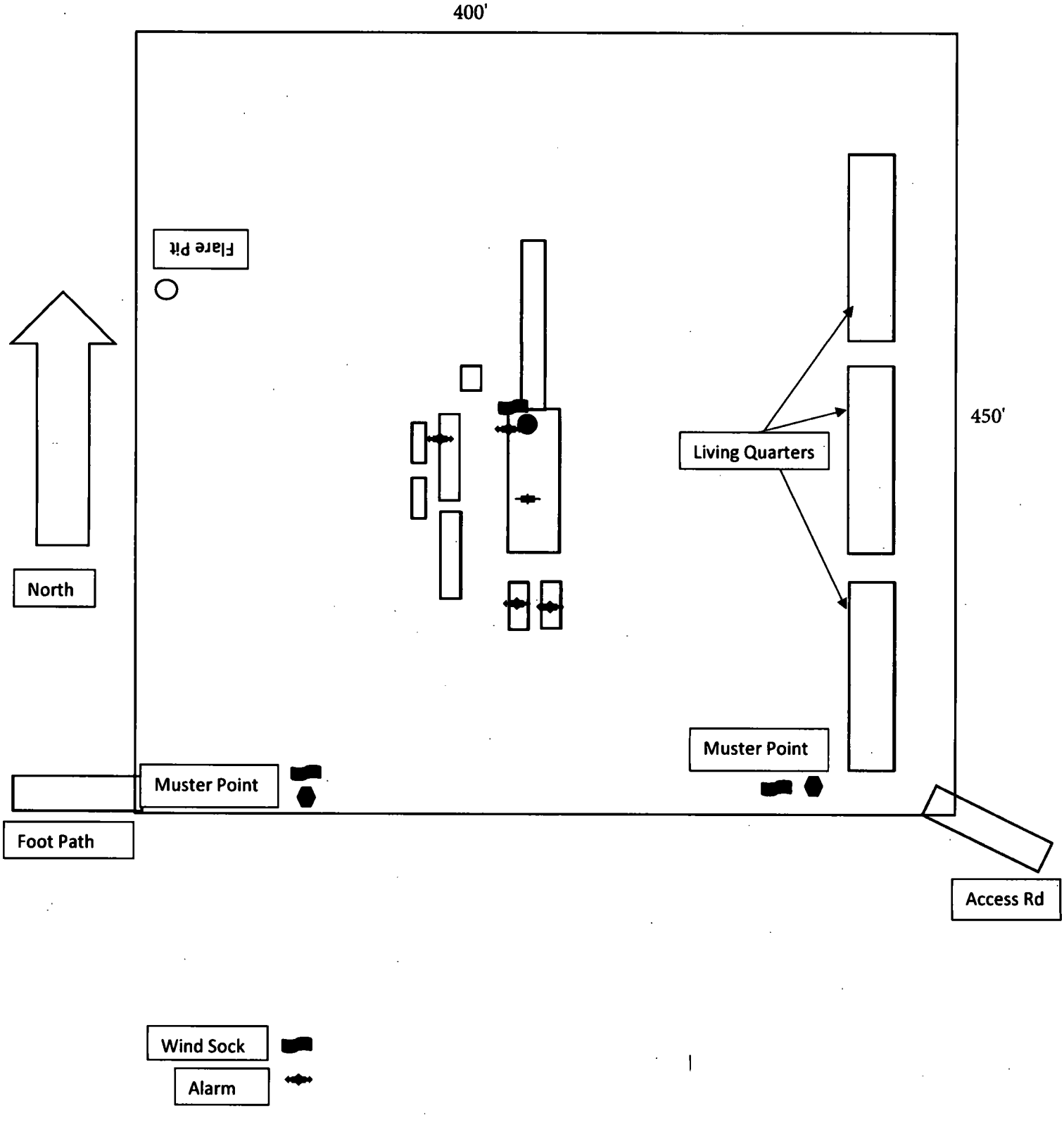
Operator Name: CAZA OPERATING LLC

Well Name: IGLOO 19-24 STATE FED COM **Well Number:** 14H

Other SUPO Attachment

emar_bta_blm_well_location_access_ltr_20190328053946.pdf

IGLOO_19_24_STATE_FED_COM_14H_Interim_Reclamation_Plat_20190328054013.pdf


400'
Flare Pit
North
450'
Living Quarters
Muster Point
Muster Point
Foot Path
Access Rd
Wind Sock
Alarm

Caza Petroleum

March 27, 2019

Bureau of Land Management
620 E. Green street
Carlsbad, NM 88220
Attn: Mr. Matt Wirth

Re: Request for BLM Access to Caza's Well Locations
Section 19, Township 20 South, Range 35 East
Lea County, New Mexico

Dear Mr. Wirth:

Pursuant to several conversations you have had with Steve Morris regarding Caza Operating, LLC's ("Caza") APD's for its Igloo 19-24 State Fed Com #12H, #13H and #14H Wells, specifically the BLM's right to access Caza's well locations, Caza hereby grants the BLM permission to access the well locations pursuant to that certain Entry, Roadway and Location Agreement dated September 30, 2014 (the "SUA"), by and between Caza Petroleum, LLC, Caza's parent company, and S&S, Inc., the fee surface owner. The SUA calls for Caza to notify the surface owner prior to entry upon the lands. Therefore, the BLM's representative will need to coordinate location access with Caza's Production Engineer, Kevin Garrett. Mr. Garrett can be contacted using the following contact information:

Mr. Kevin Garrett
Caza Operating, LLC
Production Engineer
Office: 432-682-7424
Mobile: 432-556-8508
Email: Kgarrett@cazapetro.com

Thank you for your cooperation with this matter. If you have questions or require additional information regarding the permissions granted hereunder, or if you wish to discuss this matter in more detail, please contact me at 432-661-7424 or via email at ralbro@cazapetro.com.

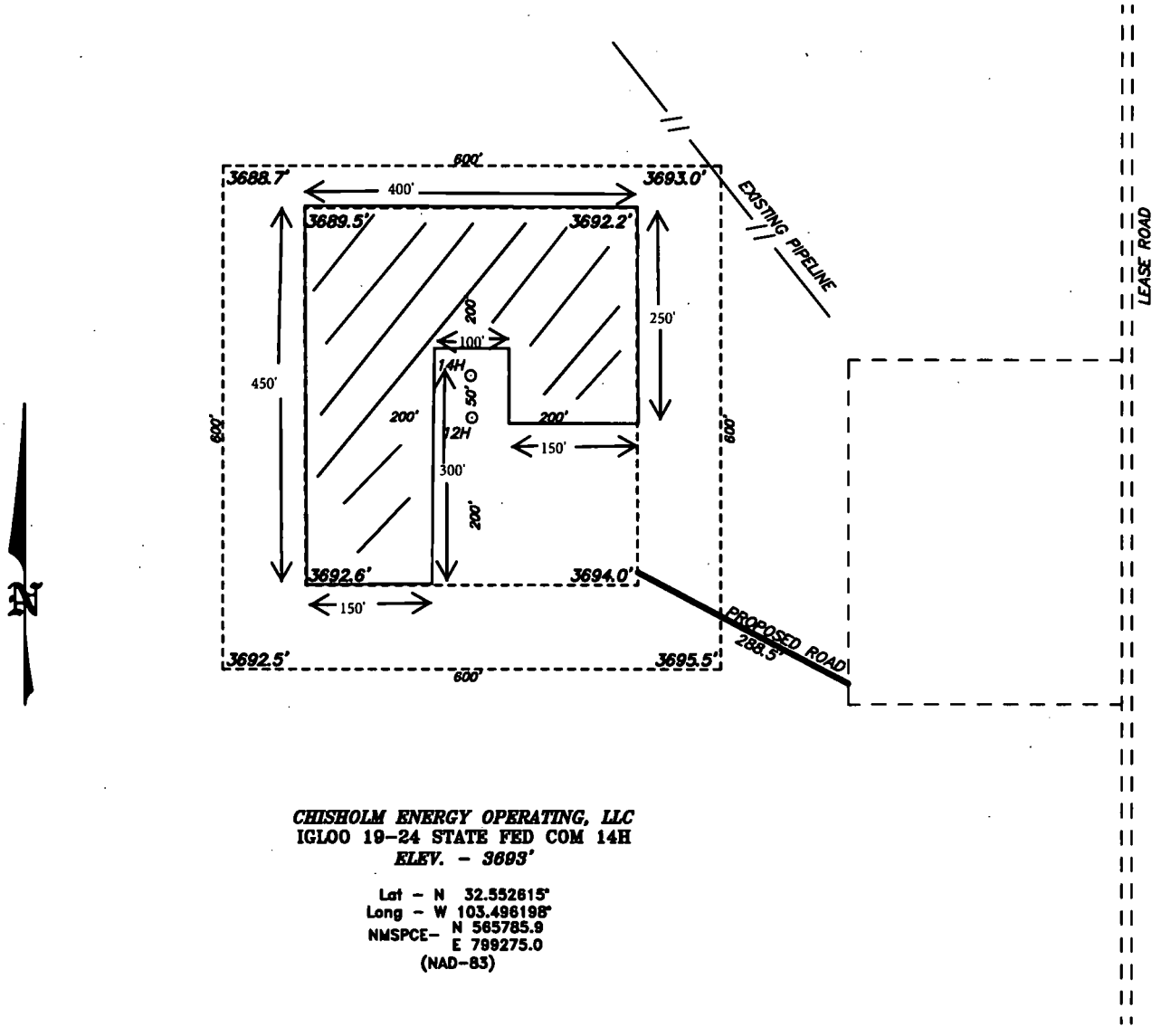
Very truly yours,

CAZA PETROLEUM, LLC

Richard R. Albro
Vice President, Land

cc: Ms. Deborah Ham, Land/Law Examiner
BLM Carlsbad Office
620 E. Green street
Carlsbad, NM 88220

SECTION 19, TOWNSHIP 20 SOUTH, RANGE 35 EAST, N.M.P.M.,
LEA COUNTY, **NEW MEXICO.**



CHISHOLM ENERGY OPERATING, LLC
IGLOO 19-24 STATE FED COM 14H
ELEV. - 3693'

Lat - N 32.552615°
Long - W 103.496198°
NMSPCE- N 565785.9
E 799275.0
(NAD-83)

MONUMENT, NM IS ±14 MILES TO THE NORTHEAST OF LOCATION.

200 0 200 400 FEET

SCALE: 1" = 200'

Directions to Location:

FROM HIGHWAY 62-180 GO SOUTH ON MARATHON ROAD 5.5 MILES TO LEASE ROAD THEN GO EAST 1.7 MILES THEN SOUTH 0.3 MILES TO PROPOSED ROAD.

CAZA OPERATING, LLC.

REF: IGLOO 19-24 STATE FED COM 14H / WELL PAD TOPO

THE IGLOO 19-24 STATE FED COM 14H LOCATED 450' FROM THE SOUTH LINE AND 2514' FROM THE EAST LINE OF SECTION 19, TOWNSHIP 20 SOUTH, RANGE 35 EAST, N.M.P.M., LEA COUNTY, NEW MEXICO.

basin surveys
focused on excellence in the oilfield
P.O. Box 1786
1120 N. West County Rd.
Hobbs, New Mexico 88241
(575) 393-7316 - Office
(575) 392-2206 - Fax
basinsurveys.com

W.O. Number: 33494	Drawn By: K GOAD	Date: 01-23-2018	Survey Date: 01-22-2018	Sheet 1 of 1 Sheets

AFMSS

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

PWD Data Report

09/26/2019

APD ID: 10400027887 **Submission Date:** 03/13/2018

Operator Name: CAZA OPERATING LLC

Well Name: IGLOO 19-24 STATE FED COM **Well Number:** 14H

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

Section 1 - General

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

Section 2 - Lined Pits

Would you like to utilize Lined Pit PWD options? NO

Produced Water Disposal (PWD) Location:

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

Lined pit PWD on or off channel:

Lined pit PWD discharge volume (bbl/day):

Lined pit specifications:

Pit liner description:

Pit liner manufacturers information:

Precipitated solids disposal:

Decribe precipitated solids disposal:

Precipitated solids disposal permit:

Lined pit precipitated solids disposal schedule:

Lined pit precipitated solids disposal schedule attachment:

Lined pit reclamation description:

Lined pit reclamation attachment:

Leak detection system description:

Leak detection system attachment:

Operator Name: CAZA OPERATING LLC

Well Name: IGLOO 19-24 STATE FED COM **Well Number:** 14H

Lined pit Monitor description:

Lined pit Monitor attachment:

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

Is the reclamation bond a rider under the BLM bond?

Lined pit bond number:

Lined pit bond amount:

Additional bond information attachment:

Section 3 - Unlined Pits

Would you like to utilize Unlined Pit PWD options? NO

Produced Water Disposal (PWD) Location:

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

Unlined pit PWD on or off channel:

Unlined pit PWD discharge volume (bbl/day):

Unlined pit specifications:

Precipitated solids disposal:

Decribe precipitated solids disposal:

Precipitated solids disposal permit:

Unlined pit precipitated solids disposal schedule:

Unlined pit precipitated solids disposal schedule attachment:

Unlined pit reclamation description:

Unlined pit reclamation attachment:

Unlined pit Monitor description:

Unlined pit Monitor attachment:

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

Beneficial use user confirmation:

Estimated depth of the shallowest aquifer (feet):

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

TDS lab results:

Geologic and hydrologic evidence:

State authorization:

Unlined Produced Water Pit Estimated percolation:

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

Operator Name: CAZA OPERATING LLC

Well Name: IGLOO 19-24 STATE FED COM **Well Number:** 14H

Is the reclamation bond a rider under the BLM bond?

Unlined pit bond number:

Unlined pit bond amount:

Additional bond information attachment:

Section 4 - Injection

Would you like to utilize Injection PWD options? NO

Produced Water Disposal (PWD) Location:

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

Injection PWD discharge volume (bbl/day):

Injection well mineral owner:

Injection well type:

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

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

Injection well new surface disturbance (acres):

Minerals protection information:

Mineral protection attachment:

Underground Injection Control (UIC) Permit?

UIC Permit attachment:

Section 5 - Surface Discharge

Would you like to utilize Surface Discharge PWD options? NO

Produced Water Disposal (PWD) Location:

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

Surface discharge PWD discharge volume (bbl/day):

Surface Discharge NPDES Permit?

Surface Discharge NPDES Permit attachment:

Surface Discharge site facilities information:

Surface discharge site facilities map:

Section 6 - Other

Would you like to utilize Other PWD options? NO

Produced Water Disposal (PWD) Location:

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

Other PWD discharge volume (bbl/day):

Operator Name: CAZA OPERATING LLC

Well Name: IGLOO 19-24 STATE FED COM **Well Number:** 14H

Other PWD type description:

Other PWD type attachment:

Have other regulatory requirements been met?

Other regulatory requirements attachment:

AFMSS

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

Bond Info Data Report

09/26/2019

APD ID: 10400027887

Submission Date: 03/13/2018

Operator Name: CAZA OPERATING LLC

Well Name: IGLOO 19-24 STATE FED COM

Well Number: 14H

Well Type: OIL WELL

Well Work Type: Drill

[redacted]

Show Final Text

Bond Information

Federal/Indian APD: FED

BLM Bond number: NMB000471

BIA Bond number:

Do you have a reclamation bond? NO

Is the reclamation bond a rider under the BLM bond?

Is the reclamation bond BLM or Forest Service?

BLM reclamation bond number:

Forest Service reclamation bond number:

Forest Service reclamation bond attachment:

Reclamation bond number:

Reclamation bond amount:

Reclamation bond rider amount:

Additional reclamation bond information attachment: