Form 3160-3
(June 2015)

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.
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
15H (326170)

2. Name of Operator
CAZA OPERATING LLC (249099)

9. API Well No.
30-025-46602

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 (37580)
LEA / LEA BONE SPRING SOUTH

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*
At surface NWSE / 1570 FSL / 2365 FEL / LAT 32.555693 / LONG -103.495709
At proposed prod. zone NWSW / 1710 FSL / 280 FWL / LAT 32.556054 / LONG -103.521415

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*
22.6 miles

12. County or Parish
LEA

13. State
NM

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

16. No of acres in lease
320

17. Spacing Unit dedicated to this well
240

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

19. Proposed Depth
9597 feet / 18025 feet

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

21. Elevations (Show whether DF, KDB, RT, GL, etc.)
3693 feet

22. Approximate date work will start*
09/19/2019

23. Estimated duration
30 days

24. Attachments

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

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

25. Signature	Name *(Printed/Typed)*	Date
(Electronic Submission)	Tony B Sam / Ph: (432)682-7424	05/09/2019
Title: VP Operations		
Approved by *(Signature)* (Electronic Submission)	Name *(Printed/Typed)* Cody Layton / Ph: (575)234-5959	Date 12/12/2019
Title: Assistant Field Manager Lands & Minerals	Office: CARLSBAD	

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

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

GCP Rec 12/13/19

APPROVED WITH CONDITIONS

KZ 12/19/19

Approval Date: 12/12/2019

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*(Instructions on page 2)

PECOS DISTRICT
DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	**CAZA OPERATING LLC**
LEASE NO.:	**NMNM02079**
WELL NAME & NO.:	IGLOO 19-24 STATE FED COM 15H
SURFACE HOLE FOOTAGE:	1570'/S & 2365'/E
BOTTOM HOLE FOOTAGE	1720'/S & 280'/W
LOCATION:	Section 19, T.20 S., R.35 E., NMP
COUNTY:	Lea County, New Mexico

COA

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

A. HYDROGEN SULFIDE

A Hydrogen Sulfide (H2S) Drilling Plan shall be activated 500 feet prior to drilling into the **Yates-Sevon Rivers and Wolfcamp** 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 **1864 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 shall be set at approximately **5549 feet** is:

Option 1 (Single Stage):

- Cement to surface. If cement does not circulate see B.1.a, c-d above. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to Capitan Reef.**

Option 2:

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

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

b. Second stage above DV tool:

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

❖ 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 **5-1/2** inch production casing is:

    - Cement should tie-back at least **50 feet** on top of Capitan Reef top. 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 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 **2000 (2M)** psi.

3. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the intermediate casing shoe shall be **3000 (3M)** psi.

D. SPECIAL REQUIREMENT (S)

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.

GENERAL REQUIREMENTS

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

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

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

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

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

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

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

3. The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well – vertical portion of hole) shall be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.

A. CASING

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

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

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

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

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

6. On that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Formation at the shoe shall be tested to a minimum of the mud weight equivalent anticipated to control the formation pressure to the next casing depth or at total depth of the well. This test shall be performed before drilling more than 20 feet of new hole.

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

B. PRESSURE CONTROL

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

2. If a variance is approved for a flexible hose to be installed from the BOP to the choke manifold, the following requirements apply: The flex line must meet the requirements of API 16C. Check condition of flexible line from BOP to choke manifold, replace if exterior is damaged or if line fails test. Line to be as straight as possible with no hard bends and is to be anchored according to Manufacturer's requirements. The flexible hose can be exchanged with a hose of equal size and equal or greater pressure rating. Anchor requirements, specification sheet and hydrostatic pressure test certification matching the hose in service, to be onsite for review. These documents shall be posted in the company man's trailer and on the rig floor.

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

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

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

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

    a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not

hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).

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

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

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

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

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

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

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

C. DRILLING MUD

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

D. WASTE MATERIAL AND FLUIDS

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

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

Caza Oil and Gas, Inc

H2S Drilling Operations Plan

Prepared by: Steve Morris

Date: 04/28/2018

Table of Contents

H2S Contingency Plan Section

Scope:

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

Objective:

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

Provide proper evacuation procedures to cope with emergencies.

Provide immediate and adequate medical attention should an injury occur.

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

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

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

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

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

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

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

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

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

Emergency Procedures Section

Emergency Procedures

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

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

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

Emergency Procedure Implementation

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

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

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

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

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

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

II. Taking a Kick:

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

III. Open Hole Logging:

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

IV. Running Casing or Plugging:

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

Simulated Blowout Control Drills

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

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

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

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

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

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

e) Report to Driller for further instructions.

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

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

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

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

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

Ignition Procedures

Responsibility:

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

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

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

Instructions for Igniting the Well:

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

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

Training Program

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

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

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

Emergency Equipment Requirements

Lease Entrance Sign:

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

CAUTION- POTENTIAL POISON GAS HYDROGEN SULFIDE

Well Control Equipment:

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

Mud Program:

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

Metallurgy:

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

Respiratory Equipment:

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

Windsocks or Wind Streamers:

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

Hydrogen Sulfide Detector and Alarms:

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

Well Condition Sign and Flags:

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

GREEN - Normal Operating Conditions

YELLOW - Potential Danger

RED - Danger, H2S Gas Present

Auxiliary Rescue Equipment:

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

Mud Inspection Equipment:

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

Fire Extinguishers:

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

Blowout Preventer:

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

Confined Space Monitor:

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

Communication Equipment:

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

Special Control Equipment:

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

Evacuation Plan:

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

Designated Areas:

Parking and Visitor area:

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

Safe Briefing Areas:

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

NOTES:

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

CHECK LISTS

Status Check List

Note: Date each item as they are implemented.

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

Procedural Check List

Perform the following on each tour:

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

Perform the following each week:

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

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

Briefing Procedures

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

Pre-Spud Meeting

Date: Prior to spudding the well.

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

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

Evacuation Plan

General Plan

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

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

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

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

Emergency Assistance Telephone List

PUBLIC SAFETY: 911 or

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

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

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

Ambulance 911

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

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

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

Caza Oil and Gas, Inc:

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

VP Operations: Tony Sam

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

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

Project Manager: Steve Morris

Cell .....(972) 835-3315

Project Manager: Joel Stockford

Cell .....(972) 835-3349

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:

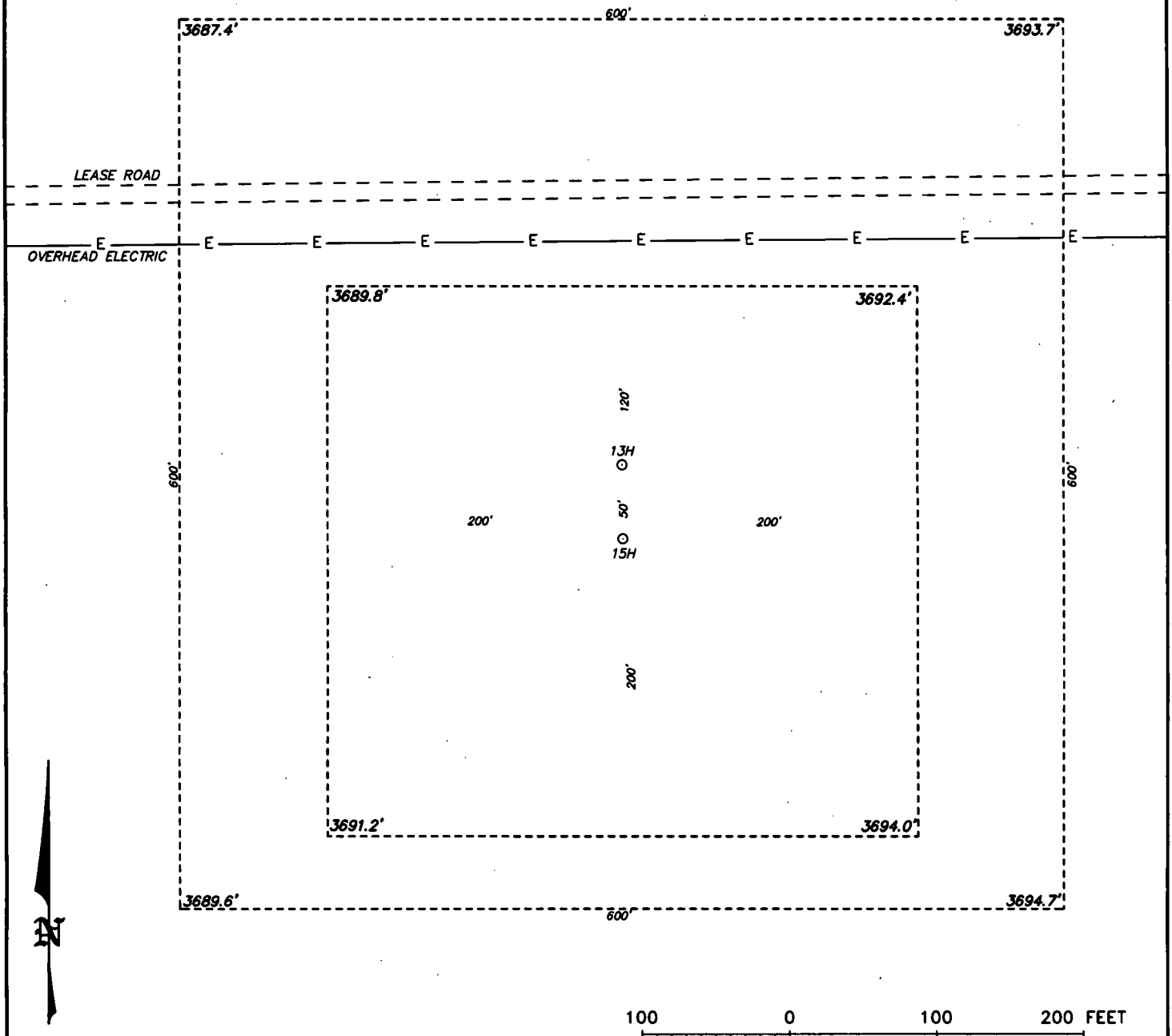
All evacuees will migrate laterally toward the wind direction.

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.

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



100 0 100 200 FEET

SCALE: 1" = 100'

CAZA OPERATING, LLC.

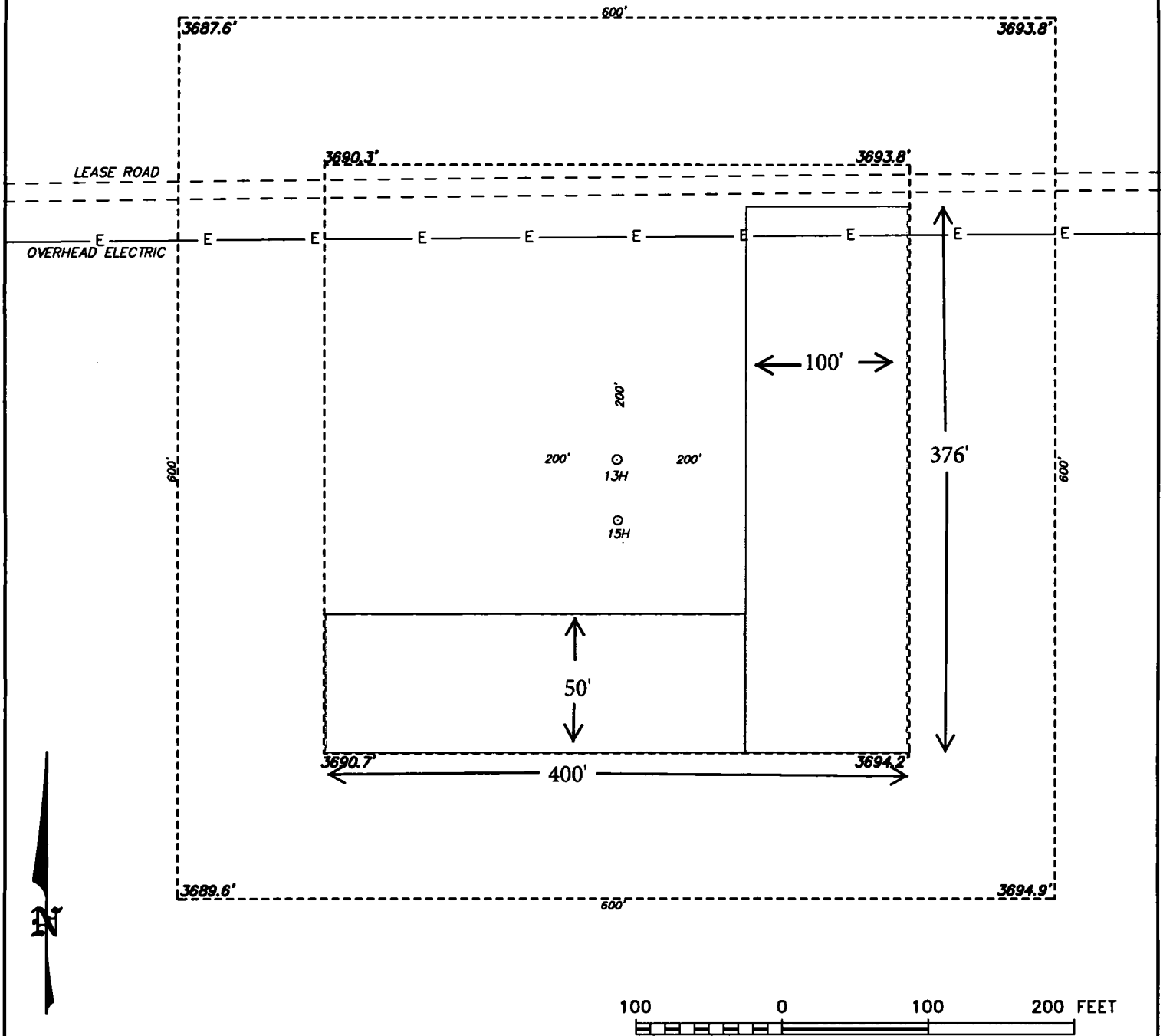
REF: IGLOO 19-24 STATE FED COM 15H / WELL PAD TOPO

THE IGLOO 19-24 STATE FED COM 15H LOCATED 1570' FROM THE SOUTH LINE AND 2365' 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: 33495	Drawn By: K. GOAD	Date: 01-23-2018	Survey Date: 01-22-2018	Sheet 1 of 1 Sheets

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



100 0 100 200 FEET

SCALE: 1" = 100'

CAZA OPERATING, LLC.

REF: IGLOO 19-24 STATE FED COM 13H / WELL PAD TOPO

THE IGLOO 19-24 STATE FED COM 13H LOCATED 1620' FROM THE SOUTH LINE AND 2365' FROM THE EAST LINE OF SECTION 19, TOWNSHIP 20 SOUTH, RANGE 35 EAST, N.M.P.M., LEA COUNTY, NEW MEXICO.

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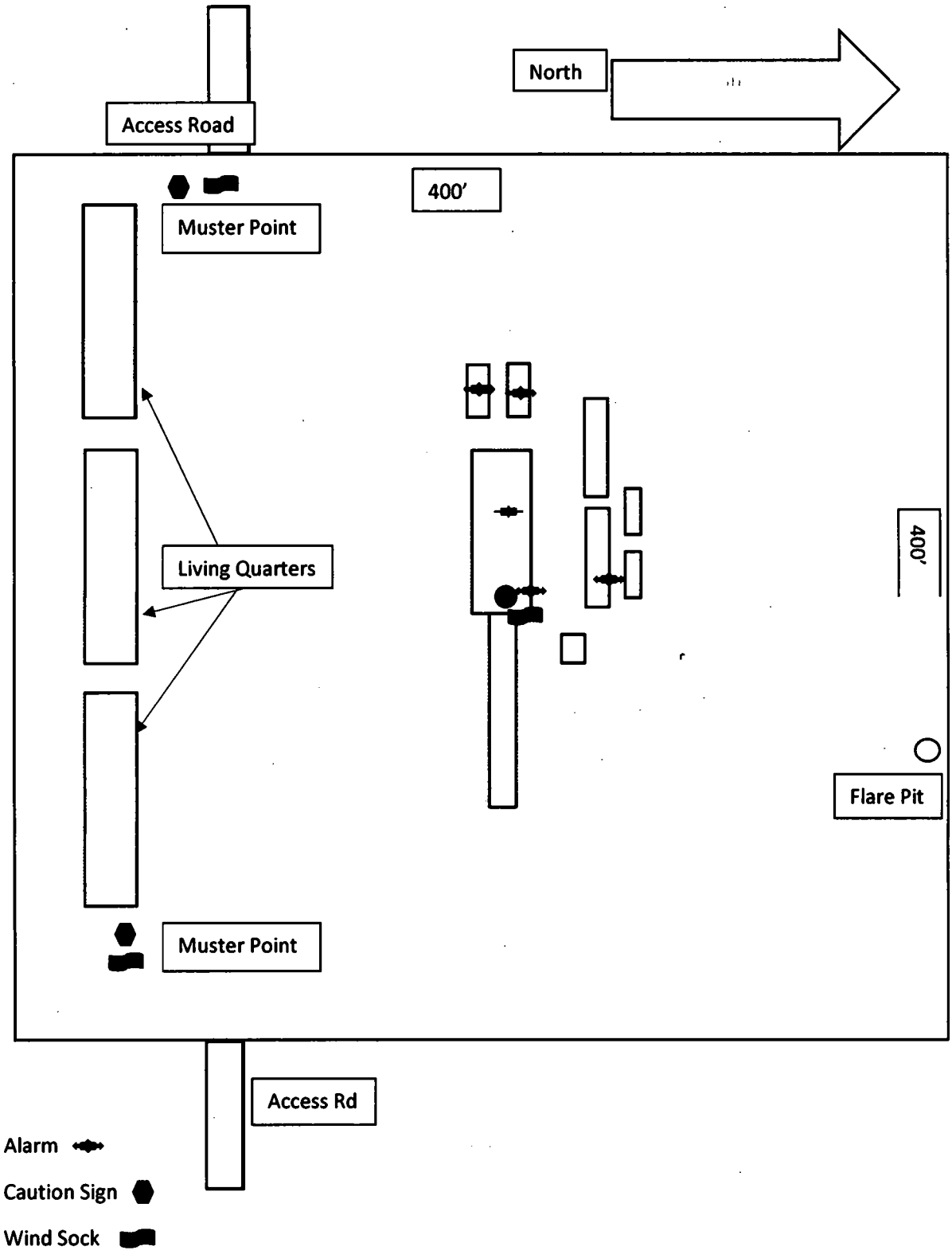
Hobbs, New Mexico 88241
(575) 393-7316 - Office
(575) 392-2206 - Fax
basinsurveys.com

W.O. Number: 33200	Drawn By: J GOAD	Date: 09-29-2017	Survey Date: 8-2-2017	Sheet 1 of 1 Sheets


Access Road
North
400'
Muster Point
Living Quarters
400'
Flare Pit
Muster Point
Access Rd
Alarm
Caution Sign
Wind Sock

Igloo 19-24 State Fed Com 15H - Casing Design

In a Lesser Prairie-Chicken section.

13 3/8	surface csg in a	17 1/2	inch hole.	Design Factors			SURFACE		
Segment	#/ft	Grade	Coupling	Joint	Collapse	Burst	Length	Weight	ALT Burst
"A"	54.50	J 55	ST&C	5.06	1.31	0.95	1,864	101,588	1.64
"B"							0	0	
w/8.4#/g mud, 30min Sfc Csg Test psig: 1,098			Tail Cmt	does not	circ to sfc.	Totals:	1,864	101,588	

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
17 1/2	0.6946	1036	1819	1368	33	8.90	1662	2M	1.56

Burst Frac Gradient(s) for Segment(s) A, B = 1.46, 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	ALT Burst
"A"	40.00	J 55	LT&C	2.34	1.3	0.85	3,800	152,000	1.58
"B"	40.00	L 80	LT&C	10.39	1.14	1.23	1,400	56,000	2.30
"C"	40.00	HCL 80	LT&C	59.96	1.47	1.23	349	13,960	
"D"							0	0	
w/8.4#/g mud, 30min Sfc Csg Test psig: 1,107						Totals:	5,549	221,960	

The cement volume(s) are intended to achieve a top of 0 ft from surface or a 1864 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	1827	3706	1849	100	10.00	2498	3M	0.81
Setting Depths for D V Tool(s):		3800					sum of sx	Σ CuFt	Σ%excess
excess cmt by stage % :		100	100				1824	3700	100

Class 'C' tail cmt yld > 1.35

Burst Frac Gradient(s) for Segment(s): A, B, C, D = 1.04, b, c, d All > 0.70, OK.

Tail cmt proposed for the csg below could overlap the previous csg shoe.

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	9,326	158,542
"B"	17.00	P 110	BUTT	7.73	1.45	2.28	8,699	147,883
w/8.4#/g mud, 30min Sfc Csg Test psig: 2,052						Totals:	18,025	306,425

B Segment Design Factors would be: 57.65 1.60 if it were a vertical wellbore.

No Pilot Hole Planned	MTD	Max VTD	Csg VD	Curve KOP	Dogleg°	Severity°	MEOC
	18025	9883	9883	9326	92	10	10213

The cement volume(s) are intended to achieve a top of 0 ft from surface or a 5549 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	4910	9666	4604	110	9.10			1.35

Class 'H' tail cmt yld > 1.20

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

Design Plan:

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

Equipment Includes:

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

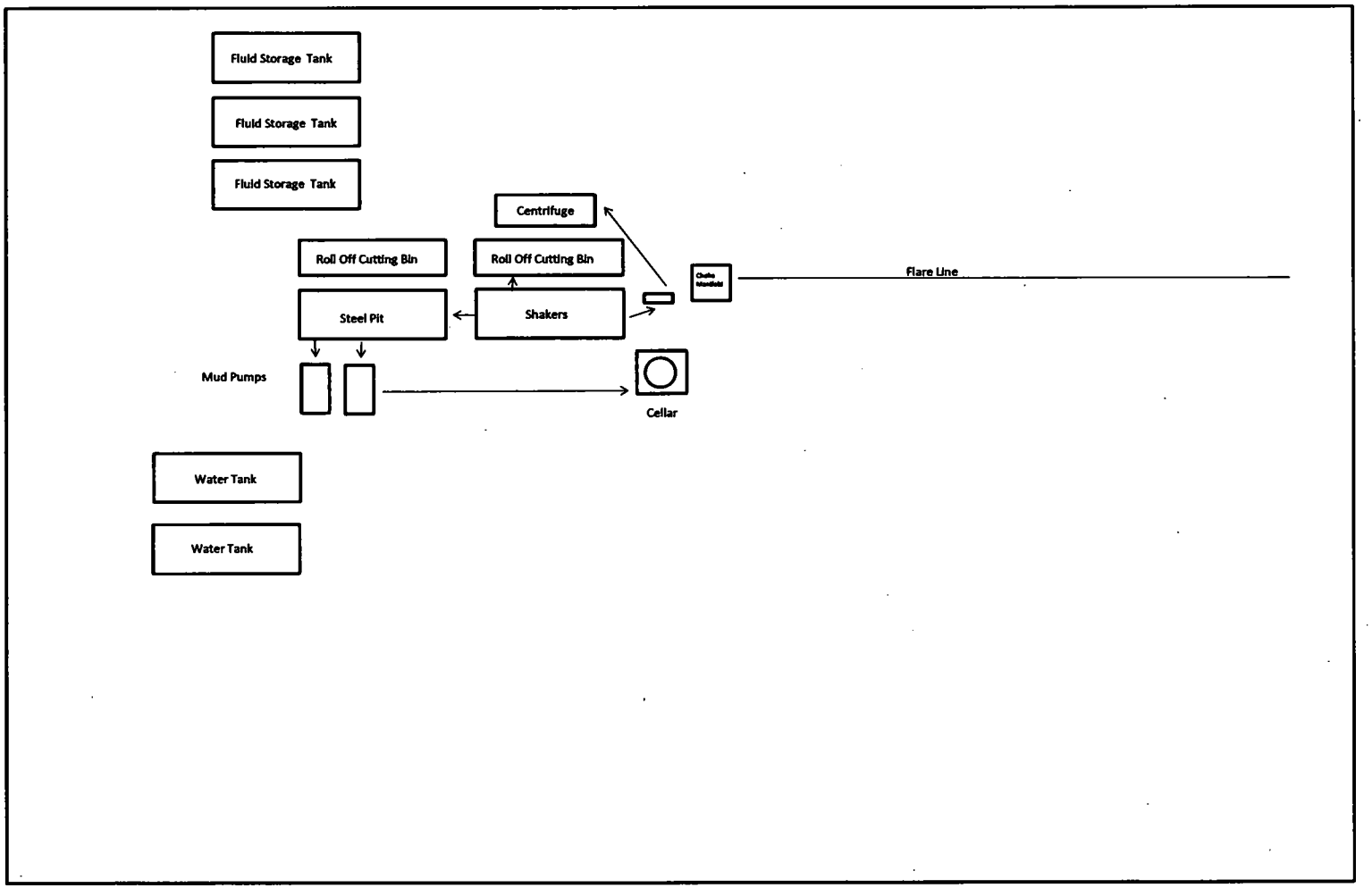
Operating and Maintenance Plan:

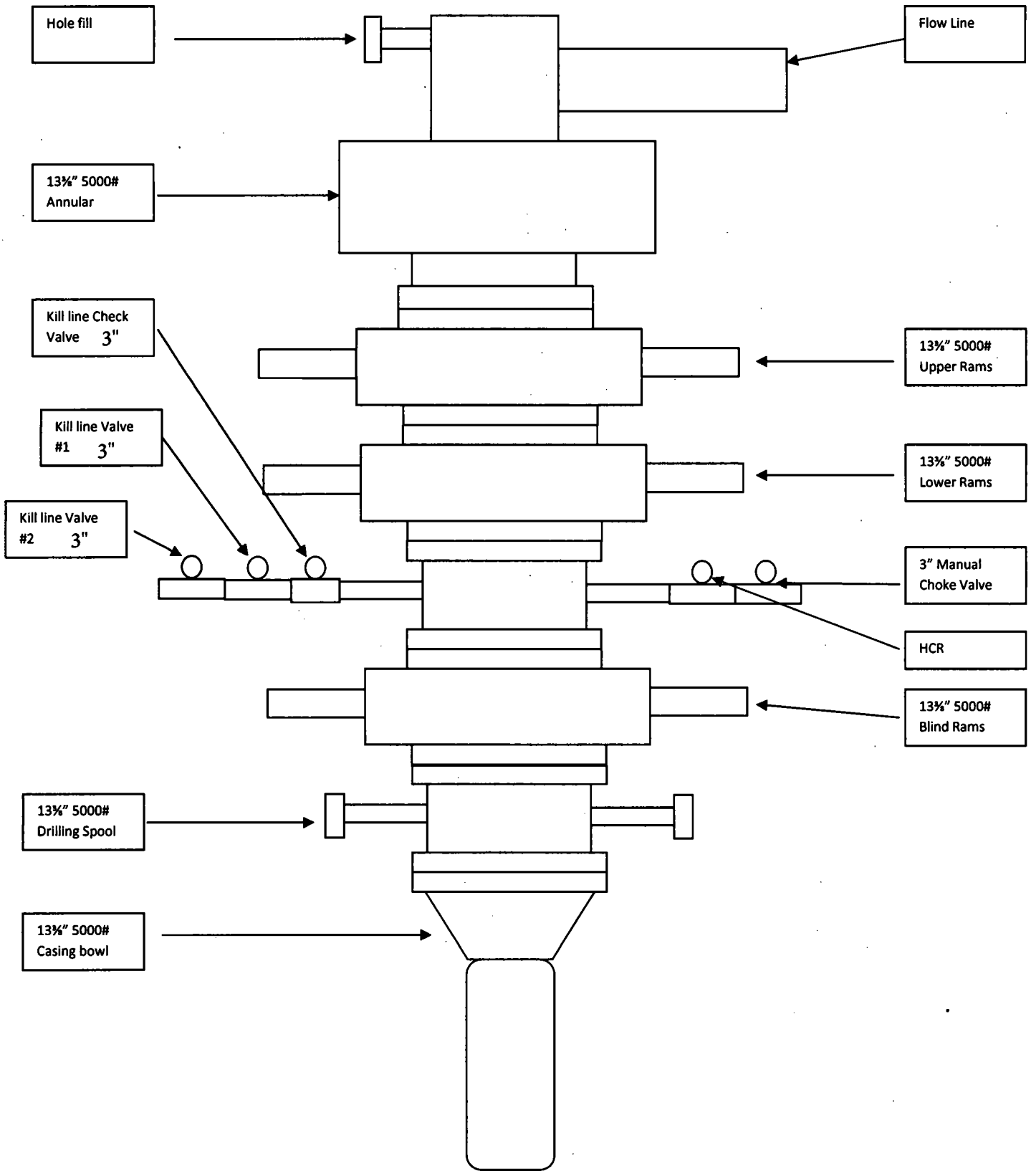
Inspection to occur every tour for proper operation of system and individual components. If any problems are found they will be repaired and/or corrected immediately.

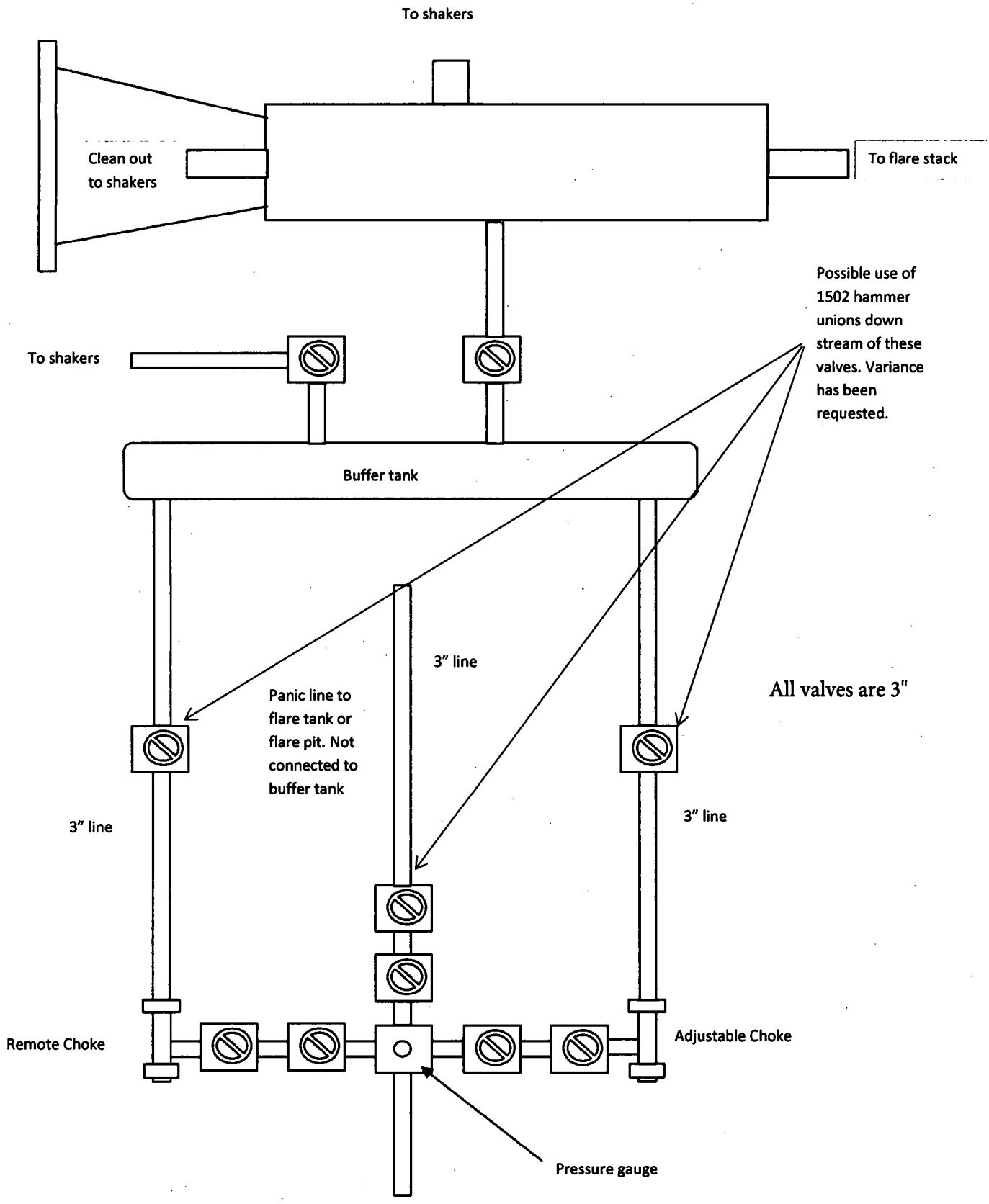
Closure Plan:

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

Closed Loop Diagram Design Plan




Hole fill
Flow Line
13⅝" 5000#
Annular
Kill line Check
Valve 3"
13⅝" 5000#
Upper Rams
Kill line Valve
#1 3"
13⅝" 5000#
Lower Rams
Kill line Valve
#2 3"
3" Manual
Choke Valve
HCR
13⅝" 5000#
Blind Rams
13⅝" 5000#
Drilling Spool
13⅝" 5000#
Casing bowl


To shakers
Clean out to shakers
To flare stack
To shakers
Possible use of 1502 hammer unions down stream of these valves. Variance has been requested.
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

COPPER STATE RUBBER
VISUAL INSPECTION / HYDROSTATIC TEST REPORT
CHOKE & KILL HOSE
10,000 P.S.I. W/P X 15,000 P.S.I. T/P
SPEC: 090-1915 HS
H2S SUITABLE

SHOP ORDER NO.: 16454 SIZE: 4" I.D.

SERIAL NO.: 22199 LENGTH 50 FT. IN.

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

HT-X1840

VISUAL INSPECTION

(A) END CAPS / SLEEVE RECESS: OK
(B) EXTERIOR / COVER / BRANDING: OK
(C) INTERIOR TUBE: OK

HYDROSTATIC TEST

5 MIN. @ 10,000 PSI

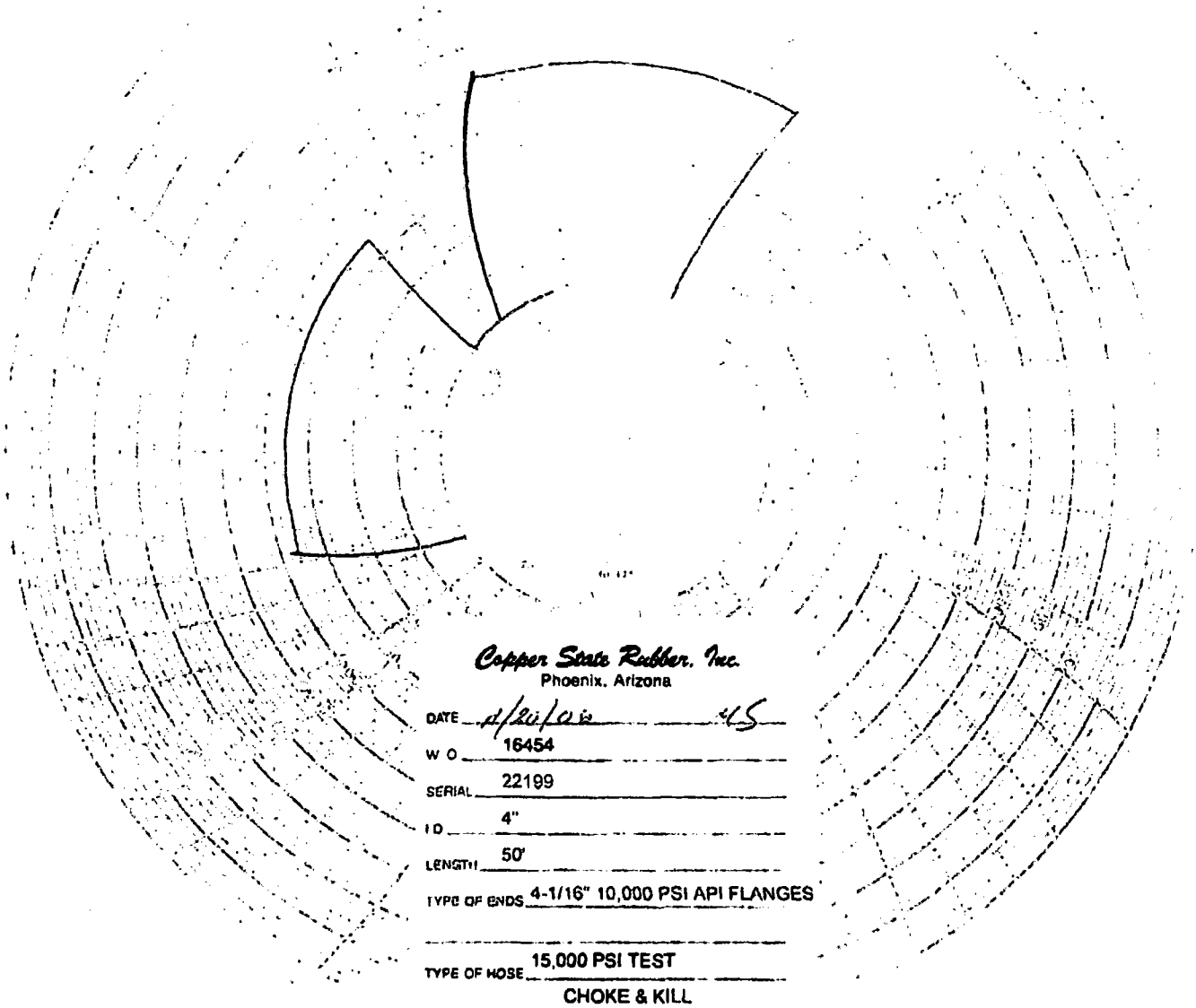
2 MIN. @ 0 PSI 51' OAL

3 MIN. @ 15,000 PSI

WITNESSED BY:

DATE November 20, 2006

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



Copper State Rubber, Inc.
Phoenix, Arizona

DATE 4/20/95

W O 16454

SERIAL 22199

I D 4"

LENGTH 50'

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

TYPE OF HOSE 15,000 PSI TEST
CHOKE & KILL

Caza Petroleum

Caza Operating LLC

Igloo 19-24 State Fed Com 15H
Igloo 19-24 State Fed Com 15H
Igloo 19-24 State Fed Com 15H
Igloo 19-24 State Fed Com 15H

Plan: 191210 Igloo 19-24 State Fed Com 15H

Morcor Standard Plan

12 December, 2019

[redacted]

Company:	Caza Operating LLC	**Local Co-ordinate Reference:**	Well Igloo 19-24 State Fed Com 15H
Project:	Igloo 19-24 State Fed Com 15H	**TVD Reference:**	WELL @ 3715.0usft (Original Well Elev)
Site:	Igloo 19-24 State Fed Com 15H	**MD Reference:**	WELL @ 3715.0usft (Original Well Elev)
Well:	Igloo 19-24 State Fed Com 15H	**North Reference:**	Grid
Wellbore:	Igloo 19-24 State Fed Com 15H	**Survey Calculation Method:**	Minimum Curvature
Design:	191210 Igloo 19-24 State Fed Com 15H	**Database:**	EDM 5000.1 Single User Db

Project Igloo 19-24 State Fed Com 15H

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 15H

Site Position:		**Northing:**	566,906.98 usft	**Latitude:**	32° 33' 20.495 N
From:	Lat/Long	**Easting:**	799,416.73 usft	**Longitude:**	103° 29' 44.552 W
Position Uncertainty:	1.0 usft	**Slot Radius:**	17-1/2 "	**Grid Convergence:**	0.45 °

Well Igloo 19-24 State Fed Com 15H

Well Position	**+N/-S**	0.0 usft	**Northing:**	566,906.98 usft	**Latitude:**	32° 33' 20.495 N
	+E/-W	0.0 usft	**Easting:**	799,416.73 usft	**Longitude:**	103° 29' 44.552 W
Position Uncertainty		1.0 usft	**Wellhead Elevation:**	usft	**Ground Level:**	3,693.0 usft

Wellbore Igloo 19-24 State Fed Com 15H

Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF2010	5/8/2019	6.59	60.30	48,030

Design 191210 Igloo 19-24 State Fed Com 15H

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	270.63

Survey Tool Program **Date** 12/10/2019

From (usft)	**To (usft)**	**Survey (Wellbore)**	**Tool Name**	**Description**
0.0	17,950.0	191210 Igloo 19-24 State Fed Com 15H (I	MWD	MWD - Standard

Company:	Caza Operating LLC	**Local Co-ordinate Reference:**	Well Igloo 19-24 State Fed Com 15H
Project:	Igloo 19-24 State Fed Com 15H	**TVD Reference:**	WELL @ 3715.0usft (Original Well Elev)
Site:	Igloo 19-24 State Fed Com 15H	**MD Reference:**	WELL @ 3715.0usft (Original Well Elev)
Well:	Igloo 19-24 State Fed Com 15H	**North Reference:**	Grid
Wellbore:	Igloo 19-24 State Fed Com 15H	**Survey Calculation Method:**	Minimum Curvature
Design:	191210 Igloo 19-24 State Fed Com 15H	**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	799,416.73	566,906.98	0.00	0.00
100.0	0.00	0.00	100.0	-3,615.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
120.0	0.00	0.00	120.0	-3,595.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
20" Conductor										
200.0	0.00	0.00	200.0	-3,515.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
300.0	0.00	0.00	300.0	-3,415.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
400.0	0.00	0.00	400.0	-3,315.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
500.0	0.00	0.00	500.0	-3,215.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
600.0	0.00	0.00	600.0	-3,115.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
700.0	0.00	0.00	700.0	-3,015.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
800.0	0.00	0.00	800.0	-2,915.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
900.0	0.00	0.00	900.0	-2,815.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
1,000.0	0.00	0.00	1,000.0	-2,715.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
1,100.0	0.00	0.00	1,100.0	-2,615.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
1,200.0	0.00	0.00	1,200.0	-2,515.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
Start Build 4.00										
1,300.0	0.00	0.00	1,300.0	-2,415.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
1,400.0	0.00	0.00	1,400.0	-2,315.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
Start 8623.0 hold at 1400.0 MD										
1,500.0	0.00	0.00	1,500.0	-2,215.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
1,600.0	0.00	0.00	1,600.0	-2,115.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
1,700.0	0.00	0.00	1,700.0	-2,015.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
1,800.0	0.00	0.00	1,800.0	-1,915.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
1,853.0	0.00	0.00	1,853.0	-1,862.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
Rustler										
1,864.0	0.00	0.00	1,864.0	-1,851.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
13 3/8" Surface Casing										
1,900.0	0.00	0.00	1,900.0	-1,815.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00

Company:	Caza Operating LLC	**Local Co-ordinate Reference:**	Well Igloo 19-24 State Fed Com 15H
Project:	Igloo 19-24 State Fed Com 15H	**TVD Reference:**	WELL @ 3715.0usft (Original Well Elev)
Site:	Igloo 19-24 State Fed Com 15H	**MD Reference:**	WELL @ 3715.0usft (Original Well Elev)
Well:	Igloo 19-24 State Fed Com 15H	**North Reference:**	Grid
Wellbore:	Igloo 19-24 State Fed Com 15H	**Survey Calculation Method:**	Minimum Curvature
Design:	191210 Igloo 19-24 State Fed Com 15H	**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	0.00	0.00	2,000.0	-1,715.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
2,052.0	0.00	0.00	2,052.0	-1,663.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
Top of Salt										
2,100.0	0.00	0.00	2,100.0	-1,615.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
2,200.0	0.00	0.00	2,200.0	-1,515.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
2,300.0	0.00	0.00	2,300.0	-1,415.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
2,400.0	0.00	0.00	2,400.0	-1,315.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
2,500.0	0.00	0.00	2,500.0	-1,215.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
2,600.0	0.00	0.00	2,600.0	-1,115.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
2,700.0	0.00	0.00	2,700.0	-1,015.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
2,800.0	0.00	0.00	2,800.0	-915.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
2,900.0	0.00	0.00	2,900.0	-815.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
3,000.0	0.00	0.00	3,000.0	-715.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
3,100.0	0.00	0.00	3,100.0	-615.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
3,200.0	0.00	0.00	3,200.0	-515.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
3,300.0	0.00	0.00	3,300.0	-415.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
3,400.0	0.00	0.00	3,400.0	-315.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
3,463.0	0.00	0.00	3,463.0	-252.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
Base of Salt										
3,500.0	0.00	0.00	3,500.0	-215.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
3,600.0	0.00	0.00	3,600.0	-115.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
3,700.0	0.00	0.00	3,700.0	-15.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
3,779.0	0.00	0.00	3,779.0	64.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
Yates										
3,800.0	0.00	0.00	3,800.0	85.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
3,900.0	0.00	0.00	3,900.0	185.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
4,000.0	0.00	0.00	4,000.0	285.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00

Company:	Caza Operating LLC	**Local Co-ordinate Reference:**	Well Igloo 19-24 State Fed Com 15H
Project:	Igloo 19-24 State Fed Com 15H	**TVD Reference:**	WELL @ 3715.0usft (Original Well Elev)
Site:	Igloo 19-24 State Fed Com 15H	**MD Reference:**	WELL @ 3715.0usft (Original Well Elev)
Well:	Igloo 19-24 State Fed Com 15H	**North Reference:**	Grid
Wellbore:	Igloo 19-24 State Fed Com 15H	**Survey Calculation Method:**	Minimum Curvature
Design:	191210 Igloo 19-24 State Fed Com 15H	**Database:**	EDM 5000.1 Single User Db

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	Easting (usft)	Northing (usft)	V. Sec (usft)	DLeg (°/100usft)
4,061.0	0.00	0.00	4,061.0	346.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
Capitan										
4,100.0	0.00	0.00	4,100.0	385.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
4,200.0	0.00	0.00	4,200.0	485.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
4,300.0	0.00	0.00	4,300.0	585.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
4,400.0	0.00	0.00	4,400.0	685.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
4,500.0	0.00	0.00	4,500.0	785.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
4,600.0	0.00	0.00	4,600.0	885.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
4,700.0	0.00	0.00	4,700.0	985.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
4,800.0	0.00	0.00	4,800.0	1,085.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
4,900.0	0.00	0.00	4,900.0	1,185.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
5,000.0	0.00	0.00	5,000.0	1,285.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
5,100.0	0.00	0.00	5,100.0	1,385.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
5,200.0	0.00	0.00	5,200.0	1,485.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
5,300.0	0.00	0.00	5,300.0	1,585.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
5,400.0	0.00	0.00	5,400.0	1,685.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
5,500.0	0.00	0.00	5,500.0	1,785.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
5,549.0	0.00	0.00	5,549.0	1,834.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
9 5/8" Intermediate Casing										
5,588.0	0.00	0.00	5,588.0	1,873.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
Delaware										
5,600.0	0.00	0.00	5,600.0	1,885.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
5,700.0	0.00	0.00	5,700.0	1,985.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
5,800.0	0.00	0.00	5,800.0	2,085.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
Cherry Canyon										
5,900.0	0.00	0.00	5,900.0	2,185.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
6,000.0	0.00	0.00	6,000.0	2,285.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00

Company:	Caza Operating LLC	**Local Co-ordinate Reference:**	Well Igloo 19-24 State Fed Com 15H
Project:	Igloo 19-24 State Fed Com 15H	**TVD Reference:**	WELL @ 3715.0usft (Original Well Elev)
Site:	Igloo 19-24 State Fed Com 15H	**MD Reference:**	WELL @ 3715.0usft (Original Well Elev)
Well:	Igloo 19-24 State Fed Com 15H	**North Reference:**	Grid
Wellbore:	Igloo 19-24 State Fed Com 15H	**Survey Calculation Method:**	Minimum Curvature
Design:	191210 Igloo 19-24 State Fed Com 15H	**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)
6,100.0	0.00	0.00	6,100.0	2,385.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
6,200.0	0.00	0.00	6,200.0	2,485.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
6,300.0	0.00	0.00	6,300.0	2,585.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
6,400.0	0.00	0.00	6,400.0	2,685.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
6,500.0	0.00	0.00	6,500.0	2,785.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
6,600.0	0.00	0.00	6,600.0	2,885.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
6,700.0	0.00	0.00	6,700.0	2,985.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
6,800.0	0.00	0.00	6,800.0	3,085.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
6,858.0	0.00	0.00	6,858.0	3,143.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
Brushy Canyon										
6,900.0	0.00	0.00	6,900.0	3,185.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
7,000.0	0.00	0.00	7,000.0	3,285.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
7,100.0	0.00	0.00	7,100.0	3,385.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
7,200.0	0.00	0.00	7,200.0	3,485.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
7,300.0	0.00	0.00	7,300.0	3,585.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
7,400.0	0.00	0.00	7,400.0	3,685.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
7,500.0	0.00	0.00	7,500.0	3,785.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
7,600.0	0.00	0.00	7,600.0	3,885.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
7,700.0	0.00	0.00	7,700.0	3,985.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
7,800.0	0.00	0.00	7,800.0	4,085.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
7,900.0	0.00	0.00	7,900.0	4,185.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
8,000.0	0.00	0.00	8,000.0	4,285.0	0.0	0.0	799,416.73	566,906.98	0.00	0.00
8,100.0	3.00	0.00	8,100.0	4,385.0	2.6	0.0	799,416.73	566,909.60	0.03	3.00
8,200.0	6.00	0.00	8,199.6	4,484.6	10.5	0.0	799,416.73	566,917.44	0.12	3.00
8,300.0	6.00	0.00	8,299.1	4,584.1	20.9	0.0	799,416.73	566,927.90	0.23	0.00
8,400.0	6.00	0.00	8,398.5	4,683.5	31.4	0.0	799,416.73	566,938.35	0.35	0.00
8,500.0	6.00	0.00	8,498.0	4,783.0	41.8	0.0	799,416.73	566,948.80	0.46	0.00

Company:	Caza Operating LLC	**Local Co-ordinate Reference:**	Well Igloo 19-24 State Fed Com 15H
Project:	Igloo 19-24 State Fed Com 15H	**TVD Reference:**	WELL @ 3715.0usft (Original Well Elev)
Site:	Igloo 19-24 State Fed Com 15H	**MD Reference:**	WELL @ 3715.0usft (Original Well Elev)
Well:	Igloo 19-24 State Fed Com 15H	**North Reference:**	Grid
Wellbore:	Igloo 19-24 State Fed Com 15H	**Survey Calculation Method:**	Minimum Curvature
Design:	191210 Igloo 19-24 State Fed Com 15H	**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)
8,574.4	6.00	0.00	8,572.0	4,857.0	49.6	0.0	799,416.73	566,956.58	0.55	0.00
Bone Spring										
8,600.0	6.00	0.00	8,597.4	4,882.4	52.3	0.0	799,416.73	566,959.26	0.58	0.00
8,700.0	6.00	0.00	8,696.9	4,981.9	62.7	0.0	799,416.73	566,969.71	0.69	0.00
8,800.0	6.00	0.00	8,796.3	5,081.3	73.2	0.0	799,416.73	566,980.16	0.81	0.00
8,900.0	6.00	0.00	8,895.8	5,180.8	83.6	0.0	799,416.73	566,990.61	0.92	0.00
9,000.0	6.00	0.00	8,995.3	5,280.3	94.1	0.0	799,416.73	567,001.07	1.04	0.00
9,100.0	3.00	0.00	9,094.9	5,379.9	101.9	0.0	799,416.73	567,008.91	1.12	3.00
9,200.0	0.00	0.00	9,194.9	5,479.9	104.5	0.0	799,416.73	567,011.53	1.15	3.00
9,300.0	0.00	0.00	9,294.9	5,579.9	104.5	0.0	799,416.73	567,011.53	1.15	0.00
9,400.0	0.00	0.00	9,394.9	5,679.9	104.5	0.0	799,416.73	567,011.53	1.15	0.00
9,423.0	0.00	0.00	9,417.9	5,702.9	104.5	0.0	799,416.73	567,011.53	1.15	0.00
9,475.0	0.00	269.90	9,469.9	5,754.9	104.5	0.0	799,416.73	567,011.53	1.15	0.00
9,500.0	2.79	269.90	9,494.9	5,779.9	104.5	-0.6	799,416.13	567,011.53	1.76	11.16
9,600.0	13.95	269.90	9,593.7	5,878.7	104.5	-15.1	799,401.60	567,011.50	16.29	11.16
9,700.0	25.10	269.90	9,687.8	5,972.8	104.5	-48.5	799,368.23	567,011.44	49.65	11.16
9,800.0	36.26	269.90	9,773.6	6,058.6	104.4	-99.4	799,317.29	567,011.36	100.59	11.16
9,848.1	41.62	269.90	9,811.0	6,096.0	104.3	-129.6	799,287.08	567,011.30	130.79	11.16
1st Bone Spring Sand										
9,900.0	47.42	269.90	9,848.0	6,133.0	104.3	-166.0	799,250.69	567,011.24	167.18	11.16
10,000.0	58.57	269.90	9,908.1	6,193.1	104.1	-245.8	799,170.96	567,011.10	246.91	11.16
10,023.0	61.14	269.90	9,919.7	6,204.7	104.1	-265.7	799,151.07	567,011.07	266.79	11.16
Start Drop -4.00										
10,100.0	69.73	269.90	9,951.6	6,236.6	104.0	-335.6	799,081.11	567,010.94	336.75	11.16
10,200.0	80.88	269.90	9,977.0	6,262.0	103.8	-432.2	798,984.53	567,010.77	433.32	11.16
10,223.0	83.45	269.90	9,980.1	6,265.1	103.8	-455.0	798,961.75	567,010.74	456.10	11.16
Start 138.0 hold at 10223.0 MD										
10,293.0	91.26	269.90	9,983.3	6,268.3	103.6	-524.9	798,891.88	567,010.61	525.97	11.16

Company:	Caza Operating LLC	**Local Co-ordinate Reference:**	Well Igloo 19-24 State Fed Com 15H
Project:	Igloo 19-24 State Fed Com 15H	**TVD Reference:**	WELL @ 3715.0usft (Original Well Elev)
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Well:	Igloo 19-24 State Fed Com 15H	**North Reference:**	Grid
Wellbore:	Igloo 19-24 State Fed Com 15H	**Survey Calculation Method:**	Minimum Curvature
Design:	191210 Igloo 19-24 State Fed Com 15H	**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)
10,300.0	91.26	269.90	9,983.2	6,268.2	103.6	-531.9	798,884.88	567,010.60	532.97	0.00
10,361.0	91.26	269.90	9,981.8	6,266.8	103.5	-592.8	798,823.89	567,010.49	593.95	0.00
Start Build 6.00										
10,400.0	91.26	269.90	9,981.0	6,266.0	103.4	-631.8	798,784.90	567,010.43	632.93	0.00
10,461.0	91.26	269.90	9,979.6	6,264.6	103.3	-692.8	798,723.92	567,010.32	693.91	0.00
Start DLS 11.24 TFO -0.30										
10,500.0	91.26	269.90	9,978.8	6,263.8	103.3	-731.8	798,684.93	567,010.25	732.90	0.00
10,600.0	91.26	269.90	9,976.6	6,261.6	103.1	-831.8	798,584.95	567,010.08	832.87	0.00
10,700.0	91.26	269.90	9,974.4	6,259.4	102.9	-931.8	798,484.98	567,009.90	932.84	0.00
10,800.0	91.26	269.90	9,972.2	6,257.2	102.7	-1,031.7	798,385.00	567,009.73	1,032.80	0.00
10,900.0	91.26	269.90	9,970.0	6,255.0	102.6	-1,131.7	798,285.02	567,009.55	1,132.77	0.00
11,000.0	91.26	269.90	9,967.8	6,252.8	102.4	-1,231.7	798,185.05	567,009.38	1,232.74	0.00
11,100.0	91.26	269.90	9,965.6	6,250.6	102.2	-1,331.7	798,085.07	567,009.21	1,332.71	0.00
11,200.0	91.26	269.90	9,963.4	6,248.4	102.0	-1,431.6	797,985.10	567,009.03	1,432.68	0.00
11,232.0	91.26	269.90	9,962.7	6,247.7	102.0	-1,463.6	797,953.11	567,008.97	1,464.67	0.00
Start DLS 0.00 TFO -90.00										
11,300.0	91.26	269.90	9,961.2	6,246.2	101.9	-1,531.6	797,885.12	567,008.86	1,532.64	0.00
11,400.0	91.26	269.90	9,959.0	6,244.0	101.7	-1,631.6	797,785.15	567,008.68	1,632.61	0.00
11,500.0	91.26	269.90	9,956.8	6,241.8	101.5	-1,731.6	797,685.17	567,008.51	1,732.58	0.00
11,600.0	91.26	269.90	9,954.6	6,239.6	101.4	-1,831.5	797,585.20	567,008.33	1,832.55	0.00
11,700.0	91.26	269.90	9,952.4	6,237.4	101.2	-1,931.5	797,485.22	567,008.16	1,932.51	0.00
11,800.0	91.26	269.90	9,950.2	6,235.2	101.0	-2,031.5	797,385.24	567,007.98	2,032.48	0.00
11,900.0	91.26	269.90	9,948.0	6,233.0	100.8	-2,131.5	797,285.27	567,007.81	2,132.45	0.00
12,000.0	91.26	269.90	9,945.8	6,230.8	100.7	-2,231.4	797,185.29	567,007.63	2,232.42	0.00
12,100.0	91.26	269.90	9,943.6	6,228.6	100.5	-2,331.4	797,085.32	567,007.46	2,332.38	0.00
12,200.0	91.26	269.90	9,941.4	6,226.4	100.3	-2,431.4	796,985.34	567,007.29	2,432.35	0.00
12,300.0	91.26	269.90	9,939.2	6,224.2	100.1	-2,531.4	796,885.37	567,007.11	2,532.32	0.00
12,400.0	91.26	269.90	9,937.0	6,222.0	100.0	-2,631.3	796,785.39	567,006.94	2,632.29	0.00

Company:	Caza Operating LLC	**Local Co-ordinate Reference:**	Well Igloo 19-24 State Fed Com 15H
Project:	Igloo 19-24 State Fed Com 15H	**TVD Reference:**	WELL @ 3715.0usft (Original Well Elev)
Site:	Igloo 19-24 State Fed Com 15H	**MD Reference:**	WELL @ 3715.0usft (Original Well Elev)
Well:	Igloo 19-24 State Fed Com 15H	**North Reference:**	Grid
Wellbore:	Igloo 19-24 State Fed Com 15H	**Survey Calculation Method:**	Minimum Curvature
Design:	191210 Igloo 19-24 State Fed Com 15H	**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)
12,500.0	91.26	269.90	9,934.8	6,219.8	99.8	-2,731.3	796,685.41	567,006.76	2,732.26	0.00
12,600.0	91.26	269.90	9,932.6	6,217.6	99.6	-2,831.3	796,585.44	567,006.59	2,832.22	0.00
12,700.0	91.26	269.90	9,930.4	6,215.4	99.4	-2,931.3	796,485.46	567,006.41	2,932.19	0.00
12,800.0	91.26	269.90	9,928.2	6,213.2	99.3	-3,031.2	796,385.49	567,006.24	3,032.16	0.00
12,900.0	91.26	269.90	9,926.0	6,211.0	99.1	-3,131.2	796,285.51	567,006.06	3,132.13	0.00
13,000.0	91.26	269.90	9,923.8	6,208.8	98.9	-3,231.2	796,185.54	567,005.89	3,232.09	0.00
13,100.0	91.26	269.90	9,921.6	6,206.6	98.7	-3,331.2	796,085.56	567,005.72	3,332.06	0.00
13,200.0	91.26	269.90	9,919.4	6,204.4	98.6	-3,431.1	795,985.58	567,005.54	3,432.03	0.00
13,300.0	91.26	269.90	9,917.2	6,202.2	98.4	-3,531.1	795,885.61	567,005.37	3,532.00	0.00
13,400.0	91.26	269.90	9,915.0	6,200.0	98.2	-3,631.1	795,785.63	567,005.19	3,631.96	0.00
13,500.0	91.26	269.90	9,912.8	6,197.8	98.0	-3,731.1	795,685.66	567,005.02	3,731.93	0.00
13,600.0	91.26	269.90	9,910.6	6,195.6	97.9	-3,831.1	795,585.68	567,004.84	3,831.90	0.00
13,700.0	91.26	269.90	9,908.4	6,193.4	97.7	-3,931.0	795,485.71	567,004.67	3,931.87	0.00
13,800.0	91.26	269.90	9,906.2	6,191.2	97.5	-4,031.0	795,385.73	567,004.49	4,031.83	0.00
13,900.0	91.26	269.90	9,904.0	6,189.0	97.3	-4,131.0	795,285.75	567,004.32	4,131.80	0.00
14,000.0	91.26	269.90	9,901.8	6,186.8	97.2	-4,231.0	795,185.78	567,004.14	4,231.77	0.00
14,100.0	91.26	269.90	9,899.6	6,184.6	97.0	-4,330.9	795,085.80	567,003.97	4,331.74	0.00
14,200.0	91.26	269.90	9,897.4	6,182.4	96.8	-4,430.9	794,985.83	567,003.80	4,431.71	0.00
14,300.0	91.26	269.90	9,895.2	6,180.2	96.6	-4,530.9	794,885.85	567,003.62	4,531.67	0.00
14,400.0	91.26	269.90	9,893.0	6,178.0	96.5	-4,630.9	794,785.88	567,003.45	4,631.64	0.00
14,500.0	91.26	269.90	9,890.8	6,175.8	96.3	-4,730.8	794,685.90	567,003.27	4,731.61	0.00
14,600.0	91.26	269.90	9,888.6	6,173.6	96.1	-4,830.8	794,585.93	567,003.10	4,831.58	0.00
14,700.0	91.26	269.90	9,886.4	6,171.4	95.9	-4,930.8	794,485.95	567,002.92	4,931.54	0.00
14,800.0	91.26	269.90	9,884.2	6,169.2	95.8	-5,030.8	794,385.97	567,002.75	5,031.51	0.00
14,900.0	91.26	269.90	9,882.0	6,167.0	95.6	-5,130.7	794,286.00	567,002.57	5,131.48	0.00
15,000.0	91.26	269.90	9,879.8	6,164.8	95.4	-5,230.7	794,186.02	567,002.40	5,231.45	0.00
15,100.0	91.26	269.90	9,877.6	6,162.6	95.2	-5,330.7	794,086.05	567,002.23	5,331.41	0.00

Company:	Caza Operating LLC	**Local Co-ordinate Reference:**	Well Igloo 19-24 State Fed Com 15H
Project:	Igloo 19-24 State Fed Com 15H	**TVD Reference:**	WELL @ 3715.0usft (Original Well Elev)
Site:	Igloo 19-24 State Fed Com 15H	**MD Reference:**	WELL @ 3715.0usft (Original Well Elev)
Well:	Igloo 19-24 State Fed Com 15H	**North Reference:**	Grid
Wellbore:	Igloo 19-24 State Fed Com 15H	**Survey Calculation Method:**	Minimum Curvature
Design:	191210 Igloo 19-24 State Fed Com 15H	**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)
15,200.0	91.26	269.90	9,875.4	6,160.4	95.1	-5,430.7	793,986.07	567,002.05	5,431.38	0.00
15,300.0	91.26	269.90	9,873.2	6,158.2	94.9	-5,530.6	793,886.10	567,001.88	5,531.35	0.00
15,400.0	91.26	269.90	9,871.0	6,156.0	94.7	-5,630.6	793,786.12	567,001.70	5,631.32	0.00
15,500.0	91.26	269.90	9,868.8	6,153.8	94.5	-5,730.6	793,686.14	567,001.53	5,731.28	0.00
15,600.0	91.26	269.90	9,866.6	6,151.6	94.4	-5,830.6	793,586.17	567,001.35	5,831.25	0.00
15,700.0	91.26	269.90	9,864.4	6,149.4	94.2	-5,930.5	793,486.19	567,001.18	5,931.22	0.00
15,800.0	91.26	269.90	9,862.2	6,147.2	94.0	-6,030.5	793,386.22	567,001.00	6,031.19	0.00
15,900.0	91.26	269.90	9,860.0	6,145.0	93.8	-6,130.5	793,286.24	567,000.83	6,131.16	0.00
16,000.0	91.26	269.90	9,857.8	6,142.8	93.7	-6,230.5	793,186.27	567,000.65	6,231.12	0.00
16,100.0	91.26	269.90	9,855.6	6,140.6	93.5	-6,330.4	793,086.29	567,000.48	6,331.09	0.00
16,200.0	91.26	269.90	9,853.4	6,138.4	93.3	-6,430.4	792,986.31	567,000.31	6,431.06	0.00
16,300.0	91.26	269.90	9,851.2	6,136.2	93.1	-6,530.4	792,886.34	567,000.13	6,531.03	0.00
16,400.0	91.26	269.90	9,849.0	6,134.0	93.0	-6,630.4	792,786.36	566,999.96	6,630.99	0.00
16,500.0	91.26	269.90	9,846.8	6,131.8	92.8	-6,730.3	792,686.39	566,999.78	6,730.96	0.00
16,600.0	91.26	269.90	9,844.6	6,129.6	92.6	-6,830.3	792,586.41	566,999.61	6,830.93	0.00
16,700.0	91.26	269.90	9,842.4	6,127.4	92.5	-6,930.3	792,486.44	566,999.43	6,930.90	0.00
16,800.0	91.26	269.90	9,840.2	6,125.2	92.3	-7,030.3	792,386.46	566,999.26	7,030.86	0.00
16,900.0	91.26	269.90	9,838.0	6,123.0	92.1	-7,130.2	792,286.48	566,999.08	7,130.83	0.00
17,000.0	91.26	269.90	9,835.8	6,120.8	91.9	-7,230.2	792,186.51	566,998.91	7,230.80	0.00
17,100.0	91.26	269.90	9,833.6	6,118.6	91.8	-7,330.2	792,086.53	566,998.74	7,330.77	0.00
17,200.0	91.26	269.90	9,831.4	6,116.4	91.6	-7,430.2	791,986.56	566,998.56	7,430.73	0.00
17,300.0	91.26	269.90	9,829.2	6,114.2	91.4	-7,530.2	791,886.58	566,998.39	7,530.70	0.00
17,400.0	91.26	269.90	9,827.0	6,112.0	91.2	-7,630.1	791,786.61	566,998.21	7,630.67	0.00
17,500.0	91.26	269.90	9,824.9	6,109.9	91.1	-7,730.1	791,686.63	566,998.04	7,730.64	0.00
17,600.0	91.26	269.90	9,822.7	6,107.7	90.9	-7,830.1	791,586.66	566,997.86	7,830.61	0.00
17,700.0	91.26	269.90	9,820.5	6,105.5	90.7	-7,930.1	791,486.68	566,997.69	7,930.57	0.00
17,800.0	91.26	269.90	9,818.3	6,103.3	90.5	-8,030.0	791,386.70	566,997.51	8,030.54	0.00

Company:	Caza Operating LLC	**Local Co-ordinate Reference:**	Well Igloo 19-24 State Fed Com 15H
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Site:	Igloo 19-24 State Fed Com 15H	**MD Reference:**	WELL @ 3715.0usft (Original Well Elev)
Well:	Igloo 19-24 State Fed Com 15H	**North Reference:**	Grid
Wellbore:	Igloo 19-24 State Fed Com 15H	**Survey Calculation Method:**	Minimum Curvature
Design:	191210 Igloo 19-24 State Fed Com 15H	**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)
17,900.0	91.26	269.90	9,816.1	6,101.1	90.4	-8,130.0	791,286.73	566,997.34	8,130.51	0.00
17,950.0	91.26	269.90	9,815.0	6,100.0	90.3	-8,180.0	791,236.74	566,997.25	8,180.49	0.00

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
120.0	120.0	20" Conductor	20	26
1,864.0	1,864.0	13 3/8" Surface Casing	13-3/8	17-1/2
5,549.0	5,549.0	9 5/8" Intermediate Casing	9-5/8	30-1/2
19,025.0		5 1/2" Prodution Casing	5-1/2	8-3/4

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
9,848.1	9,811.0	1st Bone Spring Sand		0.00	
2,052.0	2,052.0	Top of Salt		0.00	
5,800.0	5,800.0	Cherry Canyon		0.00	
3,463.0	3,463.0	Base of Salt		0.00	
8,574.4	8,572.0	Bone Spring		0.00	
1,853.0	1,853.0	Rustler		0.00	
6,858.0	6,858.0	Brushy Canyon		0.00	
5,588.0	5,588.0	Delaware		0.00	
4,061.0	4,061.0	Capitan		0.00	
3,779.0	3,779.0	Yates		0.00	

Company:	Caza Operating LLC	**Local Co-ordinate Reference:**	Well Igloo 19-24 State Fed Com 15H
Project:	Igloo 19-24 State Fed Com 15H	**TVD Reference:**	WELL @ 3715.0usft (Original Well Elev)
Site:	Igloo 19-24 State Fed Com 15H	**MD Reference:**	WELL @ 3715.0usft (Original Well Elev)
Well:	Igloo 19-24 State Fed Com 15H	**North Reference:**	Grid
Wellbore:	Igloo 19-24 State Fed Com 15H	**Survey Calculation Method:**	Minimum Curvature
Design:	191210 Igloo 19-24 State Fed Com 15H	**Database:**	EDM 5000.1 Single User Db

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
1,200.0	1,200.0	0.0	0.0	Start Build 4.00
1,400.0	1,400.0	0.0	0.0	Start 8623.0 hold at 1400.0 MD
10,023.0	9,919.7	104.1	-265.7	Start Drop -4.00
10,223.0	9,980.1	103.8	-455.0	Start 138.0 hold at 10223.0 MD
10,361.0	9,981.8	103.5	-592.8	Start Build 6.00
10,461.0	9,979.6	103.3	-692.8	Start DLS 11.24 TFO -0.30
11,232.0	9,962.7	102.0	-1,463.6	Start DLS 0.00 TFO -90.00
19,025.0				TD at 19025.0

Checked By: _____ Approved By: _____ Date: _____

Project: Igloo 19-24 State Fed Com 15H
Site: Igloo 19-24 State Fed Com 15H
Well: Igloo 19-24 State Fed Com 15H
Wellbore: Igloo 19-24 State Fed Com 15H
Design: 191210 Igloo 19-24 State Fed Com 15H

Caza Petroleum

Azimuths to Grid North
True North: -0.45°
Magnetic North: 6.14°

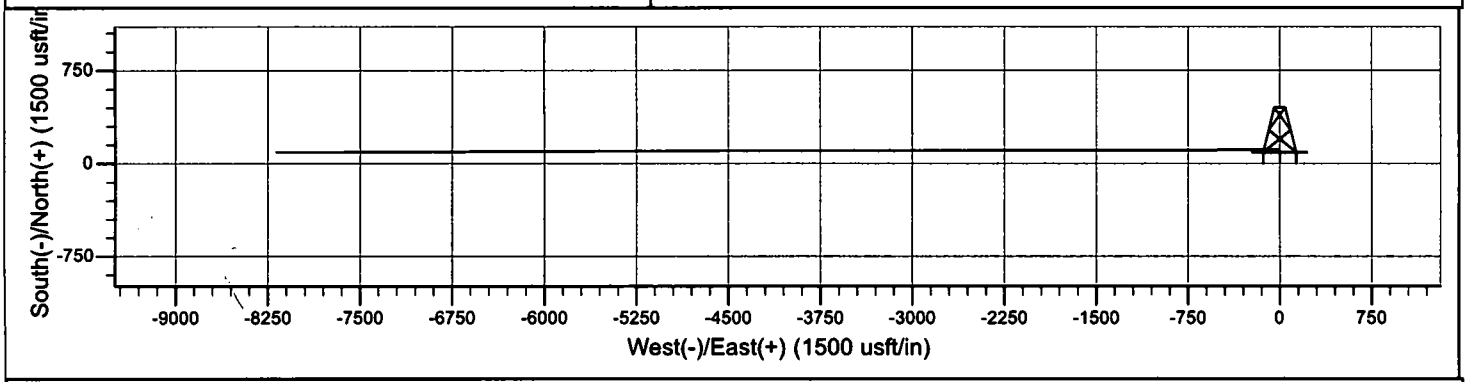
Magnetic Field
Strength: 48029.8snT
Dip Angle: 60.30°
Date: 5/8/2019
Model: IGRF2010

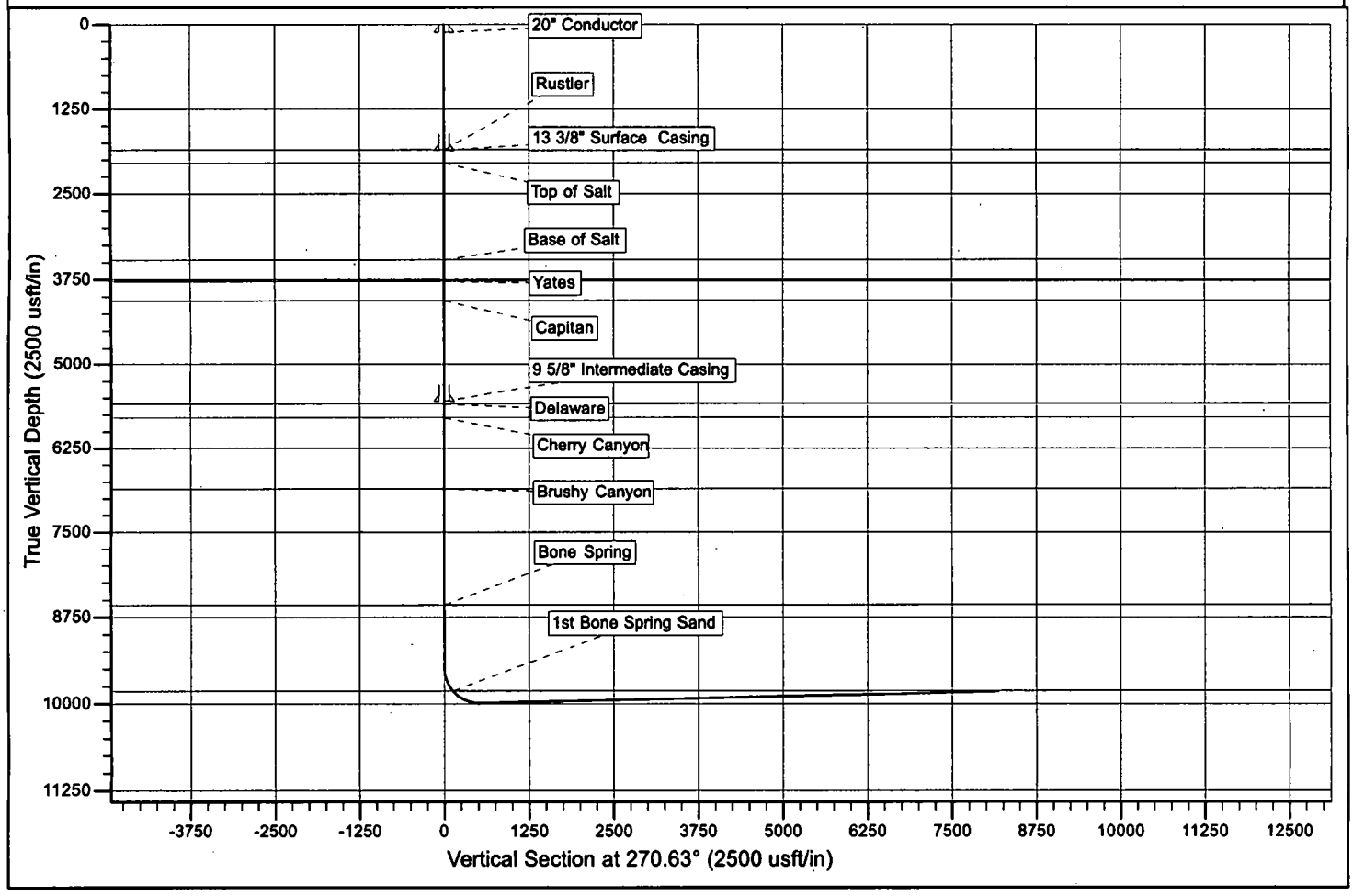
CASING DETAILS

TVD	MD	Name	Size
120.0	120.0	20" Conductor	20
1864.0	1864.0	13 3/8" Surface Casing	13-3/8
5549.0	5549.0	9 5/8" Intermediate Casing	9-5/8
	19025.0	5 1/2" Prodution Casing	5-1/2

FORMATION TOP DETAILS

TVDPath	MDPath	Formation	DipAngle	DipDir
1853.0	1853.0	Rustler	0.00	
2052.0	2052.0	Top of Salt	0.00	
3463.0	3463.0	Base of Salt	0.00	
3779.0	3779.0	Yates	0.00	
4061.0	4061.0	Capitan	0.00	
5588.0	5588.0	Delaware	0.00	
5800.0	5800.0	Cherry Canyon	0.00	
6858.0	6858.0	Brushy Canyon	0.00	
8572.0	8574.4	Bone Spring	0.00	
9811.0	9848.1	1st Bone Spring Sand	0.00	





Caza Operating, LLC
200 N. Loraine, Ste. 1550
Midland, TX 79701

December 12, 2019

NMOCD District 1 - Hobbs
1625 N. French Drive
Hobbs, NM 88240

Ladies and Gentlemen:

Please find attached the supporting documents for the following BLM approved APD that was filed electronically. We are requesting an API number.

Igloo 19-24 State Fed Com 15H

Please send an electronic copy of the receipt to our contract engineer at the following email address: steve.morris@morcorengineering.com

Thank you for your assistance in this matter. Please call or email me if you have any questions.

Regards,

Tony Cook

Tony Cook
tcook@cazapetro.com
Sr. V.P., Development & Operations
432-682-7424 (O)
918-605-1377 (cell)

Attachments