

OCD Hobbs

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

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

|  |   |  |
|--|---|--|
| 1a. Type of work: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER   |   | 5. Lease Serial No.<br>NMNM097153                                  |
| 1b. Type of Well: <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other  |   | 6. If Indian, Allottee or Tribe Name                               |
| 1c. Type of Completion: <input type="checkbox"/> Hydraulic Fracturing <input checked="" type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone   |   | 7. If Unit or CA Agreement, Name and No.                           |
| 2. Name of Operator<br>BTA OIL PRODUCERS LLC (260297)  |   | 8. Lease Name and Well No.<br>VACA DRAW 9418 10 FED 19H (317432)   |
| 3a. Address<br>104 S. Pecos Midland TX 79701   | 3b. Phone No. (include area code)<br>(432)682-3753  | 9. API Well No.<br>30-024-45497 (98094)                            |
| 4. Location of Well (Report location clearly and in accordance with any State requirements. *)<br>At surface SESE / 220 FSL / 1275 FEL / LAT 32.138411 / LONG -103.555773<br>At proposed prod. zone NENE / 50 FNL / 350 FEL / LAT 32.152192 / LONG -103.552791 |   | 10. Field and Pool, or Exploratory<br>BOBCAT DRAW / UPPER WOLFCAMP |
| 11. Sec., T. R. M. or Blk. and Survey or Area<br>SEC 10 / T25S / R33E / NMP  |   |  |
| 14. Distance in miles and direction from nearest town or post office*<br>20 miles  |   | 12. County or Parish<br>LEA  |
| 13. State<br>NM  |   |  |
| 15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any)<br>50 feet   | 16. No of acres in lease<br>640                     | 17. Spacing Unit dedicated to this well<br>160                     |
| 18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.<br>30 feet  | 19. Proposed Depth<br>12504 feet / 17527 feet       | 20. BLM/BIA Bond No. in file<br>FED: NM1195                        |
| 21. Elevations (Show whether DF, KDB, RT, GL, etc.)<br>3377 feet   | 22. Approximate date work will start*<br>09/03/2018 | 23. Estimated duration<br>45 days                                  |
| 24. Attachments  |   |  |

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

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

|  |  |                    |
|--|--|--------------------|
| 25. Signature<br>(Electronic Submission)           | Name (Printed/Typed)<br>Katy Reddell / Ph: (432)682-3753 | Date<br>05/22/2018 |
| Title<br>Regulatory Analyst                        |  |                    |
| Approved by (Signature)<br>(Electronic Submission) | Name (Printed/Typed)<br>Ty Allen / Ph: (575)234-5978     | Date<br>11/30/2018 |
| Title<br>Wildlife Biologist                        |  |                    |
| Office<br>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.

(Continued on page 2)

APPROVED WITH CONDITIONS

Approval Date: 11/30/2018

\*(Instructions on page 2)

Double checked

## 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 1:** 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 well, 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 directionally 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 well 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 will 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 collects this information to allow 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 Connection Clearance Officer (WO-630), 1849 C Street, N.W., Mail Stop 401 LS, Washington, D.C. 20240.

## Additional Operator Remarks

### Location of Well

1. SHL: SESE / 220 FSL / 1275 FEL / TWSP: 25S / RANGE: 33E / SECTION: 10 / LAT: 32.138411 / LONG: -103.555773 ( TVD: 0 feet, MD: 0 feet )  
PPP: SESE / 330 FSL / 350 FEL / TWSP: 25S / RANGE: 33E / SECTION: 10 / LAT: 32.138716 / LONG: -103.552785 ( TVD: 12504 feet, MD: 12880 feet )  
BHL: NENE / 50 FNL / 350 FEL / TWSP: 25S / RANGE: 33E / SECTION: 10 / LAT: 32.152192 / LONG: -103.552791 ( TVD: 12504 feet, MD: 17527 feet )

### BLM Point of Contact

Name: Tenille Ortiz

Title: Legal Instruments Examiner

Phone: 5752342224

Email: tortiz@blm.gov

CONFIDENTIAL

## **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.

CONFIDENTIAL

# PECOS DISTRICT DRILLING CONDITIONS OF APPROVAL

|                       |                               |
|-----------------------|-------------------------------|
| OPERATOR'S NAME:      | BTA OIL PRODUCERS             |
| LEASE NO.:            | NMNM097153                    |
| WELL NAME & NO.:      | Vaca Draw 9418 10 Federal 19H |
| SURFACE HOLE FOOTAGE: | 220'/S & 1275'/E              |
| BOTTOM HOLE FOOTAGE:  | 50'/N & 350'/E                |
| LOCATION:             | SECTION 10, T25S, R33E, NMPM  |
| COUNTY:               | LEA                           |

COA

|                      |  |  |                               |
|----------------------|--|--|-------------------------------|
| H2S                  | <input type="radio"/> Yes              | <input checked="" type="radio"/> No        |                               |
| Potash               | <input checked="" type="radio"/> None  | <input type="radio"/> Secretary            | <input type="radio"/> R-111-P |
| Cave/Karst Potential | <input checked="" type="radio"/> Low   | <input type="radio"/> Medium               | <input type="radio"/> High    |
| Variance             | <input type="radio"/> None             | <input checked="" type="radio"/> Flex Hose | <input type="radio"/> Other   |
| Wellhead             | <input type="radio"/> Conventional     | <input checked="" type="radio"/> Multibowl | <input type="radio"/> Both    |
| Other                | <input type="checkbox"/> 4 String Area | <input type="checkbox"/> Capitan Reef      | <input type="checkbox"/> WIPP |

## A. Hydrogen Sulfide

Hydrogen Sulfide (H2S) monitors shall be installed prior to drilling out the surface shoe. If H2S is detected in concentrations greater than 100 ppm, the Hydrogen Sulfide area shall meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, provide measured values and formations to the BLM.

## B. CASING

1. The 13-3/8 inch surface casing shall be set at approximately **1450** feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt) and cemented to the surface.
  - a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.
  - b. Wait on cement (WOC) time for a primary cement job will be a minimum of **8 hours** or 500 pounds compressive strength, whichever is greater. (This is to include the lead cement)

- c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.
  - d. If cement falls back, remedial cementing will be done prior to drilling out that string.
2. The minimum required fill of cement behind the **9-5/8** inch intermediate casing is:
  - Cement to surface. If cement does not circulate see B.1.a, c-d above.
3. The minimum required fill of cement behind the **7** inch production casing is:
  - Cement should tie-back at least **200** feet into previous casing string. Operator shall provide method of verification.
4. The minimum required fill of cement behind the **4-1/2** inch production liner is:
  - Cement should tie-back **100'** into the previous casing. Operator shall provide method of verification. **Excess calculates to 8% - additional cement might be required.**

### **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.

#### **Option 1:**

- i. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **5000 (5M) psi.**
- ii. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the intermediate casing shoe shall be **10,000 (10M) psi. Variance is approved to use 5M Annular which shall be tested to 5000 psi.**

#### **Option 2:**

**Operator has proposed a multi-bowl wellhead assembly. This assembly will only be tested when installed on the surface casing. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for**

**drilling below the surface casing shoe shall be 10,000 (10M) psi. Variance is approved to use 5M Annular which shall be tested to 5000 psi.**

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

## GENERAL REQUIREMENTS

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

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

☒ Chaves and Roosevelt Counties

Call the Roswell Field Office, 2909 West Second St., Roswell NM 88201.  
During office hours call (575) 627-0272.  
After office hours call (575)

☒ Eddy County

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

☒ Lea County

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

1. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval.
  - a. In the event the operator has proposed to drill multiple wells utilizing a skid/walking rig. Operator shall secure the wellbore on the current well, after installing and testing the wellhead, by installing a blind flange of like pressure rating to the wellhead and a pressure gauge that can be monitored while drilling is performed on the other well(s).
  - b. When the operator proposes to set surface casing with Spudder Rig
    - Notify the BLM when moving in and removing the Spudder Rig.
    - Notify the BLM when moving in the 2<sup>nd</sup> Rig. Rig to be moved in within 90 days of notification that Spudder Rig has left the location.
    - BOP/BOPE test to be conducted per Onshore Oil and Gas Order No. 2 as soon as 2nd Rig is rigged up on well.
2. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works are located, this does not include the dog house or stairway area.



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

#### A. CASING

1. Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size or are Non-API. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.). The initial wellhead installed on the well will remain on the well with spools used as needed.
2. Wait on cement (WOC) for Potash Areas: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi for all cement blends, 2) until cement has been in place at least 24 hours. WOC time will be recorded in the driller's log. The casing integrity test can be done (prior to the cement setting up) immediately after bumping the plug.
3. Wait on cement (WOC) for Water Basin: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi at the shoe, 2) until cement has been in place at least 8 hours. WOC time will be recorded in the driller's log. See individual casing strings for details regarding lead cement slurry requirements. The casing integrity test can be done (prior to the cement setting up) immediately after bumping the plug.
4. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. Have well specific cement details onsite prior to pumping the cement for each casing string.
5. No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.
6. On that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Formation at the shoe shall be tested to a minimum of the mud weight equivalent anticipated to control the formation pressure to the next casing depth or at total depth of the well. This test shall be performed before drilling more than 20 feet of new hole.

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

#### B. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.
2. If a variance is approved for a flexible hose to be installed from the BOP to the choke manifold, the following requirements apply: The flex line must meet the requirements of API 16C. Check condition of flexible line from BOP to choke manifold, replace if exterior is damaged or if line fails test. Line to be as straight as possible with no hard bends and is to be anchored according to Manufacturer's requirements. The flexible hose can be exchanged with a hose of equal size and equal or greater pressure rating. Anchor requirements, specification sheet and hydrostatic pressure test certification matching the hose in service, to be onsite for review. These documents shall be posted in the company man's trailer and on the rig floor.
3. 5M or higher system requires an HCR valve, remote kill line and annular to match. The remote kill line is to be installed prior to testing the system and tested to stack pressure.
4. If the operator has proposed a multi-bowl wellhead assembly in the APD. The following requirements must be met:
  - a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
  - b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
  - c. Manufacturer representative shall install the test plug for the initial BOP test.
  - d. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.
  - e. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.

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. The results of the test shall be reported to the appropriate BLM office.
  - 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. 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.
  - f. 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. This test shall be performed prior to the test at full stack pressure.
  - g. 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.

**PECOS DISTRICT  
SURFACE USE  
CONDITIONS OF APPROVAL**

|                       |                               |
|-----------------------|-------------------------------|
| OPERATOR'S NAME:      | BTA OIL PRODUCERS             |
| LEASE NO.:            | NMNM097153                    |
| WELL NAME & NO.:      | Vaca Draw 9418 10 Federal 19H |
| SURFACE HOLE FOOTAGE: | 220'/S & 1275'/E              |
| BOTTOM HOLE FOOTAGE:  | 50'/N & 350'/E                |
| LOCATION:             | SECTION 10, T25S, R33E, NMPM  |
| COUNTY:               | LEA                           |

**TABLE OF CONTENTS**

Standard Conditions of Approval (COA) apply to this APD. If any deviations to these standards exist or special COAs are required, the section with the deviation or requirement will be checked below.

- ☐ **General Provisions**
- ☐ **Permit Expiration**
- ☐ **Archaeology, Paleontology, and Historical Sites**
- ☐ **Noxious Weeds**
- ☒ **Special Requirements**
  - Lesser Prairie-Chicken Timing Stipulations
  - Below Ground-level Abandoned Well Marker
  - Hydrology
- ☐ **Construction**
  - Notification
  - Topsoil
  - Closed Loop System
  - Federal Mineral Material Pits
  - Well Pads
  - Roads
- ☐ **Road Section Diagram**
- ☐ **Production (Post Drilling)**
  - Well Structures & Facilities
- ☐ **Interim Reclamation**
- ☐ **Final Abandonment & Reclamation**

## **I. GENERAL PROVISIONS**

The approval of the Application For Permit To Drill (APD) is in compliance with all applicable laws and regulations: 43 Code of Federal Regulations 3160, the lease terms, Onshore Oil and Gas Orders, Notices To Lessees, New Mexico Oil Conservation Division (NMOCD) Rules, National Historical Preservation Act As Amended, and instructions and orders of the Authorized Officer. Any request for a variance shall be submitted to the Authorized Officer on Form 3160-5, Sundry Notices and Report on Wells.

## **II. PERMIT EXPIRATION**

If the permit terminates prior to drilling and drilling cannot be commenced within 60 days after expiration, an operator is required to submit Form 3160-5, Sundry Notices and Reports on Wells, requesting surface reclamation requirements for any surface disturbance. However, if the operator will be able to initiate drilling within 60 days after the expiration of the permit, the operator must have set the conductor pipe in order to allow for an extension of 60 days beyond the expiration date of the APD. (Filing of a Sundry Notice is required for this 60 day extension.)

## **III. ARCHAEOLOGICAL, PALEONTOLOGY & HISTORICAL SITES**

Any cultural and/or paleontological resource discovered by the operator or by any person working on the operator's behalf shall immediately report such findings to the Authorized Officer. The operator is fully accountable for the actions of their contractors and subcontractors. The operator shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery shall be made by the Authorized Officer to determine the appropriate actions that shall be required to prevent the loss of significant cultural or scientific values of the discovery. The operator shall be held responsible for the cost of the proper mitigation measures that the Authorized Officer assesses after consultation with the operator on the evaluation and decisions of the discovery. Any unauthorized collection or disturbance of cultural or paleontological resources may result in a shutdown order by the Authorized Officer.

## **IV. NOXIOUS WEEDS**

The operator shall be held responsible if noxious weeds become established within the areas of operations. Weed control shall be required on the disturbed land where noxious weeds exist, which includes the roads, pads, associated pipeline corridor, and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA and BLM requirements and policies.

## **V. SPECIAL REQUIREMENT(S)**

### **Timing Limitation Stipulation / Condition of Approval for lesser prairie-chicken:**

Oil and gas activities including 3-D geophysical exploration, and drilling will not be allowed in lesser prairie-chicken habitat during the period from March 1st through June 15th annually. During that period, other activities that produce noise or involve human activity, such as the maintenance of oil and gas facilities, pipeline, road, and well pad construction, will be allowed except between 3:00 am and 9:00 am. The 3:00 am to 9:00 am restriction will not apply to normal, around-the-clock operations, such as venting, flaring, or pumping, which do not require a human presence during this period. Additionally, no new drilling will be allowed within up to 200 meters of leks known at the time of permitting. Normal vehicle use on existing roads will not be restricted. Exhaust noise from pump jack engines must be muffled or otherwise controlled so as not to exceed 75 db measured at 30 feet from the source of the noise.

**Below Ground-level Abandoned Well Marker to avoid raptor perching:** Upon the plugging and subsequent abandonment of the well, the well marker will be installed at ground level on a plate containing the pertinent information for the plugged well. For more installation details, contact the Carlsbad Field Office at 575-234-5972.

### **Timing Limitation Exceptions:**

The Carlsbad Field Office will publish an annual map of where the LPC timing and noise stipulations and conditions of approval (Limitations) will apply for the identified year (between March 1 and June 15) based on the latest survey information. The LPC Timing Area map will identify areas which are Habitat Areas (HA), Isolated Population Area (IPA), and Primary Population Area (PPA). The LPC Timing Area map will also have an area in red crosshatch. The red crosshatch area is the only area where an operator is required to submit a request for exception to the LPC Limitations. If an operator is operating outside the red crosshatch area, the LPC Limitations do not apply for that year and an exception to LPC Limitations is not required.

### **Hydrology**

The entire well pad will be bermed to prevent oil, salt, and other chemical contaminants from leaving the well pad. Topsoil shall not be used to construct the berm. No water flow from the uphill side(s) of the pad shall be allowed to enter the well pad. The berm shall be maintained through the life of the well and after interim reclamation has been completed. Any water erosion that may occur due to the construction of the well pad during the life of the well will be quickly corrected and proper measures will be taken to prevent future erosion.

Tank battery locations will be lined and bermed. A 20 mil permanent liner will be installed with a 4 oz. felt backing to prevent tears or punctures. Tank battery berms must be large enough to contain 1 ½ times the content of the largest tank or 24 hour production, whichever is greater. Automatic shut off, check valves, or similar systems

will be installed for tanks to minimize the effects of catastrophic line failures used in production or drilling.

A leak detection plan will be submitted to the BLM Carlsbad Field Office for approval prior to pipeline installation. The method could incorporate gauges to detect pressure drops, situating valves and lines so they can be visually inspected periodically or installing electronic sensors to alarm when a leak is present. The leak detection plan will incorporate an automatic shut off system that will be installed for proposed pipelines to minimize the effects of an undesirable event.



## **VI. CONSTRUCTION**

### **A. NOTIFICATION**

The BLM shall administer compliance and monitor construction of the access road and well pad. Notify the Carlsbad Field Office at (575) 234-5909 at least 3 working days prior to commencing construction of the access road and/or well pad.

When construction operations are being conducted on this well, the operator shall have the approved APD and Conditions of Approval (COA) on the well site and they shall be made available upon request by the Authorized Officer.

### **B. TOPSOIL**

The operator shall strip the top portion of the soil (root zone) from the entire well pad area and stockpile the topsoil along the edge of the well pad as depicted in the APD. The root zone is typically six (6) inches in depth. All the stockpiled topsoil will be redistributed over the interim reclamation areas. Topsoil shall not be used for berming the pad or facilities. For final reclamation, the topsoil shall be spread over the entire pad area for seeding preparation.

Other subsoil (below six inches) stockpiles must be completely segregated from the topsoil stockpile. Large rocks or subsoil clods (not evident in the surrounding terrain) must be buried within the approved area for interim and final reclamation.

### **C. CLOSED LOOP SYSTEM**

Tanks are required for drilling operations: No Pits.

The operator shall properly dispose of drilling contents at an authorized disposal site.

### **D. FEDERAL MINERAL MATERIALS PIT**

Payment shall be made to the BLM prior to removal of any federal mineral materials. Call the Carlsbad Field Office at (575) 234-5972.

### **E. WELL PAD SURFACING**

Surfacing of the well pad is not required.

If the operator elects to surface the well pad, the surfacing material may be required to be removed at the time of reclamation. The well pad shall be constructed in a manner which creates the smallest possible surface disturbance, consistent with safety and operational needs.

### **F. EXCLOSURE FENCING (CELLARS & PITS)**

**Exclosure Fencing**

The operator will install and maintain exclosure fencing for all open well cellars to prevent access to public, livestock, and large forms of wildlife before and after drilling operations until the pit is free of fluids and the operator initiates backfilling. (For examples of exclosure fencing design, refer to BLM's Oil and Gas Gold Book, Exclosure Fence Illustrations, Figure 1, Page 18.)

**G. ON LEASE ACCESS ROADS****Road Width**

The access road shall have a driving surface that creates the smallest possible surface disturbance and does not exceed fourteen (14) feet in width. The maximum width of surface disturbance, when constructing the access road, shall not exceed twenty-five (25) feet.

**Surfacing**

Surfacing material is not required on the new access road driving surface. If the operator elects to surface the new access road or pad, the surfacing material may be required to be removed at the time of reclamation.

Where possible, no improvements should be made on the unsurfaced access road other than to remove vegetation as necessary, road irregularities, safety issues, or to fill low areas that may sustain standing water.

The Authorized Officer reserves the right to require surfacing of any portion of the access road at any time deemed necessary. Surfacing may be required in the event the road deteriorates, erodes, road traffic increases, or it is determined to be beneficial for future field development. The surfacing depth and type of material will be determined at the time of notification.

**Crowning**

Crowning shall be done on the access road driving surface. The road crown shall have a grade of approximately 2% (i.e., a 1" crown on a 14' wide road). The road shall conform to Figure 1; cross section and plans for typical road construction.

**Ditching**

Ditching shall be required on both sides of the road.

**Turnouts**

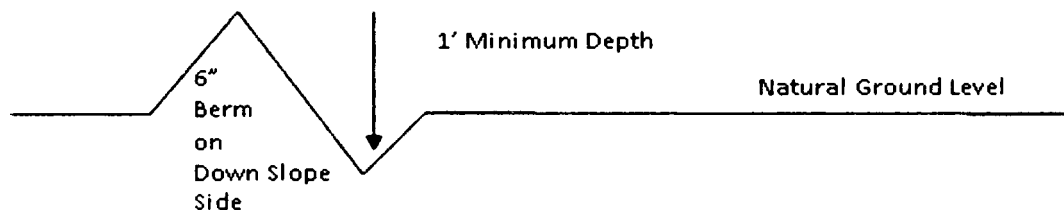
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall conform to Figure 1; cross section and plans for typical road construction.

**Drainage**

Drainage control systems shall be constructed on the entire length of road (e.g. ditches, sidehill outslowing and insloping, lead-off ditches, culvert installation, and low water crossings).

A typical lead-off ditch has a minimum depth of 1 foot below and a berm of 6 inches above natural ground level. The berm shall be on the down-slope side of the lead-off ditch.

#### **Cross Section of a Typical Lead-off Ditch**



All lead-off ditches shall be graded to drain water with a 1 percent minimum to 3 percent maximum ditch slope. The spacing interval are variable for lead-off ditches and shall be determined according to the formula for spacing intervals of lead-off ditches, but may be amended depending upon existing soil types and centerline road slope (in %);

#### **Formula for Spacing Interval of Lead-off Ditches**

Example - On a 4% road slope that is 400 feet long, the water flow shall drain water into a lead-off ditch. Spacing interval shall be determined by the following formula:

$$400 \text{ foot road with } 4\% \text{ road slope: } \frac{400'}{4\%} + 100' = 200' \text{ lead-off ditch interval}$$

#### **Cattle guards**

An appropriately sized cattle guard sufficient to carry out the project shall be installed and maintained at fence/road crossings. Any existing cattle guards on the access road route shall be repaired or replaced if they are damaged or have deteriorated beyond practical use. The operator shall be responsible for the condition of the existing cattle guards that are in place and are utilized during lease operations.

#### **Fence Requirement**

Where entry is granted across a fence line, the fence shall be braced and tied off on both sides of the passageway prior to cutting. The operator shall notify the private surface landowner or the grazing allotment holder prior to crossing any fences.

#### **Public Access**

Public access on this road shall not be restricted by the operator without specific written approval granted by the Authorized Officer.

### Construction Steps

1. Salvage topsoil
2. Construct road

3. Redistribute topsoil
4. Revegetate slopes

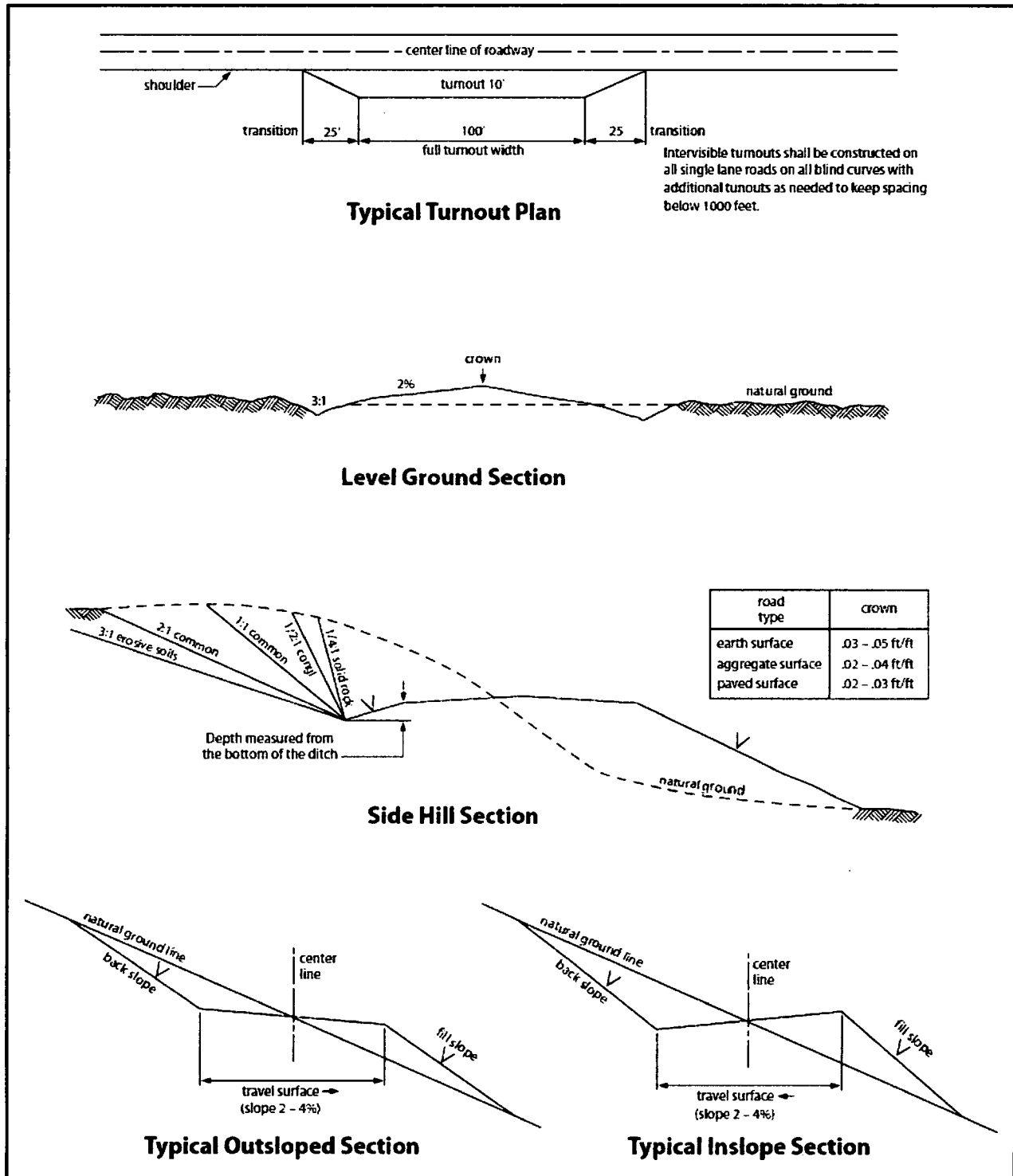


Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.

## **VII. PRODUCTION (POST DRILLING)**

### **A. WELL STRUCTURES & FACILITIES**

#### **Placement of Production Facilities**

Production facilities should be placed on the well pad to allow for maximum interim recontouring and revegetation of the well location.

#### **Exclosure Netting (Open-top Tanks)**

Immediately following active drilling or completion operations, the operator will take actions necessary to prevent wildlife and livestock access, including avian wildlife, to all open-topped tanks that contain or have the potential to contain salinity sufficient to cause harm to wildlife or livestock, hydrocarbons, or Resource Conservation and Recovery Act of 1976-exempt hazardous substances. At a minimum, the operator will net, screen, or cover open-topped tanks to exclude wildlife and livestock and prevent mortality. If the operator uses netting, the operator will cover and secure the open portion of the tank to prevent wildlife entry. The operator will net, screen, or cover the tanks until the operator removes the tanks from the location or the tanks no longer contain substances that could be harmful to wildlife or livestock. Use a maximum netting mesh size of 1 ½ inches. The netting must not be in contact with fluids and must not have holes or gaps.

#### **Chemical and Fuel Secondary Containment and Exclosure Screening**

The operator will prevent all hazardous, poisonous, flammable, and toxic substances from coming into contact with soil and water. At a minimum, the operator will install and maintain an impervious secondary containment system for any tank or barrel containing hazardous, poisonous, flammable, or toxic substances sufficient to contain the contents of the tank or barrel and any drips, leaks, and anticipated precipitation. The operator will dispose of fluids within the containment system that do not meet applicable state or U. S. Environmental Protection Agency livestock water standards in accordance with state law; the operator must not drain the fluids to the soil or ground. The operator will design, construct, and maintain all secondary containment systems to prevent wildlife and livestock exposure to harmful substances. At a minimum, the operator will install effective wildlife and livestock exclosure systems such as fencing, netting, expanded metal mesh, lids, and grate covers. Use a maximum netting mesh size of 1 ½ inches.

#### **Open-Vent Exhaust Stack Exclosures**

The operator will construct, modify, equip, and maintain all open-vent exhaust stacks on production equipment to prevent birds and bats from entering, and to discourage perching, roosting, and nesting. (*Recommended exclosure structures on open-vent exhaust stacks are in the shape of a cone.*) Production equipment includes, but may not be limited to, tanks, heater-treaters, separators, dehydrators, flare stacks, in-line units, and compressor mufflers.

#### **Containment Structures**

Proposed production facilities such as storage tanks and other vessels will have a secondary containment structure that is constructed to hold the capacity of 1.5 times the largest tank, plus freeboard to account for precipitation, unless more stringent protective requirements are deemed necessary.

#### **Painting Requirement**

All above-ground structures including meter housing that are not subject to safety requirements shall be painted a flat non-reflective paint color, **Shale Green** from the BLM Standard Environmental Color Chart (CC-001: June 2008).

### **VIII. INTERIM RECLAMATION**

During the life of the development, all disturbed areas not needed for active support of production operations should undergo interim reclamation in order to minimize the environmental impacts of development on other resources and uses.

Within six (6) months of well completion, operators should work with BLM surface management specialists (Jim Amos: 575-234-5909) to devise the best strategies to reduce the size of the location. Interim reclamation should allow for remedial well operations, as well as safe and efficient removal of oil and gas.

During reclamation, the removal of caliche is important to increasing the success of revegetating the site. Removed caliche that is free of contaminants may be used for road repairs, fire walls or for building other roads and locations. In order to operate the well or complete workover operations, it may be necessary to drive, park and operate on restored interim vegetation within the previously disturbed area. Disturbing revegetated areas for production or workover operations will be allowed. If there is significant disturbance and loss of vegetation, the area will need to be revegetated. Communicate with the appropriate BLM office for any exceptions/exemptions if needed.

All disturbed areas after they have been satisfactorily prepared need to be reseeded with the seed mixture provided below.

Upon completion of interim reclamation, the operator shall submit a Sundry Notices and Reports on Wells, Subsequent Report of Reclamation (Form 3160-5).

### **IX. FINAL ABANDONMENT & RECLAMATION**

At final abandonment, well locations, production facilities, and access roads must undergo "final" reclamation so that the character and productivity of the land are restored.

Earthwork for final reclamation must be completed within six (6) months of well plugging. All pads, pits, facility locations and roads must be reclaimed to a satisfactory revegetated, safe, and stable condition, unless an agreement is made with the landowner or BLM to keep the road and/or pad intact.

After all disturbed areas have been satisfactorily prepared, these areas need to be revegetated with the seed mixture provided below. Seeding should be accomplished by drilling on the contour whenever practical or by other approved methods. Seeding may need to be repeated until revegetation is successful, as determined by the BLM.

Operators shall contact a BLM surface protection specialist prior to surface abandonment operations for site specific objectives (Jim Amos: 575-234-5909).

Below Ground-level Abandoned Well Marker to avoid raptor perching: Upon the plugging and subsequent abandonment of the well, the well marker will be installed at ground level on a plate containing the pertinent information for the plugged well.

## Seed Mixture for LPC Sand/Shinnery Sites

Holder shall seed all disturbed areas with the seed mixture listed below. The seed mixture shall be planted in the amounts specified in pounds of pure live seed (PLS)\* per acre. There shall be no primary or secondary noxious weeds in the seed mixture. Seed will be tested and the viability testing of seed shall be done in accordance with State law(s) and within nine (9) months prior to purchase. Commercial seed shall be either certified or registered seed. The seed container shall be tagged in accordance with State law(s) and available for inspection by the Authorized Officer.

Seed will be planted using a drill equipped with a depth regulator to ensure proper depth of planting where drilling is possible. The seed mixture will be evenly and uniformly planted over the disturbed area (smaller/heavier seeds have a tendency to drop the bottom of the drill and are planted first). Holder shall take appropriate measures to ensure this does not occur. Where drilling is not possible, seed will be broadcast and the area shall be raked or chained to cover the seed. When broadcasting the seed, the pounds per acre are to be doubled. Seeding shall be repeated until a satisfactory stand is established as determined by the Authorized Officer. Evaluation of growth may not be made before completion of at least one full growing season after seeding.

Species to be planted in pounds of pure live seed\* per acre:

| <u>Species</u>      | <u>lb/acre</u> |
|---------------------|----------------|
| Plains Bristlegrass | 5lbs/A         |
| Sand Bluestem       | 5lbs/A         |
| Little Bluestem     | 3lbs/A         |
| Big Bluestem        | 6lbs/A         |
| Plains Coreopsis    | 2lbs/A         |
| Sand Dropseed       | 1lbs/A         |

\*Pounds of pure live seed:

Pounds of seed x percent purity x percent germination = pounds pure live seed





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

## Operator Certification Data Report

11/30/2018

### 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:** Katy Reddell

**Signed on:** 04/24/2018

**Title:** Regulatory Analyst

**Street Address:** 104 S Pecos

**City:** Midland

**State:** TX

**Zip:** 79701

**Phone:** (432)682-3753

**Email address:** Kreddell@btaoil.com

### Field Representative

**Representative Name:** Nick Eaton

**Street Address:** 104 South Pecos

**City:** Midland

**State:** TX

**Zip:** 79701

**Phone:** (432)682-3753

**Email address:** neaton@btaoil.com



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

## Application Data Report

11/30/2018

APD ID: 10400029777

Submission Date: 05/22/2018

Operator Name: BTA OIL PRODUCERS LLC

Well Name: VACA DRAW 9418 10 FED

Well Number: 19H

Well Type: OIL WELL

Well Work Type: Drill



[Show Final Text](#)

### Section 1 - General

APD ID: 10400029777

Tie to previous NOS? 10400013967

Submission Date: 05/22/2018

BLM Office: CARLSBAD

User: Katy Reddell

Title: Regulatory Analyst

Federal/Indian APD: FED

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

Lease number: NMNM097153

Lease Acres: 640

Surface access agreement in place?

Allotted?

Reservation:

Agreement in place? NO

Federal or Indian agreement:

Agreement number:

Agreement name:

Keep application confidential? YES

Permitting Agent? NO

APD Operator: BTA OIL PRODUCERS LLC

Operator letter of designation:

### Operator Info

Operator Organization Name: BTA OIL PRODUCERS LLC

Operator Address: 104 S. Pecos

Zip: 79701

Operator PO Box:

Operator City: Midland

State: TX

Operator Phone: (432)682-3753

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: VACA DRAW 9418 10 FED

Well Number: 19H

Well API Number:

Field/Pool or Exploratory? Field and Pool

Field Name: BOBCAT DRAW

Pool Name: UPPER  
WOLFCAMP

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

Operator Name: BTA OIL PRODUCERS LLC

Well Name: VACA DRAW 9418 10 FED

Well Number: 19H

Describe other minerals:

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: VACA Number: 16H-19H

DRAW 9418 10 FED

Well Class: HORIZONTAL

Number of Legs:

Well Work Type: Drill

Well Type: OIL WELL

Describe Well Type:

Well sub-Type: EXPLORATORY (WILDCAT)

Describe sub-type:

Distance to town: 20 Miles

Distance to nearest well: 30 FT

Distance to lease line: 50 FT

Reservoir well spacing assigned acres Measurement: 160 Acres

Well plat: Vaca\_Draw\_9418\_10\_Fed\_19H\_C102\_20180424124047.pdf

Well work start Date: 09/03/2018

Duration: 45 DAYS

### Section 3 - Well Location Table

Survey Type: RECTANGULAR

Describe Survey Type:

Datum: NAD83

Vertical Datum: NGVD29

Survey number:

|                  | 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<br>Leg<br>#1 | 220     | FSL          | 127<br>5 | FEL          | 25S  | 33E   | 10      | Aliquot<br>SESE   | 32.13841<br>1 | -<br>103.5557<br>73 | LEA    | NEW<br>MEXI<br>CO | NEW<br>MEXI<br>CO | F          | NMNM<br>097153 | 337<br>7      | 0         | 0         |
| KOP<br>Leg<br>#1 | 220     | FSL          | 127<br>5 | FEL          | 25S  | 33E   | 10      | Aliquot<br>SESE   | 32.13841<br>1 | -<br>103.5557<br>73 | LEA    | NEW<br>MEXI<br>CO | NEW<br>MEXI<br>CO | F          | NMNM<br>097153 | 782<br>5      | 259<br>5  | 259<br>5  |
| PPP<br>Leg<br>#1 | 330     | FSL          | 350      | FEL          | 25S  | 33E   | 10      | Aliquot<br>SESE   | 32.13871<br>6 | -<br>103.5527<br>85 | LEA    | NEW<br>MEXI<br>CO | NEW<br>MEXI<br>CO | F          | NMNM<br>097153 | -<br>912<br>7 | 128<br>80 | 125<br>04 |

**Operator Name:** BTA OIL PRODUCERS LLC

**Well Name:** VACA DRAW 9418 10 FED

**Well Number:** 19H

|                   | 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<br>Leg<br>#1 | 330     | FNL          | 350     | FEL          | 25S  | 33E   | 10      | Aliquot<br>NENE   | 32.15142<br>2 | -<br>103.5527<br>91 | LEA    | NEW<br>MEXI<br>CO | NEW<br>MEXI<br>CO | F          | NMNM<br>097153 | -<br>912<br>7 | 172<br>47 | 125<br>04 |
| BHL<br>Leg<br>#1  | 50      | FNL          | 350     | FEL          | 25S  | 33E   | 10      | Aliquot<br>NENE   | 32.15219<br>2 | -<br>103.5527<br>91 | LEA    | NEW<br>MEXI<br>CO | NEW<br>MEXI<br>CO | F          | NMNM<br>097153 | -<br>912<br>7 | 175<br>27 | 125<br>04 |

Operator Name: BTA OIL PRODUCERS LLC

Well Name: VACA DRAW 9418 10 FED

Well Number: 19H

10M\_Choke\_Schematic\_20180420092627.pdf

10M\_BOP\_with\_5M\_Annular\_20180420092645.pdf

5M\_Annular\_Well\_Control\_Plan\_20180420092906.PDF

Pressure Rating (PSI): 5M

Rating Depth: 13000

**Equipment:** The 13-5/8" blowout preventer equipment (BOP) shown in Exhibit A will consist of a (5M system) double ram type (5000 psi WP) preventer and a bag-type (Hydril) preventer (5000 psi WP). Both units will be hydraulically operated and the ram type preventer will be equipped with blind rams on top and 4-1/2" drill pipe rams on bottom. The BOP's will be installed on the 13 3/8" surface casing and utilized continuously until total depth is reached. All BOP's and associated equipment will be tested as per BLM drilling Operations Order No. 2. A 2" kill line and 3" choke line will be incorporated in the drilling spool below the ram-type BOP. Other accessory BOP equipment will include a Kelly cock, floor safety valve, choke lines, and choke manifold having a 5000 psi WP rating.

**Requesting Variance?** YES

**Variance request:** A choke hose variance is requested. See attached test chart and spec.

**Testing Procedure:** Pipe rams will be operated and checked each 24-hour period and each time the drill pipe is out of the hole. These functional tests will be documented on the daily driller's log.

**Choke Diagram Attachment:**

5M\_BOP\_Schematic\_20180420092947.pdf

Choke Hose - Test Chart and Specs\_12-08-2016.pdf

**BOP Diagram Attachment:**

5M\_Choke\_Schematic\_20180420092958.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         | SURFACE      | 17.5      | 13.375   | NEW       | API      | N              | 0          | 1450          | 0           | 1450           | 3414        | 2314           | 1450                        | J-55  | 54.5   | STC        | 2.4         | 5.9      | DRY           | 9.01     | DRY          | 14.9    |
| 2         | INTERMEDIATE | 12.25     | 9.625    | NEW       | API      | N              | 0          | 5030          | 0           | 5030           |             |                | 5030                        | J-55  | 40     | LTC        | 1.7         | 2.6      | DRY           | 2.6      | DRY          | 3.1     |
| 3         | PRODUCTION   | 8.75      | 7.0      | NEW       | API      | N              | 0          | 12580         | 0           | 12427          | 3414        | -6686          | 12580                       | P-110 | 29     | LTC        | 1.4         | 1.6      | DRY           | 2.1      | DRY          | 2.5     |
| 4         | LINER        | 6.125     | 4.5      | NEW       | API      | N              | 11980      | 17527         | 11931       | 12504          |             |                | 5547                        | P-110 | 11.6   | LTC        | 1.6         | 2.2      | DRY           | 2        | DRY          | 2.6     |

**Operator Name:** BTA OIL PRODUCERS LLC

**Well Name:** VACA DRAW 9418 10 FED

**Well Number:** 19H

### Casing Attachments

---

**Casing ID:** 1      **String Type:** SURFACE

**Inspection Document:**

**Spec Document:**

**Tapered String Spec:**

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

Vaca\_Draw\_9418\_10\_Fed\_19H\_CASING\_ASSUMPTION\_\_20180424124842.pdf

---

**Casing ID:** 2      **String Type:** INTERMEDIATE

**Inspection Document:**

**Spec Document:**

**Tapered String Spec:**

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

Vaca\_Draw\_9418\_10\_Fed\_19H\_CASING\_ASSUMPTION\_\_20180424124855.pdf

---

**Casing ID:** 3      **String Type:** PRODUCTION

**Inspection Document:**

**Spec Document:**

**Tapered String Spec:**

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

Vaca\_Draw\_9418\_10\_Fed\_19H\_CASING\_ASSUMPTION\_\_20180424124928.pdf

---

Operator Name: BTA OIL PRODUCERS LLC

Well Name: VACA DRAW 9418 10 FED

Well Number: 19H

#### Casing Attachments

Casing ID: 4 String Type: LINER

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Vaca\_Draw\_9418\_10\_Fed\_19H\_CASING\_ASSUMPTION\_20180424125007.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                                      |
|--------------|-----------|------------------|-----------|-----------|--------------|-------|---------|-------|---------|-------------|--|
| SURFACE      | Lead      |                  | 0         | 1259      | 690          | 1.73  | 13.5    | 1193  | 100     | Class C     | 2% CaCl2                                       |
| SURFACE      | Tail      |                  | 1259      | 1450      | 200          | 1.33  | 14.8    | 266   | 100     | Class C     | 2% CaCl2                                       |
| INTERMEDIATE | Lead      |                  | 0         | 4180      | 1240         | 2.08  | 12.9    | 2579  | 100     | Class C     | 6% Gel   |
| INTERMEDIATE | Tail      |                  | 4180      | 5030      | 250          | 1.33  | 14.8    | 332   | 25      | Class C     | 0.004 GPS cf-41L                               |
| PRODUCTION   | Lead      |                  | 4000      | 1120<br>0 | 530          | 2.87  | 10.5    | 1173  | 40      | 100% TXL    | Plus Additives                                 |
| PRODUCTION   | Tail      |                  | 1120<br>0 | 1258<br>0 | 200          | 1.18  | 15.6    | 236   | 15      | Class H     | 2% Gel   |
| LINER        | Lead      |                  | 1190<br>0 | 1752<br>7 | 470          | 1.22  | 14.4    | 561   | 10      | 50:50 H     | 50% Class H POZ. 2% Gel 1 Gal / 1000 sx CF-41L |

**Operator Name:** BTA OIL PRODUCERS LLC

**Well Name:** VACA DRAW 9418 10 FED

**Well Number:** 19H

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

**Describe the mud monitoring system utilized:** PVT/Pason/Visual Monitoring

### 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         | 1450         | SPUD MUD          | 8.3                  | 8.4                  |                     |                             |    |                |                |                 |                            |
| 1450      | 5030         | SALT SATURATED    | 10                   | 10.2                 |                     |                             |    |                |                |                 |                            |
| 5030      | 1242<br>7    | OTHER : Cut Brine | 8.6                  | 9.2                  |                     |                             |    |                |                |                 |                            |
| 1242<br>7 | 1250<br>4    | OIL-BASED MUD     | 11                   | 11.5                 |                     |                             |    |                |                |                 |                            |

### Section 6 - Test, Logging, Coring

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

No DST Planned

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

GR

**Coring operation description for the well:**

No cores are currently planned



**Operator Name:** BTA OIL PRODUCERS LLC

**Well Name:** VACA DRAW 9418 10 FED

**Well Number:** 19H

### Section 7 - Pressure

**Anticipated Bottom Hole Pressure:** 7475

**Anticipated Surface Pressure:** 4724.12

**Anticipated Bottom Hole Temperature(F):** 181

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

**Describe:**

**Contingency Plans geohazards 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:**

Vaca\_Draw\_9418\_10\_Fed\_19H\_Directional\_Plan\_20180424125126.pdf

**Other proposed operations facets description:**

A variance is requested for a Multi Bowl Wellhead. See the attached schematic and running procedure.

**Other proposed operations facets attachment:**

H2S Plan m\_12-08-2016.pdf

H2S\_Equipment\_Schematic\_\_Well\_Pad\_05-23-2017.pdf

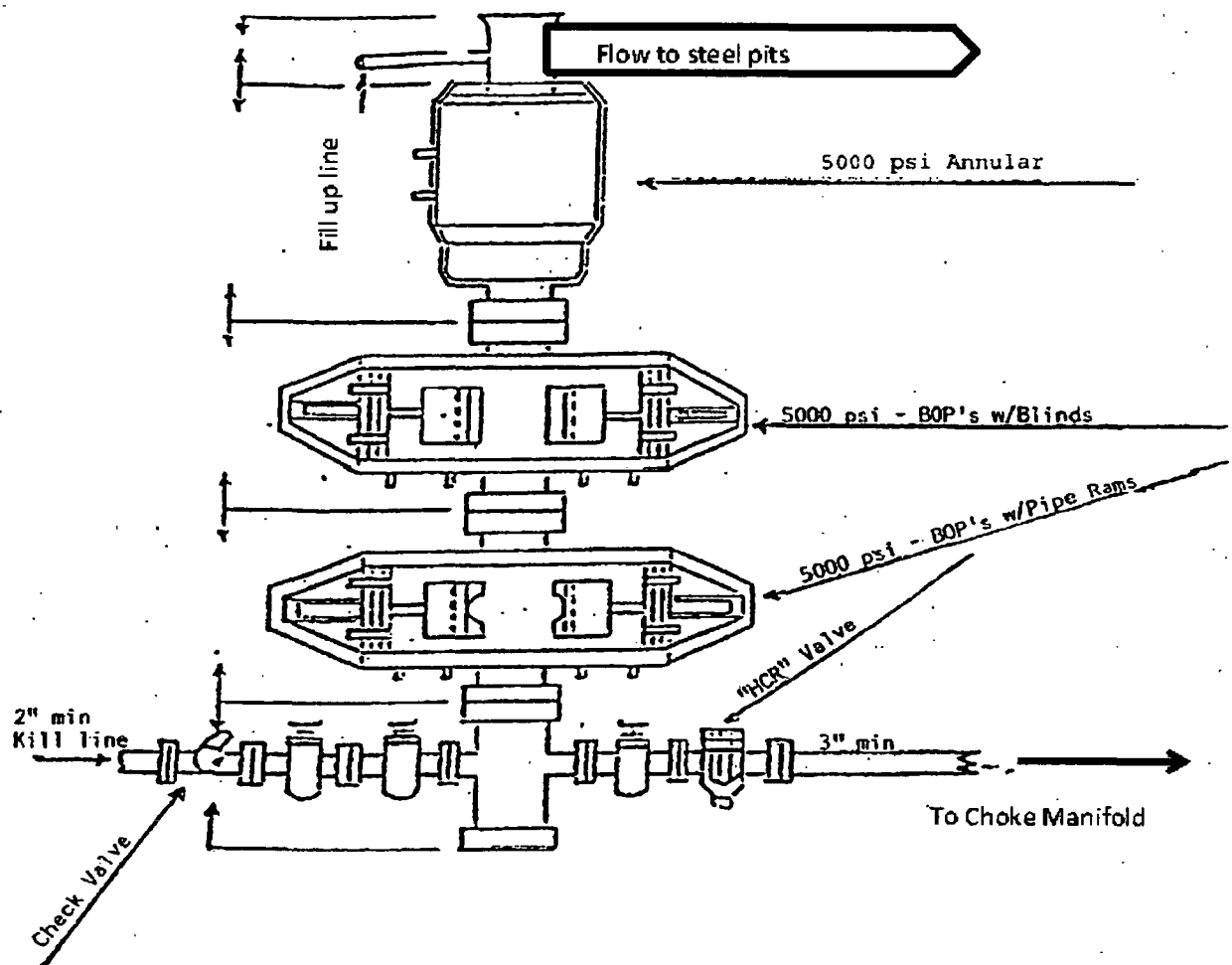
**Other Variance attachment:**

Multi\_Bowl\_Diagram\_20180420093359.pdf

Wellhead System and Testing\_12-08-2016.pdf

GAS\_CAPTURE\_PLAN\_VACA\_DRAW\_19H\_20180906075715.pdf

# 13-5/8" 5,000 PSI BOP





ContiTech

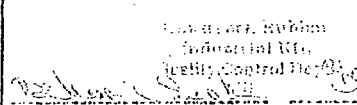
CONTITECH RUBBER  
Industrial Kft.

No: QC-DB- 599/ 2014

Page: 16 / 176

Rig 94

Asset 24455

| QUALITY CONTROL<br>INSPECTION AND TEST CERTIFICATE   |  |                          |  | CERT. N°: 1592   |  |
|--|--|--------------------------|--|--|--|
| PURCHASER: ContiTech Oil & Marine Corp.  |  |                          |  | P.O. N°: 4500461753  |  |
| CONTITECH ORDER N°: 539225   |  | HOSE TYPE: 3" ID         |  | Choke & Kill Hose  |  |
| HOSE SERIAL N°: [REDACTED]   |  | NOMINAL / ACTUAL LENGTH: |  | 7,62 m / 7,66 m  |  |
| W.P. 68,9 MPa 10000 psi  |  | T.P. 103,4 MPa 15000 psi |  | Duration: 60 min.  |  |
| Pressure test with water at ambient temperature  |  |                          |  |  |  |
| See attachment. ( 1 page )   |  |                          |  |  |  |
| → 10 Min.<br>↑ 50 MPa  |  |                          |  |  |  |
| COUPLINGS Type   |  | Serial N°                |  | Quality  |  |
| 3" coupling with<br>4 1/16" 10K API Swivel Flange end<br>Hub   |  | 2574 5533                |  | AISI 4130<br>AISI 4130<br>AISI 4130  |  |
|  |  |                          |  | Heat N°<br>A1582N H8572<br>58855<br>A1199N A1423N  |  |
| Not Designed For Well Testing  |  |                          |  | API Spec 16 C  |  |
| Fire Rated   |  |                          |  | Temperature rate: "B"  |  |
| All metal parts are flawless   |  |                          |  |  |  |
| WE CERTIFY THAT THE ABOVE HOSE HAS BEEN MANUFACTURED IN ACCORDANCE WITH THE TERMS OF THE ORDER<br>INSPECTED AND PRESSURE TESTED AS ABOVE WITH SATISFACTORY RESULT.   |  |                          |  |  |  |
| STATEMENT OF CONFORMITY: We hereby certify that the above items/equipment supplied by us are in conformity with the terms,<br>conditions and specifications of the above Purchaser Order and that these items/equipment were fabricated inspected and tested in<br>accordance with the referenced standards, codes and specifications and meet the relevant acceptance criteria and design requirements. |  |                          |  |  |  |
| Date:  |  | Inspector                |  | Quality Control  |  |
| 04. September 2014.  |  |                          |  | <br>Inspector: [Signature]<br>Industrial Kft.<br>Quality Control Dept. |  |

# ATTACHMENT OF QUALITY CONTROL INSPECTION AND TEST CERTIFICATE

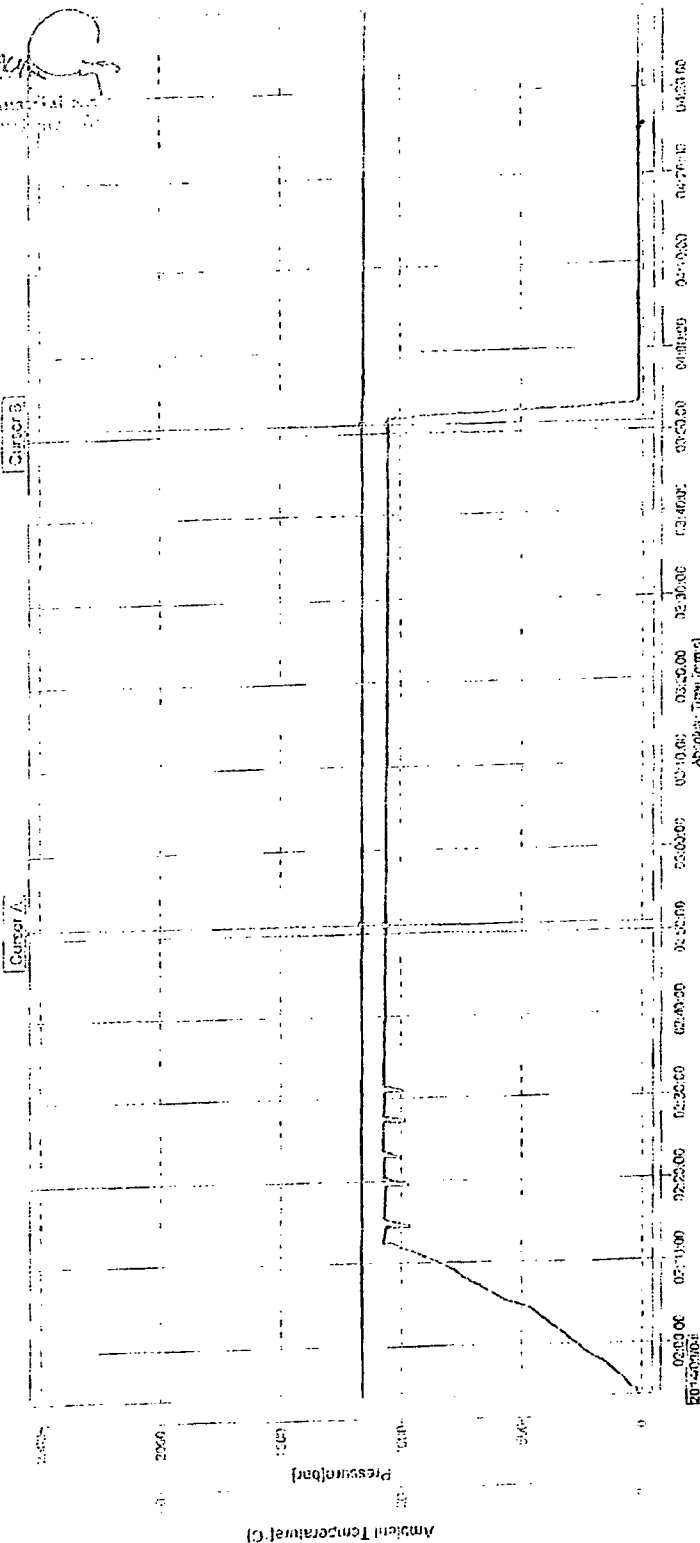
No: 1588, 1590, 1592

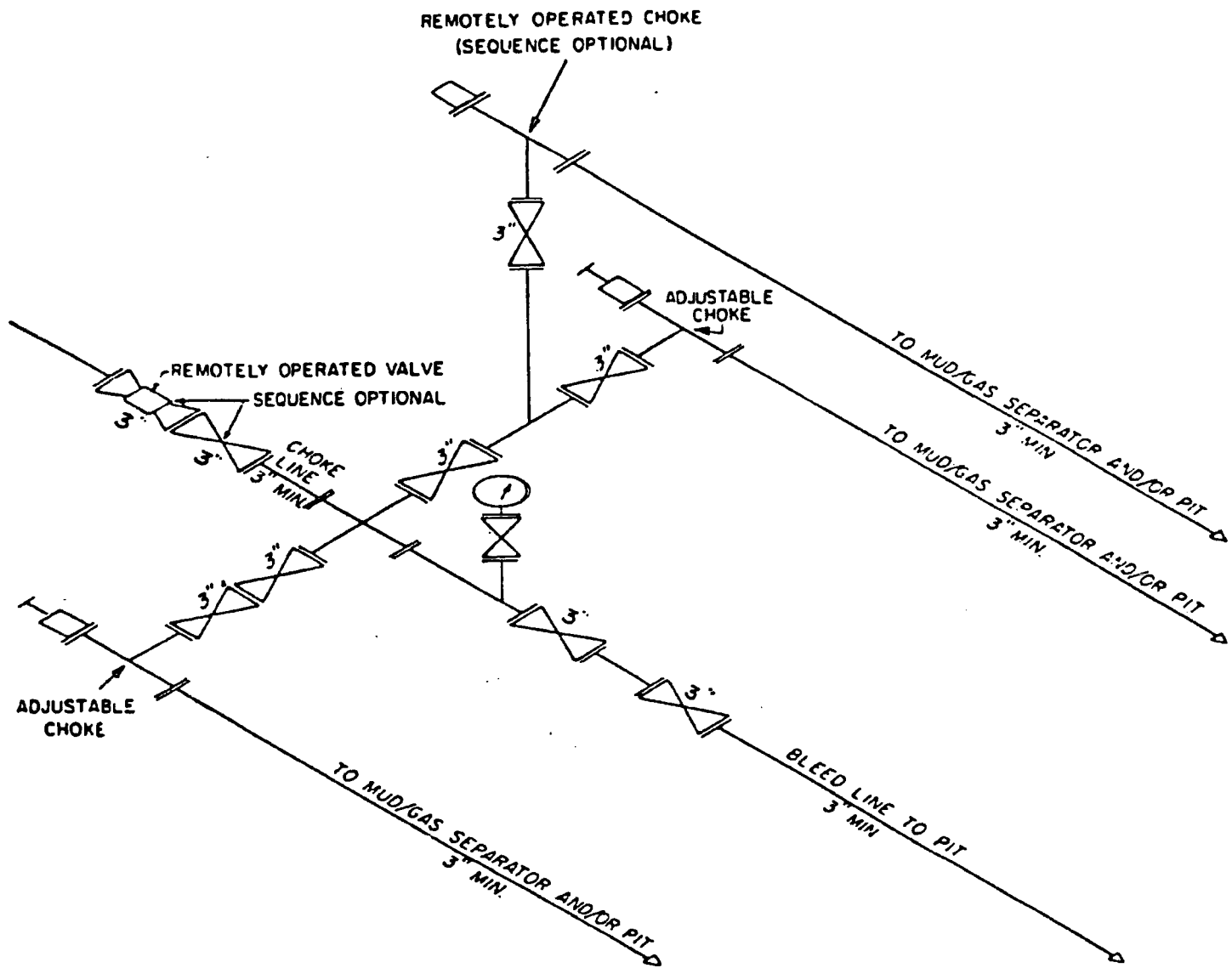
Page: 1 / 1

File Name: 000220\_68543\_68545-547.GEV.....000236\_68543\_68545-547.GEV  
 File Message: 68543\_68545\_58547  
 Device Type: GX10  
 Serial No: 525063399  
 Data Count: 9446  
 Print Group: Press-Temp  
 Print Range: 2014/09/04 01:53:54.000 - 2014/09/04 04:39:39.000  
 Comment:

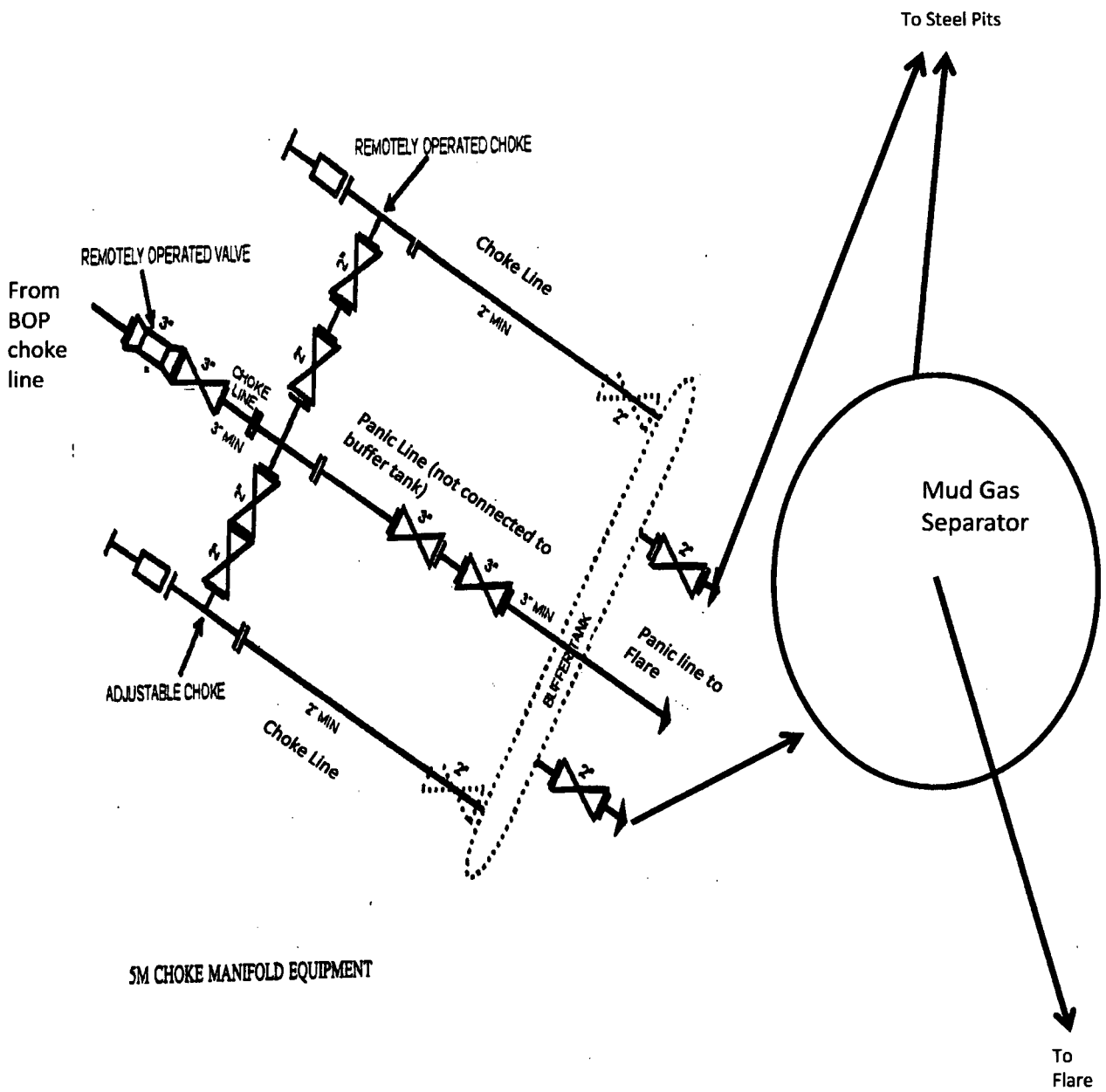
Sampling Int: 1.000 sec  
 Start Time: 2014/09/04 01:53:54.000  
 Stop Time: 2014/09/04 04:39:39.000

| Time          | Cursor A      | Cursor B     | Diff (A-B)   |
|---------------|---------------|--------------|--------------|
| 01:53:54.000  | 24.22         | 70.92        | 46.70        |
| 02:51:05.000  | 20.1409004    | 02:51:05.000 | 01:00:00.000 |
| 03:51:56.000  | 02:51:56.000  |              |              |
| 04:39:39.000  | 04:39:39.000  |              |              |
| 05:00:00.000  | 05:00:00.000  |              |              |
| 06:00:00.000  | 06:00:00.000  |              |              |
| 07:00:00.000  | 07:00:00.000  |              |              |
| 08:00:00.000  | 08:00:00.000  |              |              |
| 09:00:00.000  | 09:00:00.000  |              |              |
| 10:00:00.000  | 10:00:00.000  |              |              |
| 11:00:00.000  | 11:00:00.000  |              |              |
| 12:00:00.000  | 12:00:00.000  |              |              |
| 13:00:00.000  | 13:00:00.000  |              |              |
| 14:00:00.000  | 14:00:00.000  |              |              |
| 15:00:00.000  | 15:00:00.000  |              |              |
| 16:00:00.000  | 16:00:00.000  |              |              |
| 17:00:00.000  | 17:00:00.000  |              |              |
| 18:00:00.000  | 18:00:00.000  |              |              |
| 19:00:00.000  | 19:00:00.000  |              |              |
| 20:00:00.000  | 20:00:00.000  |              |              |
| 21:00:00.000  | 21:00:00.000  |              |              |
| 22:00:00.000  | 22:00:00.000  |              |              |
| 23:00:00.000  | 23:00:00.000  |              |              |
| 24:00:00.000  | 24:00:00.000  |              |              |
| 25:00:00.000  | 25:00:00.000  |              |              |
| 26:00:00.000  | 26:00:00.000  |              |              |
| 27:00:00.000  | 27:00:00.000  |              |              |
| 28:00:00.000  | 28:00:00.000  |              |              |
| 29:00:00.000  | 29:00:00.000  |              |              |
| 30:00:00.000  | 30:00:00.000  |              |              |
| 31:00:00.000  | 31:00:00.000  |              |              |
| 32:00:00.000  | 32:00:00.000  |              |              |
| 33:00:00.000  | 33:00:00.000  |              |              |
| 34:00:00.000  | 34:00:00.000  |              |              |
| 35:00:00.000  | 35:00:00.000  |              |              |
| 36:00:00.000  | 36:00:00.000  |              |              |
| 37:00:00.000  | 37:00:00.000  |              |              |
| 38:00:00.000  | 38:00:00.000  |              |              |
| 39:00:00.000  | 39:00:00.000  |              |              |
| 40:00:00.000  | 40:00:00.000  |              |              |
| 41:00:00.000  | 41:00:00.000  |              |              |
| 42:00:00.000  | 42:00:00.000  |              |              |
| 43:00:00.000  | 43:00:00.000  |              |              |
| 44:00:00.000  | 44:00:00.000  |              |              |
| 45:00:00.000  | 45:00:00.000  |              |              |
| 46:00:00.000  | 46:00:00.000  |              |              |
| 47:00:00.000  | 47:00:00.000  |              |              |
| 48:00:00.000  | 48:00:00.000  |              |              |
| 49:00:00.000  | 49:00:00.000  |              |              |
| 50:00:00.000  | 50:00:00.000  |              |              |
| 51:00:00.000  | 51:00:00.000  |              |              |
| 52:00:00.000  | 52:00:00.000  |              |              |
| 53:00:00.000  | 53:00:00.000  |              |              |
| 54:00:00.000  | 54:00:00.000  |              |              |
| 55:00:00.000  | 55:00:00.000  |              |              |
| 56:00:00.000  | 56:00:00.000  |              |              |
| 57:00:00.000  | 57:00:00.000  |              |              |
| 58:00:00.000  | 58:00:00.000  |              |              |
| 59:00:00.000  | 59:00:00.000  |              |              |
| 60:00:00.000  | 60:00:00.000  |              |              |
| 61:00:00.000  | 61:00:00.000  |              |              |
| 62:00:00.000  | 62:00:00.000  |              |              |
| 63:00:00.000  | 63:00:00.000  |              |              |
| 64:00:00.000  | 64:00:00.000  |              |              |
| 65:00:00.000  | 65:00:00.000  |              |              |
| 66:00:00.000  | 66:00:00.000  |              |              |
| 67:00:00.000  | 67:00:00.000  |              |              |
| 68:00:00.000  | 68:00:00.000  |              |              |
| 69:00:00.000  | 69:00:00.000  |              |              |
| 70:00:00.000  | 70:00:00.000  |              |              |
| 71:00:00.000  | 71:00:00.000  |              |              |
| 72:00:00.000  | 72:00:00.000  |              |              |
| 73:00:00.000  | 73:00:00.000  |              |              |
| 74:00:00.000  | 74:00:00.000  |              |              |
| 75:00:00.000  | 75:00:00.000  |              |              |
| 76:00:00.000  | 76:00:00.000  |              |              |
| 77:00:00.000  | 77:00:00.000  |              |              |
| 78:00:00.000  | 78:00:00.000  |              |              |
| 79:00:00.000  | 79:00:00.000  |              |              |
| 80:00:00.000  | 80:00:00.000  |              |              |
| 81:00:00.000  | 81:00:00.000  |              |              |
| 82:00:00.000  | 82:00:00.000  |              |              |
| 83:00:00.000  | 83:00:00.000  |              |              |
| 84:00:00.000  | 84:00:00.000  |              |              |
| 85:00:00.000  | 85:00:00.000  |              |              |
| 86:00:00.000  | 86:00:00.000  |              |              |
| 87:00:00.000  | 87:00:00.000  |              |              |
| 88:00:00.000  | 88:00:00.000  |              |              |
| 89:00:00.000  | 89:00:00.000  |              |              |
| 90:00:00.000  | 90:00:00.000  |              |              |
| 91:00:00.000  | 91:00:00.000  |              |              |
| 92:00:00.000  | 92:00:00.000  |              |              |
| 93:00:00.000  | 93:00:00.000  |              |              |
| 94:00:00.000  | 94:00:00.000  |              |              |
| 95:00:00.000  | 95:00:00.000  |              |              |
| 96:00:00.000  | 96:00:00.000  |              |              |
| 97:00:00.000  | 97:00:00.000  |              |              |
| 98:00:00.000  | 98:00:00.000  |              |              |
| 99:00:00.000  | 99:00:00.000  |              |              |
| 100:00:00.000 | 100:00:00.000 |              |              |





10M CHOKE MANIFOLD EQUIPMENT — CONFIGURATION MAY VARY



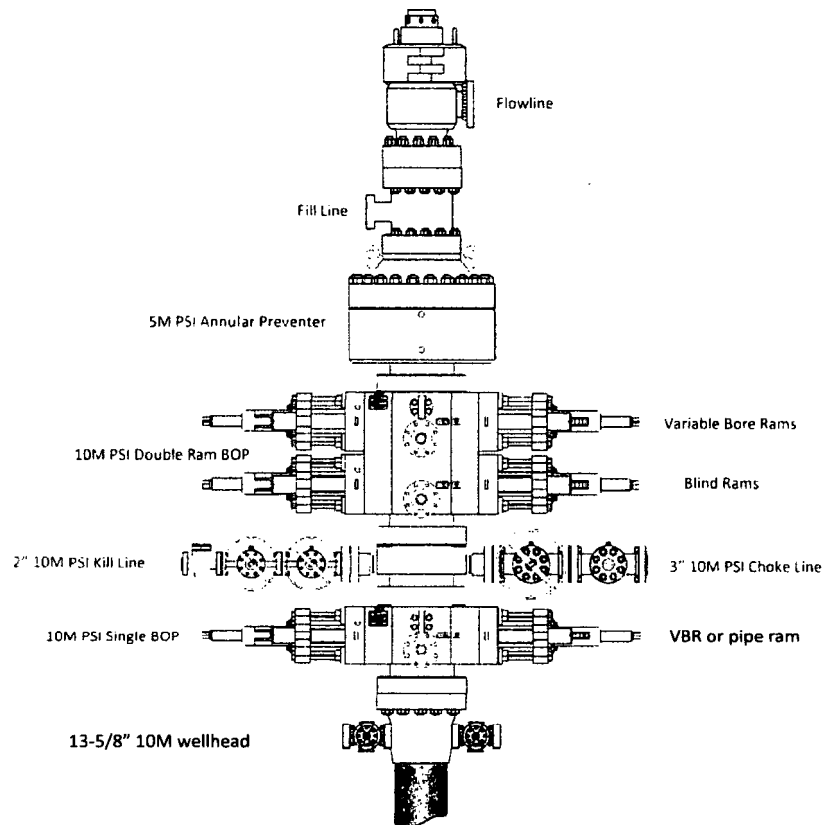
## **Drilling component and preventer compatibility table** **for 10M approval**

The following table outlines the drilling and production liner components for Wolfcamp targets requiring 10M BOPE approval. Variance is requested to utilize a 5M annular preventer in 6-1/8" hole as all components can be covered using 10M rated VBR's (variable bore rams)

| <b>6-1/8" hole section – 10M BOPE requirement (13-5/8" BOP)</b> |           |                  |            |
|---|-----------|------------------|------------|
| <b>Component</b>  | <b>OD</b> | <b>Preventer</b> | <b>RWP</b> |
| Drill pipe  | 4"        | 3.5"-5.5" VBR    | 10M        |
| HWDP  | 4"        | 3.5"-5.5" VBR    | 10M        |
| Jars  | 5"        | 3.5"-5.5" VBR    | 10M        |
| DC's and NMDC's   | 4-3/4"    | 3.5"-5.5" VBR    | 10M        |
| Mud motor   | 5"        | 3.5"-5.5" VBR    | 10M        |
| Casing  | 4-1/2"    | 3.5"-5.5" VBR    | 10M        |
| Open hole   | NA        | Blind rams       | 10M        |

| <b>12-1/4" &amp; 8-3/4" hole sections – 5M BOPE requirement (13-5/8" BOP)</b> |             |                               |            |
|---|-------------|-------------------------------|------------|
| <b>Component</b>  | <b>OD</b>   | <b>Preventer</b>              | <b>RWP</b> |
| Drill pipe  | 5"          | 3.5"-5.5" VBR or 5" pipe rams | 10M        |
| HWDP  | 5"          | 3.5"-5.5" VBR or 5" pipe rams | 10M        |
| Jars  | 6-1/4"      | Annular                       | 5M         |
| DC's and NMDC's   | 7"-8"       | Annular                       | 5M         |
| Mud motor   | 7"-8"       | Annular                       | 5M         |
| Casing  | 9-5/8" & 7" | Annular                       | 5M         |
| Open hole   | NA          | Blind rams                    | 10M        |

# 13-5/8" 10M PSI BOP Stack





### Drilling

1. Sound alarm (alert crew).
2. Space out drill string.
3. Shut down pumps (stop pumps and rotary).
4. Shut-in Well with annular with HCR and choke in closed position.
5. Confirm shut-in.
6. Notify tool pusher/company representative.
7. Read and record the following:
  - a. SIDPP & SICP
  - b. Time of shut in
  - c. Pit gain
8. Regroup and identify forward plan. If pressure has increased to 2500 psi, confirm spacing and close the upper variable bore rams.
9. Prepare for well kill operation.

### Tripping

1. Sound alarm (alert rig crew)
2. Stab full opening safety valve and close valve
3. Space out drill string
4. Shut in the well with the annular with HCR and choke in closed position
5. Confirm shut in
6. Notify tool pusher/company representative
7. Read and record the following
  - a. Time of shut in
  - b. SIDPP and SICP
  - c. Pit gain
8. If pressure has increased to 2500 psi, confirm spacing and close the upper most variable bore ram.
9. Prepare for well kill operation.

### While Running Casing

1. Sound alarm (alert rig crew)
2. Stab crossover and full opening safety valve and close valve
3. Space out casing string
4. Shut in well with annular with HCR and choke in closed position
5. Confirm shut in
6. Notify tool pusher/company representative
7. Read and record the following:
  - a. SIDPP & SICP
  - b. Pit gain
  - c. Time
8. If pressure has increased to 2500 psi, confirm spacing and close the upper most variable bore ram.
9. Prepare for well kill operation.

### No Pipe In Hole (Open Hole)

1. Sound alarm (alert rig crew)
2. Shut in blind rams with HCR and choke in closed position
3. Confirm shut in

4. Notify tool pusher/company representative
5. Read and record the following:
  - a. SICP
  - b. Pit gain
  - c. Time
6. Prepare for well kill operation

**Pulling BHA thru Stack**

1. Prior to pulling last joint of drill pipe thru the stack
  - a. Perform flow check, if flowing:
    - i. Sound Alarm (alert crew)
    - ii. Stab full opening safety valve and close valve
    - iii. Space out drill string
    - iv. Shut in using upper most VBR, choke and HCR in closed position
    - v. Confirm shut in
    - vi. Notify tool pusher/company representative.
    - vii. Read and record the following:
      1. SIDPP and SICP
      2. Pit gain
      3. Time
    - viii. Prepare for well kill operation
2. With BHA in the stack:
  - a. If possible pull BHA clear of stack
    - i. Follow 'open hole' procedure above
  - b. If unable to pull BHA clear of stack
    - i. Stab crossover with full opening safety valve, close valve.
    - ii. Space out
    - iii. Shut in using upper most VBR. HCR and choke in closed position.
    - iv. Confirm shut in
    - v. Notify tool pusher/company rep
    - vi. Read and record the following:
      1. SIDPP and SICP
      2. Pit gain
      3. Time
    - vii. Prepare for well kill operation



**BTA Oil Producers, LLC**

**WELL:** Vaca Draw 9418 10 Fed #19H

**Casing Assumption**

| Hole Size | Csg.Size | From (MD) | To (MD) | From (TVD) | To (TVD) | Tapered String | Weight (lbs) | Grade | Conn. | Collapse | Burst | Body Tension | Joint Tension | Dry/ Buoyant | Mud Weight (ppg) |
|-----------|----------|-----------|---------|------------|----------|----------------|--------------|-------|-------|----------|-------|--------------|---------------|--------------|------------------|
| 17.500    | 13.375   | 0         | 1450    | 0          | 1450     | No             | 54.5         | J-55  | STC   | 2.40     | 5.90  | 14.90        | 9.01          | Dry          | 8.4              |
| 12.250    | 9.625    | 0         | 5030    | 0          | 5030     | No             | 40.0         | J-55  | LTC   | 1.70     | 2.60  | 3.10         | 2.60          | Dry          | 10.0             |
| 8.750     | 7.000    | 0         | 12580   | 0          | 12427    | No             | 29.0         | P-110 | LTC   | 1.40     | 1.90  | 2.50         | 2.10          | Dry          | 9.2              |
| 6.125     | 4.500    | 11980     | 17527   | 11931      | 12504    | No             | 11.6         | P-110 | LTC   | 1.60     | 2.20  | 2.60         | 2.00          | Dry          | 11.50            |



**BTA Oil Producers, LLC**

**WELL:** Vaca Draw 9418 10 Fed #19H

**Casing Assumption**

| Hole Size | Csg.Size | From (MD) | To (MD) | From (TVD) | To (TVD) | Tapered String | Weight (lbs) | Grade | Conn. | Collapse | Burst | Body Tension | Joint Tension | Dry/Buoyant | Mud Weight (ppg) |
|-----------|----------|-----------|---------|------------|----------|----------------|--------------|-------|-------|----------|-------|--------------|---------------|-------------|------------------|
| 17.500    | 13.375   | 0         | 1450    | 0          | 1450     | No             | 54.5         | J-55  | STC   | 2.40     | 5.90  | 14.90        | 9.01          | Dry         | 8.4              |
| 12.250    | 9.625    | 0         | 5030    | 0          | 5030     | No             | 40.0         | J-55  | LTC   | 1.70     | 2.60  | 3.10         | 2.60          | Dry         | 10.0             |
| 8.750     | 7.000    | 0         | 12580   | 0          | 12427    | No             | 29.0         | P-110 | LTC   | 1.40     | 1.90  | 2.50         | 2.10          | Dry         | 9.2              |
| 6.125     | 4.500    | 11980     | 17527   | 11931      | 12504    | No             | 11.6         | P-110 | LTC   | 1.60     | 2.20  | 2.60         | 2.00          | Dry         | 11.50            |



**BTA Oil Producers, LLC**

**WELL:** Vaca Draw 9418 10 Fed #19H

**Casing Assumption**

| Hole Size | Csg.Size | From (MD) | To (MD) | From (TVD) | To (TVD) | Tapered String | Weight (lbs) | Grade | Conn. | Collapse | Burst | Body Tension | Joint Tension | Dry/Buoyant | Mud Weight (ppg) |
|-----------|----------|-----------|---------|------------|----------|----------------|--------------|-------|-------|----------|-------|--------------|---------------|-------------|------------------|
| 17.500    | 13.375   | 0         | 1450    | 0          | 1450     | No             | 54.5         | J-55  | STC   | 2.40     | 5.90  | 14.90        | 9.01          | Dry         | 8.4              |
| 12.250    | 9.625    | 0         | 5030    | 0          | 5030     | No             | 40.0         | J-55  | LTC   | 1.70     | 2.60  | 3.10         | 2.60          | Dry         | 10.0             |
| 8.750     | 7.000    | 0         | 12580   | 0          | 12427    | No             | 29.0         | P-110 | LTC   | 1.40     | 1.90  | 2.50         | 2.10          | Dry         | 9.2              |
| 6.125     | 4.500    | 11980     | 17527   | 11931      | 12504    | No             | 11.6         | P-110 | LTC   | 1.60     | 2.20  | 2.60         | 2.00          | Dry         | 11.50            |



**BTA Oil Producers, LLC**

**WELL:** Vaca Draw 9418 10 Fed #19H

**Casing Assumption**

| Hole Size | Csg.Size | From (MD) | To (MD) | From (TVD) | To (TVD) | Tapered String | Weight (lbs) | Grade | Conn. | Collapse | Burst | Body Tension | Joint Tension | Dry/ Buoyant | Mud Weight (ppg) |
|-----------|----------|-----------|---------|------------|----------|----------------|--------------|-------|-------|----------|-------|--------------|---------------|--------------|------------------|
| 17.500    | 13.375   | 0         | 1450    | 0          | 1450     | No             | 54.5         | J-55  | STC   | 2.40     | 5.90  | 14.90        | 9.01          | Dry          | 8.4              |
| 12.250    | 9.625    | 0         | 5030    | 0          | 5030     | No             | 40.0         | J-55  | LTC   | 1.70     | 2.60  | 3.10         | 2.60          | Dry          | 10.0             |
| 8.750     | 7.000    | 0         | 12580   | 0          | 12427    | No             | 29.0         | P-110 | LTC   | 1.40     | 1.90  | 2.50         | 2.10          | Dry          | 9.2              |
| 6.125     | 4.500    | 11980     | 17527   | 11931      | 12504    | No             | 11.6         | P-110 | LTC   | 1.60     | 2.20  | 2.60         | 2.00          | Dry          | 11.50            |

# **BTA Oil Producers, LLC**

**Lea County, NM (NAD 83)**

**Vaca Draw Sec 10, T25S, R33E**

**Vaca Draw #19H**

**Wellbore #1**

**Plan: Design #1**

## **Standard Planning Report - Geographic**

**08 March, 2018**

**BTA**  
Planning Report - Geographic

**Database:** EDM 5000.1 Single User Db  
**Company:** BTA Oil Producers, LLC  
**Project:** Lea County, NM (NAD 83)  
**Site:** Vaca Draw Sec 10, T25S, R33E  
**Well:** Vaca Draw #19H  
**Wellbore:** Wellbore #1  
**Design:** Design #1

**Local Co-ordinate Reference:** Well Vaca Draw #19H  
**TVD Reference:** GL @ 3377.0usft  
**MD Reference:** GL @ 3377.0usft  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature

|                    |   |                             |              |
|--------------------|---|-----------------------------|--------------|
| <b>Project</b>     | Lea County, NM (NAD 83), Lea County, NM |                             |              |
| <b>Map System:</b> | US State Plane 1983                     | <b>System Datum:</b>        | Ground Level |
| <b>Geo Datum:</b>  | North American Datum 1983               |                             |              |
| <b>Map Zone:</b>   | New Mexico Eastern Zone                 | Using geodetic scale factor |              |

|                              |                              |                     |                 |                                     |
|------------------------------|------------------------------|---------------------|-----------------|-------------------------------------|
| <b>Site</b>                  | Vaca Draw Sec 10, T25S, R33E |                     |                 |                                     |
| <b>Site Position:</b>        |                              | <b>Northing:</b>    | 419,812.34 usft | <b>Latitude:</b> 32° 9' 6.483 N     |
| <b>From:</b>                 | Map                          | <b>Easting:</b>     | 779,596.21 usft | <b>Longitude:</b> 103° 33' 48.478 W |
| <b>Position Uncertainty:</b> | 0.0 usft                     | <b>Slot Radius:</b> | 13-3/16 "       | <b>Grid Convergence:</b> 0.41 °     |

|                             |                |                            |                  |                                   |
|-----------------------------|----------------|----------------------------|------------------|-----------------------------------|
| <b>Well</b>                 | Vaca Draw #19H |                            |                  |                                   |
| <b>Well Position</b>        | <b>+N/-S</b>   | 0.0 usft                   | <b>Northing:</b> | 414,958.00 usft                   |
|                             | <b>+E/-W</b>   | 0.0 usft                   | <b>Easting:</b>  | 782,012.00 usft                   |
| <b>Position Uncertainty</b> | 0.0 usft       | <b>Wellhead Elevation:</b> | 0.0 usft         | <b>Ground Level:</b> 3,377.0 usft |

|                  |                   |                    |                        |                      |                            |
|------------------|-------------------|--------------------|------------------------|----------------------|----------------------------|
| <b>Wellbore</b>  | Wellbore #1       |                    |                        |                      |                            |
| <b>Magnetics</b> | <b>Model Name</b> | <b>Sample Date</b> | <b>Declination (°)</b> | <b>Dip Angle (°)</b> | <b>Field Strength (nT)</b> |
|                  | IGRF200510        | 12/31/2009         | 7.74                   | 60.16                | 48,743                     |

|                          |                                |                     |                      |                      |
|--------------------------|--------------------------------|---------------------|----------------------|----------------------|
| <b>Design</b>            | Design #1                      |                     |                      |                      |
| <b>Audit Notes:</b>      |                                |                     |                      |                      |
| <b>Version:</b>          | <b>Phase:</b>                  | PROTOTYPE           | <b>Tie On Depth:</b> | 0.0                  |
| <b>Vertical Section:</b> | <b>Depth From (TVD) (usft)</b> | <b>+N/-S (usft)</b> | <b>+E/-W (usft)</b>  | <b>Direction (°)</b> |
|                          | 0.0                            | 0.0                 | 0.0                  | 10.01                |

| Plan Sections         |                 |             |                       |              |              |                         |                        |                       |         |                    |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|------------------------|-----------------------|---------|--------------------|
| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) | TFO (°) | Target             |
| 0.0                   | 0.00            | 0.00        | 0.0                   | 0.0          | 0.0          | 0.00                    | 0.00                   | 0.00                  | 0.00    |                    |
| 2,595.6               | 0.00            | 0.00        | 2,595.6               | 0.0          | 0.0          | 0.00                    | 0.00                   | 0.00                  | 0.00    |                    |
| 2,895.6               | 6.00            | 102.20      | 2,895.0               | -3.3         | 15.3         | 2.00                    | 2.00                   | 0.00                  | 102.20  |                    |
| 11,649.0              | 6.00            | 102.20      | 11,600.5              | -196.7       | 909.7        | 0.00                    | 0.00                   | 0.00                  | 0.00    |                    |
| 11,949.0              | 0.00            | 0.00        | 11,900.0              | -200.0       | 925.0        | 2.00                    | -2.00                  | 0.00                  | 180.00  |                    |
| 11,980.1              | 0.00            | 0.00        | 11,931.0              | -200.0       | 925.0        | 0.00                    | 0.00                   | 0.00                  | 0.00    |                    |
| 12,880.1              | 90.00           | 359.57      | 12,504.0              | 372.9        | 920.7        | 10.00                   | 10.00                  | 0.00                  | 359.57  |                    |
| 17,527.4              | 90.00           | 359.57      | 12,504.0              | 5,020.1      | 886.0        | 0.00                    | 0.00                   | 0.00                  | 0.00    | Vaca Draw #19H BHL |



# BTA

## Planning Report - Geographic

**Database:** EDM 5000.1 Single User Db  
**Company:** BTA Oil Producers, LLC  
**Project:** Lea County, NM (NAD 83)  
**Site:** Vaca Draw Sec 10, T25S, R33E  
**Well:** Vaca Draw #19H  
**Wellbore:** Wellbore #1  
**Design:** Design #1

**Local Co-ordinate Reference:** Well Vaca Draw #19H  
**TVD Reference:** GL @ 3377.0usft  
**MD Reference:** GL @ 3377.0usft  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature

### Planned Survey

| Measured<br>Depth<br>(usft) | Inclination<br>(°) | Azimuth<br>(°) | Vertical<br>Depth<br>(usft) | +N/-S<br>(usft) | +E/-W<br>(usft) | Map<br>Northing<br>(usft) | Map<br>Easting<br>(usft) | Latitude        | Longitude         |
|-----------------------------|--------------------|----------------|-----------------------------|-----------------|-----------------|---------------------------|--------------------------|-----------------|-------------------|
| 0.0                         | 0.00               | 0.00           | 0.0                         | 0.0             | 0.0             | 414,958.00                | 782,012.00               | 32° 8' 18.276 N | 103° 33' 20.787 W |
| 100.0                       | 0.00               | 0.00           | 100.0                       | 0.0             | 0.0             | 414,958.00                | 782,012.00               | 32° 8' 18.276 N | 103° 33' 20.787 W |
| 200.0                       | 0.00               | 0.00           | 200.0                       | 0.0             | 0.0             | 414,958.00                | 782,012.00               | 32° 8' 18.276 N | 103° 33' 20.787 W |
| 300.0                       | 0.00               | 0.00           | 300.0                       | 0.0             | 0.0             | 414,958.00                | 782,012.00               | 32° 8' 18.276 N | 103° 33' 20.787 W |
| 400.0                       | 0.00               | 0.00           | 400.0                       | 0.0             | 0.0             | 414,958.00                | 782,012.00               | 32° 8' 18.276 N | 103° 33' 20.787 W |
| 500.0                       | 0.00               | 0.00           | 500.0                       | 0.0             | 0.0             | 414,958.00                | 782,012.00               | 32° 8' 18.276 N | 103° 33' 20.787 W |
| 600.0                       | 0.00               | 0.00           | 600.0                       | 0.0             | 0.0             | 414,958.00                | 782,012.00               | 32° 8' 18.276 N | 103° 33' 20.787 W |
| 700.0                       | 0.00               | 0.00           | 700.0                       | 0.0             | 0.0             | 414,958.00                | 782,012.00               | 32° 8' 18.276 N | 103° 33' 20.787 W |
| 800.0                       | 0.00               | 0.00           | 800.0                       | 0.0             | 0.0             | 414,958.00                | 782,012.00               | 32° 8' 18.276 N | 103° 33' 20.787 W |
| 900.0                       | 0.00               | 0.00           | 900.0                       | 0.0             | 0.0             | 414,958.00                | 782,012.00               | 32° 8' 18.276 N | 103° 33' 20.787 W |
| 1,000.0                     | 0.00               | 0.00           | 1,000.0                     | 0.0             | 0.0             | 414,958.00                | 782,012.00               | 32° 8' 18.276 N | 103° 33' 20.787 W |
| 1,100.0                     | 0.00               | 0.00           | 1,100.0                     | 0.0             | 0.0             | 414,958.00                | 782,012.00               | 32° 8' 18.276 N | 103° 33' 20.787 W |
| 1,200.0                     | 0.00               | 0.00           | 1,200.0                     | 0.0             | 0.0             | 414,958.00                | 782,012.00               | 32° 8' 18.276 N | 103° 33' 20.787 W |
| 1,300.0                     | 0.00               | 0.00           | 1,300.0                     | 0.0             | 0.0             | 414,958.00                | 782,012.00               | 32° 8' 18.276 N | 103° 33' 20.787 W |
| 1,400.0                     | 0.00               | 0.00           | 1,400.0                     | 0.0             | 0.0             | 414,958.00                | 782,012.00               | 32° 8' 18.276 N | 103° 33' 20.787 W |
| 1,500.0                     | 0.00               | 0.00           | 1,500.0                     | 0.0             | 0.0             | 414,958.00                | 782,012.00               | 32° 8' 18.276 N | 103° 33' 20.787 W |
| 1,600.0                     | 0.00               | 0.00           | 1,600.0                     | 0.0             | 0.0             | 414,958.00                | 782,012.00               | 32° 8' 18.276 N | 103° 33' 20.787 W |
| 1,700.0                     | 0.00               | 0.00           | 1,700.0                     | 0.0             | 0.0             | 414,958.00                | 782,012.00               | 32° 8' 18.276 N | 103° 33' 20.787 W |
| 1,800.0                     | 0.00               | 0.00           | 1,800.0                     | 0.0             | 0.0             | 414,958.00                | 782,012.00               | 32° 8' 18.276 N | 103° 33' 20.787 W |
| 1,900.0                     | 0.00               | 0.00           | 1,900.0                     | 0.0             | 0.0             | 414,958.00                | 782,012.00               | 32° 8' 18.276 N | 103° 33' 20.787 W |
| 2,000.0                     | 0.00               | 0.00           | 2,000.0                     | 0.0             | 0.0             | 414,958.00                | 782,012.00               | 32° 8' 18.276 N | 103° 33' 20.787 W |
| 2,100.0                     | 0.00               | 0.00           | 2,100.0                     | 0.0             | 0.0             | 414,958.00                | 782,012.00               | 32° 8' 18.276 N | 103° 33' 20.787 W |
| 2,200.0                     | 0.00               | 0.00           | 2,200.0                     | 0.0             | 0.0             | 414,958.00                | 782,012.00               | 32° 8' 18.276 N | 103° 33' 20.787 W |
| 2,300.0                     | 0.00               | 0.00           | 2,300.0                     | 0.0             | 0.0             | 414,958.00                | 782,012.00               | 32° 8' 18.276 N | 103° 33' 20.787 W |
| 2,400.0                     | 0.00               | 0.00           | 2,400.0                     | 0.0             | 0.0             | 414,958.00                | 782,012.00               | 32° 8' 18.276 N | 103° 33' 20.787 W |
| 2,500.0                     | 0.00               | 0.00           | 2,500.0                     | 0.0             | 0.0             | 414,958.00                | 782,012.00               | 32° 8' 18.276 N | 103° 33' 20.787 W |
| 2,595.6                     | 0.00               | 0.00           | 2,595.6                     | 0.0             | 0.0             | 414,958.00                | 782,012.00               | 32° 8' 18.276 N | 103° 33' 20.787 W |
| 2,600.0                     | 0.09               | 102.20         | 2,600.0                     | 0.0             | 0.0             | 414,958.00                | 782,012.00               | 32° 8' 18.276 N | 103° 33' 20.787 W |
| 2,700.0                     | 2.09               | 102.20         | 2,700.0                     | -0.4            | 1.9             | 414,957.60                | 782,013.86               | 32° 8' 18.272 N | 103° 33' 20.765 W |
| 2,800.0                     | 4.09               | 102.20         | 2,799.8                     | -1.5            | 7.1             | 414,956.46                | 782,019.12               | 32° 8' 18.260 N | 103° 33' 20.704 W |
| 2,895.6                     | 6.00               | 102.20         | 2,895.0                     | -3.3            | 15.3            | 414,954.68                | 782,027.34               | 32° 8' 18.242 N | 103° 33' 20.609 W |
| 2,900.0                     | 6.00               | 102.20         | 2,899.4                     | -3.4            | 15.8            | 414,954.58                | 782,027.79               | 32° 8' 18.241 N | 103° 33' 20.604 W |
| 3,000.0                     | 6.00               | 102.20         | 2,998.9                     | -5.6            | 26.0            | 414,952.38                | 782,038.01               | 32° 8' 18.218 N | 103° 33' 20.485 W |
| 3,100.0                     | 6.00               | 102.20         | 3,098.3                     | -7.8            | 36.2            | 414,950.17                | 782,048.22               | 32° 8' 18.196 N | 103° 33' 20.366 W |
| 3,200.0                     | 6.00               | 102.20         | 3,197.8                     | -10.0           | 46.4            | 414,947.96                | 782,058.44               | 32° 8' 18.173 N | 103° 33' 20.248 W |
| 3,300.0                     | 6.00               | 102.20         | 3,297.2                     | -12.3           | 56.7            | 414,945.75                | 782,068.65               | 32° 8' 18.151 N | 103° 33' 20.129 W |
| 3,400.0                     | 6.00               | 102.20         | 3,396.7                     | -14.5           | 66.9            | 414,943.54                | 782,078.87               | 32° 8' 18.128 N | 103° 33' 20.011 W |
| 3,500.0                     | 6.00               | 102.20         | 3,496.1                     | -16.7           | 77.1            | 414,941.33                | 782,089.09               | 32° 8' 18.106 N | 103° 33' 19.892 W |
| 3,600.0                     | 6.00               | 102.20         | 3,595.6                     | -18.9           | 87.3            | 414,939.12                | 782,099.30               | 32° 8' 18.083 N | 103° 33' 19.773 W |
| 3,700.0                     | 6.00               | 102.20         | 3,695.0                     | -21.1           | 97.5            | 414,936.91                | 782,109.52               | 32° 8' 18.060 N | 103° 33' 19.655 W |
| 3,800.0                     | 6.00               | 102.20         | 3,794.5                     | -23.3           | 107.7           | 414,934.70                | 782,119.74               | 32° 8' 18.038 N | 103° 33' 19.536 W |
| 3,900.0                     | 6.00               | 102.20         | 3,893.9                     | -25.5           | 118.0           | 414,932.50                | 782,129.95               | 32° 8' 18.015 N | 103° 33' 19.417 W |
| 4,000.0                     | 6.00               | 102.20         | 3,993.4                     | -27.7           | 128.2           | 414,930.29                | 782,140.17               | 32° 8' 17.993 N | 103° 33' 19.299 W |
| 4,100.0                     | 6.00               | 102.20         | 4,092.9                     | -29.9           | 138.4           | 414,928.08                | 782,150.39               | 32° 8' 17.970 N | 103° 33' 19.180 W |
| 4,200.0                     | 6.00               | 102.20         | 4,192.3                     | -32.1           | 148.6           | 414,925.87                | 782,160.60               | 32° 8' 17.947 N | 103° 33' 19.061 W |
| 4,300.0                     | 6.00               | 102.20         | 4,291.8                     | -34.3           | 158.8           | 414,923.66                | 782,170.82               | 32° 8' 17.925 N | 103° 33' 18.943 W |
| 4,400.0                     | 6.00               | 102.20         | 4,391.2                     | -36.5           | 169.0           | 414,921.45                | 782,181.04               | 32° 8' 17.902 N | 103° 33' 18.824 W |
| 4,500.0                     | 6.00               | 102.20         | 4,490.7                     | -38.8           | 179.3           | 414,919.24                | 782,191.25               | 32° 8' 17.880 N | 103° 33' 18.706 W |
| 4,600.0                     | 6.00               | 102.20         | 4,590.1                     | -41.0           | 189.5           | 414,917.03                | 782,201.47               | 32° 8' 17.857 N | 103° 33' 18.587 W |
| 4,700.0                     | 6.00               | 102.20         | 4,689.6                     | -43.2           | 199.7           | 414,914.82                | 782,211.69               | 32° 8' 17.834 N | 103° 33' 18.468 W |
| 4,800.0                     | 6.00               | 102.20         | 4,789.0                     | -45.4           | 209.9           | 414,912.61                | 782,221.90               | 32° 8' 17.812 N | 103° 33' 18.350 W |
| 4,900.0                     | 6.00               | 102.20         | 4,888.5                     | -47.6           | 220.1           | 414,910.41                | 782,232.12               | 32° 8' 17.789 N | 103° 33' 18.231 W |
| 5,000.0                     | 6.00               | 102.20         | 4,987.9                     | -49.8           | 230.3           | 414,908.20                | 782,242.34               | 32° 8' 17.767 N | 103° 33' 18.112 W |
| 5,100.0                     | 6.00               | 102.20         | 5,087.4                     | -52.0           | 240.6           | 414,905.99                | 782,252.55               | 32° 8' 17.744 N | 103° 33' 17.994 W |
| 5,200.0                     | 6.00               | 102.20         | 5,186.8                     | -54.2           | 250.8           | 414,903.78                | 782,262.77               | 32° 8' 17.722 N | 103° 33' 17.875 W |

**BTA**  
Planning Report - Geographic

**Database:** EDM 5000.1 Single User Db  
**Company:** BTA Oil Producers, LLC  
**Project:** Lea County, NM (NAD 83)  
**Site:** Vaca Draw Sec 10, T25S, R33E  
**Well:** Vaca Draw #19H  
**Wellbore:** Wellbore #1  
**Design:** Design #1

**Local Co-ordinate Reference:** Well Vaca Draw #19H  
**TVD Reference:** GL @ 3377.0usft  
**MD Reference:** GL @ 3377.0usft  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature

**Planned Survey**

| Measured<br>Depth<br>(usft) | Inclination<br>(°) | Azimuth<br>(°) | Vertical<br>Depth<br>(usft) | +N/-S<br>(usft) | +E/-W<br>(usft) | Map<br>Northing<br>(usft) | Map<br>Easting<br>(usft) | Latitude        | Longitude         |
|-----------------------------|--------------------|----------------|-----------------------------|-----------------|-----------------|---------------------------|--------------------------|-----------------|-------------------|
| 5,300.0                     | 6.00               | 102.20         | 5,286.3                     | -56.4           | 261.0           | 414,901.57                | 782,272.98               | 32° 8' 17.699 N | 103° 33' 17.757 W |
| 5,400.0                     | 6.00               | 102.20         | 5,385.7                     | -58.6           | 271.2           | 414,899.36                | 782,283.20               | 32° 8' 17.676 N | 103° 33' 17.638 W |
| 5,500.0                     | 6.00               | 102.20         | 5,485.2                     | -60.8           | 281.4           | 414,897.15                | 782,293.42               | 32° 8' 17.654 N | 103° 33' 17.519 W |
| 5,600.0                     | 6.00               | 102.20         | 5,584.6                     | -63.1           | 291.6           | 414,894.94                | 782,303.63               | 32° 8' 17.631 N | 103° 33' 17.401 W |
| 5,700.0                     | 6.00               | 102.20         | 5,684.1                     | -65.3           | 301.9           | 414,892.73                | 782,313.85               | 32° 8' 17.609 N | 103° 33' 17.282 W |
| 5,800.0                     | 6.00               | 102.20         | 5,783.5                     | -67.5           | 312.1           | 414,890.52                | 782,324.07               | 32° 8' 17.586 N | 103° 33' 17.163 W |
| 5,900.0                     | 6.00               | 102.20         | 5,883.0                     | -69.7           | 322.3           | 414,888.32                | 782,334.28               | 32° 8' 17.563 N | 103° 33' 17.045 W |
| 6,000.0                     | 6.00               | 102.20         | 5,982.4                     | -71.9           | 332.5           | 414,886.11                | 782,344.50               | 32° 8' 17.541 N | 103° 33' 16.926 W |
| 6,100.0                     | 6.00               | 102.20         | 6,081.9                     | -74.1           | 342.7           | 414,883.90                | 782,354.72               | 32° 8' 17.518 N | 103° 33' 16.808 W |
| 6,200.0                     | 6.00               | 102.20         | 6,181.3                     | -76.3           | 352.9           | 414,881.69                | 782,364.93               | 32° 8' 17.496 N | 103° 33' 16.689 W |
| 6,300.0                     | 6.00               | 102.20         | 6,280.8                     | -78.5           | 363.2           | 414,879.48                | 782,375.15               | 32° 8' 17.473 N | 103° 33' 16.570 W |
| 6,400.0                     | 6.00               | 102.20         | 6,380.3                     | -80.7           | 373.4           | 414,877.27                | 782,385.37               | 32° 8' 17.450 N | 103° 33' 16.452 W |
| 6,500.0                     | 6.00               | 102.20         | 6,479.7                     | -82.9           | 383.6           | 414,875.06                | 782,395.58               | 32° 8' 17.428 N | 103° 33' 16.333 W |
| 6,600.0                     | 6.00               | 102.20         | 6,579.2                     | -85.1           | 393.8           | 414,872.85                | 782,405.80               | 32° 8' 17.405 N | 103° 33' 16.214 W |
| 6,700.0                     | 6.00               | 102.20         | 6,678.6                     | -87.4           | 404.0           | 414,870.64                | 782,416.02               | 32° 8' 17.383 N | 103° 33' 16.096 W |
| 6,800.0                     | 6.00               | 102.20         | 6,778.1                     | -89.6           | 414.2           | 414,868.43                | 782,426.23               | 32° 8' 17.360 N | 103° 33' 15.977 W |
| 6,900.0                     | 6.00               | 102.20         | 6,877.5                     | -91.8           | 424.5           | 414,866.23                | 782,436.45               | 32° 8' 17.337 N | 103° 33' 15.858 W |
| 7,000.0                     | 6.00               | 102.20         | 6,977.0                     | -94.0           | 434.7           | 414,864.02                | 782,446.67               | 32° 8' 17.315 N | 103° 33' 15.740 W |
| 7,100.0                     | 6.00               | 102.20         | 7,076.4                     | -96.2           | 444.9           | 414,861.81                | 782,456.88               | 32° 8' 17.292 N | 103° 33' 15.621 W |
| 7,200.0                     | 6.00               | 102.20         | 7,175.9                     | -98.4           | 455.1           | 414,859.60                | 782,467.10               | 32° 8' 17.270 N | 103° 33' 15.503 W |
| 7,300.0                     | 6.00               | 102.20         | 7,275.3                     | -100.6          | 465.3           | 414,857.39                | 782,477.32               | 32° 8' 17.247 N | 103° 33' 15.384 W |
| 7,400.0                     | 6.00               | 102.20         | 7,374.8                     | -102.8          | 475.5           | 414,855.18                | 782,487.53               | 32° 8' 17.225 N | 103° 33' 15.265 W |
| 7,500.0                     | 6.00               | 102.20         | 7,474.2                     | -105.0          | 485.8           | 414,852.97                | 782,497.75               | 32° 8' 17.202 N | 103° 33' 15.147 W |
| 7,600.0                     | 6.00               | 102.20         | 7,573.7                     | -107.2          | 496.0           | 414,850.76                | 782,507.96               | 32° 8' 17.179 N | 103° 33' 15.028 W |
| 7,700.0                     | 6.00               | 102.20         | 7,673.1                     | -109.4          | 506.2           | 414,848.55                | 782,518.18               | 32° 8' 17.157 N | 103° 33' 14.909 W |
| 7,800.0                     | 6.00               | 102.20         | 7,772.6                     | -111.7          | 516.4           | 414,846.35                | 782,528.40               | 32° 8' 17.134 N | 103° 33' 14.791 W |
| 7,900.0                     | 6.00               | 102.20         | 7,872.0                     | -113.9          | 526.6           | 414,844.14                | 782,538.61               | 32° 8' 17.112 N | 103° 33' 14.672 W |
| 8,000.0                     | 6.00               | 102.20         | 7,971.5                     | -116.1          | 536.8           | 414,841.93                | 782,548.83               | 32° 8' 17.089 N | 103° 33' 14.554 W |
| 8,100.0                     | 6.00               | 102.20         | 8,070.9                     | -118.3          | 547.1           | 414,839.72                | 782,559.05               | 32° 8' 17.066 N | 103° 33' 14.435 W |
| 8,200.0                     | 6.00               | 102.20         | 8,170.4                     | -120.5          | 557.3           | 414,837.51                | 782,569.26               | 32° 8' 17.044 N | 103° 33' 14.316 W |
| 8,300.0                     | 6.00               | 102.20         | 8,269.8                     | -122.7          | 567.5           | 414,835.30                | 782,579.48               | 32° 8' 17.021 N | 103° 33' 14.198 W |
| 8,400.0                     | 6.00               | 102.20         | 8,369.3                     | -124.9          | 577.7           | 414,833.09                | 782,589.70               | 32° 8' 16.999 N | 103° 33' 14.079 W |
| 8,500.0                     | 6.00               | 102.20         | 8,468.8                     | -127.1          | 587.9           | 414,830.88                | 782,599.91               | 32° 8' 16.976 N | 103° 33' 13.960 W |
| 8,600.0                     | 6.00               | 102.20         | 8,568.2                     | -129.3          | 598.1           | 414,828.67                | 782,610.13               | 32° 8' 16.953 N | 103° 33' 13.842 W |
| 8,700.0                     | 6.00               | 102.20         | 8,667.7                     | -131.5          | 608.4           | 414,826.46                | 782,620.35               | 32° 8' 16.931 N | 103° 33' 13.723 W |
| 8,800.0                     | 6.00               | 102.20         | 8,767.1                     | -133.7          | 618.6           | 414,824.26                | 782,630.56               | 32° 8' 16.908 N | 103° 33' 13.605 W |
| 8,900.0                     | 6.00               | 102.20         | 8,866.6                     | -136.0          | 628.8           | 414,822.05                | 782,640.78               | 32° 8' 16.886 N | 103° 33' 13.486 W |
| 9,000.0                     | 6.00               | 102.20         | 8,966.0                     | -138.2          | 639.0           | 414,819.84                | 782,651.00               | 32° 8' 16.863 N | 103° 33' 13.367 W |
| 9,100.0                     | 6.00               | 102.20         | 9,065.5                     | -140.4          | 649.2           | 414,817.63                | 782,661.21               | 32° 8' 16.841 N | 103° 33' 13.249 W |
| 9,200.0                     | 6.00               | 102.20         | 9,164.9                     | -142.6          | 659.4           | 414,815.42                | 782,671.43               | 32° 8' 16.818 N | 103° 33' 13.130 W |
| 9,300.0                     | 6.00               | 102.20         | 9,264.4                     | -144.8          | 669.7           | 414,813.21                | 782,681.65               | 32° 8' 16.795 N | 103° 33' 13.011 W |
| 9,400.0                     | 6.00               | 102.20         | 9,363.8                     | -147.0          | 679.9           | 414,811.00                | 782,691.86               | 32° 8' 16.773 N | 103° 33' 12.893 W |
| 9,500.0                     | 6.00               | 102.20         | 9,463.3                     | -149.2          | 690.1           | 414,808.79                | 782,702.08               | 32° 8' 16.750 N | 103° 33' 12.774 W |
| 9,600.0                     | 6.00               | 102.20         | 9,562.7                     | -151.4          | 700.3           | 414,806.58                | 782,712.29               | 32° 8' 16.728 N | 103° 33' 12.655 W |
| 9,700.0                     | 6.00               | 102.20         | 9,662.2                     | -153.6          | 710.5           | 414,804.37                | 782,722.51               | 32° 8' 16.705 N | 103° 33' 12.537 W |
| 9,800.0                     | 6.00               | 102.20         | 9,761.6                     | -155.8          | 720.7           | 414,802.17                | 782,732.73               | 32° 8' 16.682 N | 103° 33' 12.418 W |
| 9,900.0                     | 6.00               | 102.20         | 9,861.1                     | -158.0          | 731.0           | 414,799.96                | 782,742.94               | 32° 8' 16.660 N | 103° 33' 12.300 W |
| 10,000.0                    | 6.00               | 102.20         | 9,960.5                     | -160.3          | 741.2           | 414,797.75                | 782,753.16               | 32° 8' 16.637 N | 103° 33' 12.181 W |
| 10,100.0                    | 6.00               | 102.20         | 10,060.0                    | -162.5          | 751.4           | 414,795.54                | 782,763.38               | 32° 8' 16.615 N | 103° 33' 12.062 W |
| 10,200.0                    | 6.00               | 102.20         | 10,159.4                    | -164.7          | 761.6           | 414,793.33                | 782,773.59               | 32° 8' 16.592 N | 103° 33' 11.944 W |
| 10,300.0                    | 6.00               | 102.20         | 10,258.9                    | -166.9          | 771.8           | 414,791.12                | 782,783.81               | 32° 8' 16.569 N | 103° 33' 11.825 W |
| 10,400.0                    | 6.00               | 102.20         | 10,358.3                    | -169.1          | 782.0           | 414,788.91                | 782,794.03               | 32° 8' 16.547 N | 103° 33' 11.706 W |
| 10,500.0                    | 6.00               | 102.20         | 10,457.8                    | -171.3          | 792.3           | 414,786.70                | 782,804.24               | 32° 8' 16.524 N | 103° 33' 11.588 W |
| 10,600.0                    | 6.00               | 102.20         | 10,557.2                    | -173.5          | 802.5           | 414,784.49                | 782,814.46               | 32° 8' 16.502 N | 103° 33' 11.469 W |
| 10,700.0                    | 6.00               | 102.20         | 10,656.7                    | -175.7          | 812.7           | 414,782.28                | 782,824.68               | 32° 8' 16.479 N | 103° 33' 11.351 W |

# BTA

## Planning Report - Geographic

**Database:** EDM 5000.1 Single User Db  
**Company:** BTA Oil Producers, LLC  
**Project:** Lea County, NM (NAD 83)  
**Site:** Vaca Draw Sec 10, T25S, R33E  
**Well:** Vaca Draw #19H  
**Wellbore:** Wellbore #1  
**Design:** Design #1

**Local Co-ordinate Reference:** Well Vaca Draw #19H  
**TVD Reference:** GL @ 3377.0usft  
**MD Reference:** GL @ 3377.0usft  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature

### Planned Survey

| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Map Northing (usft) | Map Easting (usft) | Latitude        | Longitude         |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|---------------------|--------------------|-----------------|-------------------|
| 10,800.0              | 6.00            | 102.20      | 10,756.2              | -177.9       | 822.9        | 414,780.08          | 782,834.89         | 32° 8' 16.456 N | 103° 33' 11.232 W |
| 10,900.0              | 6.00            | 102.20      | 10,855.6              | -180.1       | 833.1        | 414,777.87          | 782,845.11         | 32° 8' 16.434 N | 103° 33' 11.113 W |
| 11,000.0              | 6.00            | 102.20      | 10,955.1              | -182.3       | 843.3        | 414,775.66          | 782,855.33         | 32° 8' 16.411 N | 103° 33' 10.995 W |
| 11,100.0              | 6.00            | 102.20      | 11,054.5              | -184.6       | 853.6        | 414,773.45          | 782,865.54         | 32° 8' 16.389 N | 103° 33' 10.876 W |
| 11,200.0              | 6.00            | 102.20      | 11,154.0              | -186.8       | 863.8        | 414,771.24          | 782,875.76         | 32° 8' 16.366 N | 103° 33' 10.757 W |
| 11,300.0              | 6.00            | 102.20      | 11,253.4              | -189.0       | 874.0        | 414,769.03          | 782,885.98         | 32° 8' 16.344 N | 103° 33' 10.639 W |
| 11,400.0              | 6.00            | 102.20      | 11,352.9              | -191.2       | 884.2        | 414,766.82          | 782,896.19         | 32° 8' 16.321 N | 103° 33' 10.520 W |
| 11,500.0              | 6.00            | 102.20      | 11,452.3              | -193.4       | 894.4        | 414,764.61          | 782,906.41         | 32° 8' 16.298 N | 103° 33' 10.402 W |
| 11,600.0              | 6.00            | 102.20      | 11,551.8              | -195.6       | 904.6        | 414,762.40          | 782,916.62         | 32° 8' 16.276 N | 103° 33' 10.283 W |
| 11,649.0              | 6.00            | 102.20      | 11,600.5              | -196.7       | 909.7        | 414,761.32          | 782,921.64         | 32° 8' 16.265 N | 103° 33' 10.225 W |
| 11,700.0              | 4.98            | 102.20      | 11,651.3              | -197.7       | 914.4        | 414,760.29          | 782,926.40         | 32° 8' 16.254 N | 103° 33' 10.169 W |
| 11,800.0              | 2.98            | 102.20      | 11,751.0              | -199.2       | 921.2        | 414,758.82          | 782,933.19         | 32° 8' 16.239 N | 103° 33' 10.091 W |
| 11,900.0              | 0.98            | 102.20      | 11,851.0              | -199.9       | 924.6        | 414,758.09          | 782,936.56         | 32° 8' 16.232 N | 103° 33' 10.051 W |
| 11,949.0              | 0.00            | 0.00        | 11,900.0              | -200.0       | 925.0        | 414,758.00          | 782,936.97         | 32° 8' 16.231 N | 103° 33' 10.047 W |
| 11,980.1              | 0.00            | 0.00        | 11,931.0              | -200.0       | 925.0        | 414,758.00          | 782,936.97         | 32° 8' 16.231 N | 103° 33' 10.047 W |
| 12,000.0              | 1.99            | 359.57      | 11,950.9              | -199.7       | 925.0        | 414,758.35          | 782,936.97         | 32° 8' 16.234 N | 103° 33' 10.047 W |
| 12,100.0              | 11.99           | 359.57      | 12,050.1              | -187.5       | 924.9        | 414,770.51          | 782,936.88         | 32° 8' 16.354 N | 103° 33' 10.047 W |
| 12,200.0              | 21.99           | 359.57      | 12,145.6              | -158.3       | 924.7        | 414,799.69          | 782,936.66         | 32° 8' 16.643 N | 103° 33' 10.047 W |
| 12,300.0              | 31.99           | 359.57      | 12,234.6              | -113.0       | 924.4        | 414,845.01          | 782,936.33         | 32° 8' 17.092 N | 103° 33' 10.047 W |
| 12,400.0              | 41.99           | 359.57      | 12,314.4              | -52.9        | 923.9        | 414,905.10          | 782,935.88         | 32° 8' 17.686 N | 103° 33' 10.047 W |
| 12,500.0              | 51.99           | 359.57      | 12,382.5              | 20.1         | 923.4        | 414,978.13          | 782,935.33         | 32° 8' 18.409 N | 103° 33' 10.047 W |
| 12,600.0              | 61.99           | 359.57      | 12,436.9              | 103.9        | 922.7        | 415,061.88          | 782,934.71         | 32° 8' 19.238 N | 103° 33' 10.047 W |
| 12,700.0              | 71.99           | 359.57      | 12,475.9              | 195.8        | 922.0        | 415,153.80          | 782,934.02         | 32° 8' 20.147 N | 103° 33' 10.048 W |
| 12,800.0              | 81.99           | 359.57      | 12,498.4              | 293.1        | 921.3        | 415,251.11          | 782,933.29         | 32° 8' 21.110 N | 103° 33' 10.048 W |
| 12,880.1              | 90.00           | 359.57      | 12,504.0              | 372.9        | 920.7        | 415,330.93          | 782,932.70         | 32° 8' 21.900 N | 103° 33' 10.048 W |
| 12,900.0              | 90.00           | 359.57      | 12,504.0              | 392.9        | 920.6        | 415,350.84          | 782,932.55         | 32° 8' 22.097 N | 103° 33' 10.048 W |
| 13,000.0              | 90.00           | 359.57      | 12,504.0              | 492.8        | 919.8        | 415,450.83          | 782,931.80         | 32° 8' 23.087 N | 103° 33' 10.048 W |
| 13,100.0              | 90.00           | 359.57      | 12,504.0              | 592.8        | 919.1        | 415,550.83          | 782,931.05         | 32° 8' 24.076 N | 103° 33' 10.049 W |
| 13,200.0              | 90.00           | 359.57      | 12,504.0              | 692.8        | 918.3        | 415,650.82          | 782,930.31         | 32° 8' 25.066 N | 103° 33' 10.049 W |
| 13,300.0              | 90.00           | 359.57      | 12,504.0              | 792.8        | 917.6        | 415,750.82          | 782,929.56         | 32° 8' 26.055 N | 103° 33' 10.049 W |
| 13,400.0              | 90.00           | 359.57      | 12,504.0              | 892.8        | 916.8        | 415,850.81          | 782,928.81         | 32° 8' 27.045 N | 103° 33' 10.049 W |
| 13,500.0              | 90.00           | 359.57      | 12,504.0              | 992.8        | 916.1        | 415,950.81          | 782,928.07         | 32° 8' 28.035 N | 103° 33' 10.050 W |
| 13,600.0              | 90.00           | 359.57      | 12,504.0              | 1,092.8      | 915.3        | 416,050.80          | 782,927.32         | 32° 8' 29.024 N | 103° 33' 10.050 W |
| 13,700.0              | 90.00           | 359.57      | 12,504.0              | 1,192.8      | 914.6        | 416,150.80          | 782,926.57         | 32° 8' 30.014 N | 103° 33' 10.050 W |
| 13,800.0              | 90.00           | 359.57      | 12,504.0              | 1,292.8      | 913.9        | 416,250.79          | 782,925.83         | 32° 8' 31.003 N | 103° 33' 10.050 W |
| 13,900.0              | 90.00           | 359.57      | 12,504.0              | 1,392.8      | 913.1        | 416,350.79          | 782,925.08         | 32° 8' 31.993 N | 103° 33' 10.051 W |
| 14,000.0              | 90.00           | 359.57      | 12,504.0              | 1,492.8      | 912.4        | 416,450.78          | 782,924.33         | 32° 8' 32.982 N | 103° 33' 10.051 W |
| 14,100.0              | 90.00           | 359.57      | 12,504.0              | 1,592.8      | 911.6        | 416,550.78          | 782,923.59         | 32° 8' 33.972 N | 103° 33' 10.051 W |
| 14,200.0              | 90.00           | 359.57      | 12,504.0              | 1,692.8      | 910.9        | 416,650.77          | 782,922.84         | 32° 8' 34.961 N | 103° 33' 10.051 W |
| 14,300.0              | 90.00           | 359.57      | 12,504.0              | 1,792.8      | 910.1        | 416,750.77          | 782,922.09         | 32° 8' 35.951 N | 103° 33' 10.052 W |
| 14,400.0              | 90.00           | 359.57      | 12,504.0              | 1,892.8      | 909.4        | 416,850.76          | 782,921.35         | 32° 8' 36.940 N | 103° 33' 10.052 W |
| 14,500.0              | 90.00           | 359.57      | 12,504.0              | 1,992.8      | 908.6        | 416,950.76          | 782,920.60         | 32° 8' 37.930 N | 103° 33' 10.052 W |
| 14,600.0              | 90.00           | 359.57      | 12,504.0              | 2,092.8      | 907.9        | 417,050.75          | 782,919.86         | 32° 8' 38.919 N | 103° 33' 10.052 W |
| 14,700.0              | 90.00           | 359.57      | 12,504.0              | 2,192.8      | 907.1        | 417,150.75          | 782,919.11         | 32° 8' 39.909 N | 103° 33' 10.053 W |
| 14,800.0              | 90.00           | 359.57      | 12,504.0              | 2,292.8      | 906.4        | 417,250.74          | 782,918.36         | 32° 8' 40.898 N | 103° 33' 10.053 W |
| 14,900.0              | 90.00           | 359.57      | 12,504.0              | 2,392.8      | 905.6        | 417,350.74          | 782,917.62         | 32° 8' 41.888 N | 103° 33' 10.053 W |
| 15,000.0              | 90.00           | 359.57      | 12,504.0              | 2,492.8      | 904.9        | 417,450.73          | 782,916.87         | 32° 8' 42.877 N | 103° 33' 10.053 W |
| 15,100.0              | 90.00           | 359.57      | 12,504.0              | 2,592.8      | 904.1        | 417,550.72          | 782,916.12         | 32° 8' 43.867 N | 103° 33' 10.054 W |
| 15,200.0              | 90.00           | 359.57      | 12,504.0              | 2,692.8      | 903.4        | 417,650.72          | 782,915.38         | 32° 8' 44.857 N | 103° 33' 10.054 W |
| 15,300.0              | 90.00           | 359.57      | 12,504.0              | 2,792.8      | 902.7        | 417,750.71          | 782,914.63         | 32° 8' 45.846 N | 103° 33' 10.054 W |
| 15,400.0              | 90.00           | 359.57      | 12,504.0              | 2,892.8      | 901.9        | 417,850.71          | 782,913.88         | 32° 8' 46.836 N | 103° 33' 10.054 W |
| 15,500.0              | 90.00           | 359.57      | 12,504.0              | 2,992.8      | 901.2        | 417,950.70          | 782,913.14         | 32° 8' 47.825 N | 103° 33' 10.055 W |
| 15,600.0              | 90.00           | 359.57      | 12,504.0              | 3,092.8      | 900.4        | 418,050.70          | 782,912.39         | 32° 8' 48.815 N | 103° 33' 10.055 W |
| 15,700.0              | 90.00           | 359.57      | 12,504.0              | 3,192.8      | 899.7        | 418,150.69          | 782,911.64         | 32° 8' 49.804 N | 103° 33' 10.055 W |
| 15,800.0              | 90.00           | 359.57      | 12,504.0              | 3,292.8      | 898.9        | 418,250.69          | 782,910.90         | 32° 8' 50.794 N | 103° 33' 10.056 W |

# BTA

## Planning Report - Geographic

**Database:** EDM 5000.1 Single User Db  
**Company:** BTA Oil Producers, LLC  
**Project:** Lea County, NM (NAD 83)  
**Site:** Vaca Draw Sec 10, T25S, R33E  
**Well:** Vaca Draw #19H  
**Wellbore:** Wellbore #1  
**Design:** Design #1

**Local Co-ordinate Reference:** Well Vaca Draw #19H  
**TVD Reference:** GL @ 3377.0usft  
**MD Reference:** GL @ 3377.0usft  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature

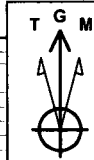
### Planned Survey

| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Map Northing (usft) | Map Easting (usft) | Latitude        | Longitude         |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|---------------------|--------------------|-----------------|-------------------|
| 15,900.0              | 90.00           | 359.57      | 12,504.0              | 3,392.8      | 898.2        | 418,350.68          | 782,910.15         | 32° 8' 51.783 N | 103° 33' 10.056 W |
| 16,000.0              | 90.00           | 359.57      | 12,504.0              | 3,492.8      | 897.4        | 418,450.68          | 782,909.40         | 32° 8' 52.773 N | 103° 33' 10.056 W |
| 16,100.0              | 90.00           | 359.57      | 12,504.0              | 3,592.8      | 896.7        | 418,550.67          | 782,908.66         | 32° 8' 53.762 N | 103° 33' 10.056 W |
| 16,200.0              | 90.00           | 359.57      | 12,504.0              | 3,692.8      | 895.9        | 418,650.67          | 782,907.91         | 32° 8' 54.752 N | 103° 33' 10.057 W |
| 16,300.0              | 90.00           | 359.57      | 12,504.0              | 3,792.8      | 895.2        | 418,750.66          | 782,907.16         | 32° 8' 55.741 N | 103° 33' 10.057 W |
| 16,400.0              | 90.00           | 359.57      | 12,504.0              | 3,892.8      | 894.4        | 418,850.66          | 782,906.42         | 32° 8' 56.731 N | 103° 33' 10.057 W |
| 16,500.0              | 90.00           | 359.57      | 12,504.0              | 3,992.8      | 893.7        | 418,950.65          | 782,905.67         | 32° 8' 57.720 N | 103° 33' 10.057 W |
| 16,600.0              | 90.00           | 359.57      | 12,504.0              | 4,092.7      | 892.9        | 419,050.65          | 782,904.92         | 32° 8' 58.710 N | 103° 33' 10.058 W |
| 16,700.0              | 90.00           | 359.57      | 12,504.0              | 4,192.7      | 892.2        | 419,150.64          | 782,904.18         | 32° 8' 59.699 N | 103° 33' 10.058 W |
| 16,800.0              | 90.00           | 359.57      | 12,504.0              | 4,292.7      | 891.5        | 419,250.64          | 782,903.43         | 32° 9' 0.689 N  | 103° 33' 10.058 W |
| 16,900.0              | 90.00           | 359.57      | 12,504.0              | 4,392.7      | 890.7        | 419,350.63          | 782,902.68         | 32° 9' 1.678 N  | 103° 33' 10.058 W |
| 17,000.0              | 90.00           | 359.57      | 12,504.0              | 4,492.7      | 890.0        | 419,450.63          | 782,901.94         | 32° 9' 2.668 N  | 103° 33' 10.059 W |
| 17,100.0              | 90.00           | 359.57      | 12,504.0              | 4,592.7      | 889.2        | 419,550.62          | 782,901.19         | 32° 9' 3.658 N  | 103° 33' 10.059 W |
| 17,200.0              | 90.00           | 359.57      | 12,504.0              | 4,692.7      | 888.5        | 419,650.61          | 782,900.44         | 32° 9' 4.647 N  | 103° 33' 10.059 W |
| 17,300.0              | 90.00           | 359.57      | 12,504.0              | 4,792.7      | 887.7        | 419,750.61          | 782,899.70         | 32° 9' 5.637 N  | 103° 33' 10.059 W |
| 17,400.0              | 90.00           | 359.57      | 12,504.0              | 4,892.7      | 887.0        | 419,850.60          | 782,898.95         | 32° 9' 6.626 N  | 103° 33' 10.060 W |
| 17,500.0              | 90.00           | 359.57      | 12,504.0              | 4,992.7      | 886.2        | 419,950.60          | 782,898.20         | 32° 9' 7.616 N  | 103° 33' 10.060 W |
| 17,527.4              | 90.00           | 359.57      | 12,504.0              | 5,020.1      | 886.0        | 419,978.00          | 782,898.00         | 32° 9' 7.887 N  | 103° 33' 10.060 W |

### Design Targets

| Target Name               | Dip Angle (°) | Dip Dir. (°) | TVD (usft) | +N/-S (usft) | +E/-W (usft) | Northing (usft) | Easting (usft) | Latitude       | Longitude         |
|---------------------------|---------------|--------------|------------|--------------|--------------|-----------------|----------------|----------------|-------------------|
| - hit/miss target         |               |              |            |              |              |                 |                |                |                   |
| - Shape                   |               |              |            |              |              |                 |                |                |                   |
| Vaca Draw #19H BHL        | 0.00          | 0.00         | 12,504.0   | 5,020.1      | 886.0        | 419,978.00      | 782,898.00     | 32° 9' 7.887 N | 103° 33' 10.060 W |
| - plan hits target center |               |              |            |              |              |                 |                |                |                   |
| - Point                   |               |              |            |              |              |                 |                |                |                   |

# BTA Oil Producers, LLC



Azimuths to Grid North  
 True North: -0.41°  
 Magnetic North: 7.32°  
 Magnetic Field  
 Strength: 48743.4snT  
 Dip Angle: 60.16°  
 Date: 12/31/2009  
 Model: IGRF200510

## SITE DETAILS: Vaca Draw Sec 10, T25S, R33E

Site Centre Northing: 419812.34  
 Easting: 779596.22

Positional Uncertainty: 0.0  
 Convergence: 0.41  
 Local North: Grid

## SECTION DETAILS

| Sec | MD      | Inc   | Azi    | TVD     | +N/-S  | +E/-W | Dleg  |
|-----|---------|-------|--------|---------|--------|-------|-------|
| 1   | 0.0     | 0.00  | 0.00   | 0.0     | 0.0    | 0.0   | 0.00  |
| 2   | 2595.6  | 0.00  | 0.00   | 2595.6  | 0.0    | 0.0   | 0.00  |
| 3   | 2895.6  | 6.00  | 102.20 | 2895.0  | -3.3   | 15.3  | 2.00  |
| 4   | 11649.0 | 6.00  | 102.20 | 11600.5 | -196.7 | 909.7 | 0.00  |
| 5   | 11949.0 | 0.00  | 0.00   | 11900.0 | -200.0 | 925.0 | 2.00  |
| 6   | 11980.1 | 0.00  | 0.00   | 11931.0 | -200.0 | 925.0 | 0.00  |
| 7   | 12880.1 | 90.00 | 359.57 | 12504.0 | 372.9  | 920.7 | 10.00 |
| 8   | 17527.4 | 90.00 | 359.57 | 12504.0 | 5020.1 | 886.0 | 0.00  |

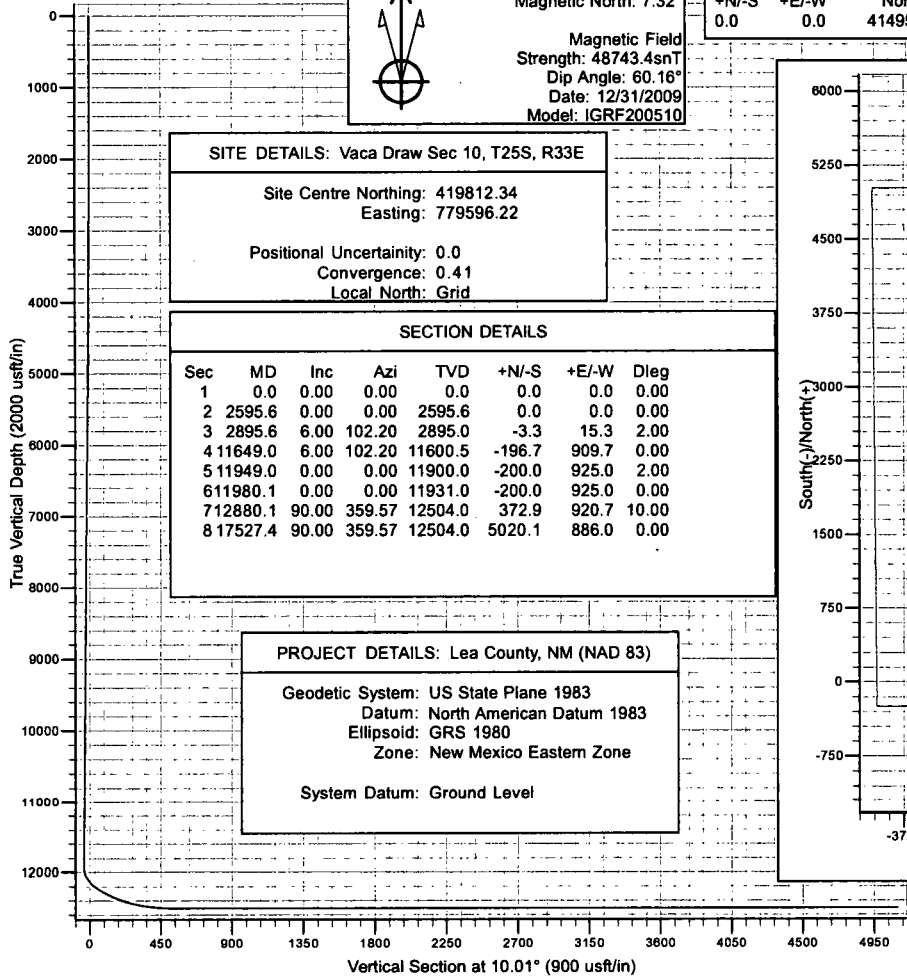
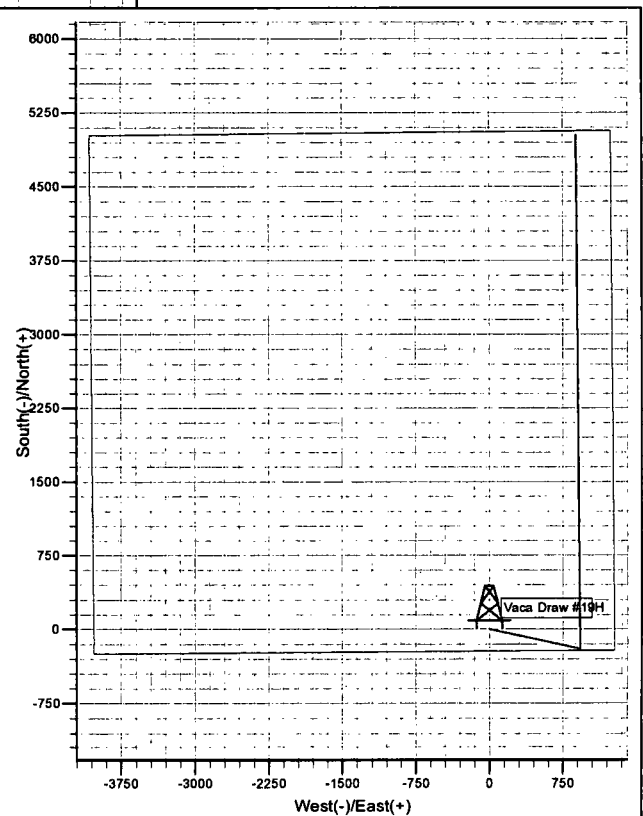
## PROJECT DETAILS: Lea County, NM (NAD 83)

Geodetic System: US State Plane 1983  
 Datum: North American Datum 1983  
 Ellipsoid: GRS 1980  
 Zone: New Mexico Eastern Zone

System Datum: Ground Level

## WELL DETAILS: Vaca Draw #19H

|       |       |           |               |           |                   |
|-------|-------|-----------|---------------|-----------|-------------------|
| +N/-S | +E/-W | Northing  | Ground Level: | 3377.0    | Longitude         |
| 0.0   | 0.0   | 414958.00 | Easting       | 782012.00 | 32° 8' 18.276 N   |
|       |       |           | Latitude      |           | 103° 33' 20.787 W |



## **BTA OIL PRODUCERS LLC**



### **HYDROGEN SULFIDE DRILLING OPERATIONS PLAN**

#### **1. HYDROGEN SULFIDE TRAINING**

All personnel, whether regularly assigned, contracted, or employed on an unscheduled basis, will receive training from a qualified instructor in the following areas prior to commencing drilling operations on this well:

- a. The hazards and characteristics of hydrogen sulfide (H<sub>2</sub>S).
- b. The proper use and maintenance of personal protective equipment and life support systems.
- c. The proper use of H<sub>2</sub>S detectors, alarms, warning systems, briefing areas, evacuation procedures, and prevailing winds.
- d. The proper techniques for first aid and rescue procedures.

In addition, supervisory personnel will be trained in the following areas:

- a. The effects of H<sub>2</sub>S on metal components. If high tensile tubulars are to be used, personnel will be trained in their special maintenance requirements.
- b. Corrective action and shut-in procedures when drilling or reworking a well and blowout prevention and well control procedures.
- c. The contents and requirements of the H<sub>2</sub>S Drilling Operations Plan and the Public Protection Plan.

There will be an initial training session just prior to encountering a known or probable H<sub>2</sub>S zone (within 3 days or 500 feet) and weekly H<sub>2</sub>S and well control drills for all personnel in each crew. The initial training session shall include a review of the site specific H<sub>2</sub>S Drilling Operations Plan and the Public Protection Plan. This plan shall be available at the well site. All personnel will be required to carry documentation that they have received the proper training.

#### **2. H<sub>2</sub>S SAFETY EQUIPMENT AND SYSTEMS**

Note: All H<sub>2</sub>S safety equipment and systems will be installed, tested, and operational when drilling reaches a depth of 500 feet above, or three days prior to penetrating the first zone containing or reasonably expected to contain H<sub>2</sub>S. If H<sub>2</sub>S greater than 100 ppm is encountered in the gas stream we will shut in and install H<sub>2</sub>S equipment.

- a. Well Control Equipment:
  - Flare line.
  - Choke manifold with remotely operated choke.
  - Blind rams and pipe rams to accommodate all pipe sizes with properly sized closing unit.
  - Auxiliary equipment to include: annular preventer, mud-gas separator, rotating head.
- b. Protective equipment for essential personnel:
  - Mark II Surviveair 30-minute units located in the dog house and at briefing areas.
- c. H<sub>2</sub>S detection and monitoring equipment:

- 2 - portable H2S monitor positioned on location for best coverage and response. These units have warning lights and audible sirens when H2S levels of 20 ppm are reached.
- d. Visual warning systems:  
Caution/Danger signs shall be posted on roads providing direct access to location. Signs will be painted a high visibility yellow with black lettering of sufficient size to be readable at a reasonable distance from the immediate location. Bilingual signs will be used, when appropriate. See example attached.
- e. Mud Program:  
The mud program has been designed to minimize the volume of H2S circulated to the surface.
- f. Metallurgy:  
All drill strings, casings, tubing, wellhead, blowout preventers, drilling spool, kill lines, choke manifold and lines, and valves shall be suitable for H2S service.
- g. Communication:  
Company vehicles equipped with cellular telephone.

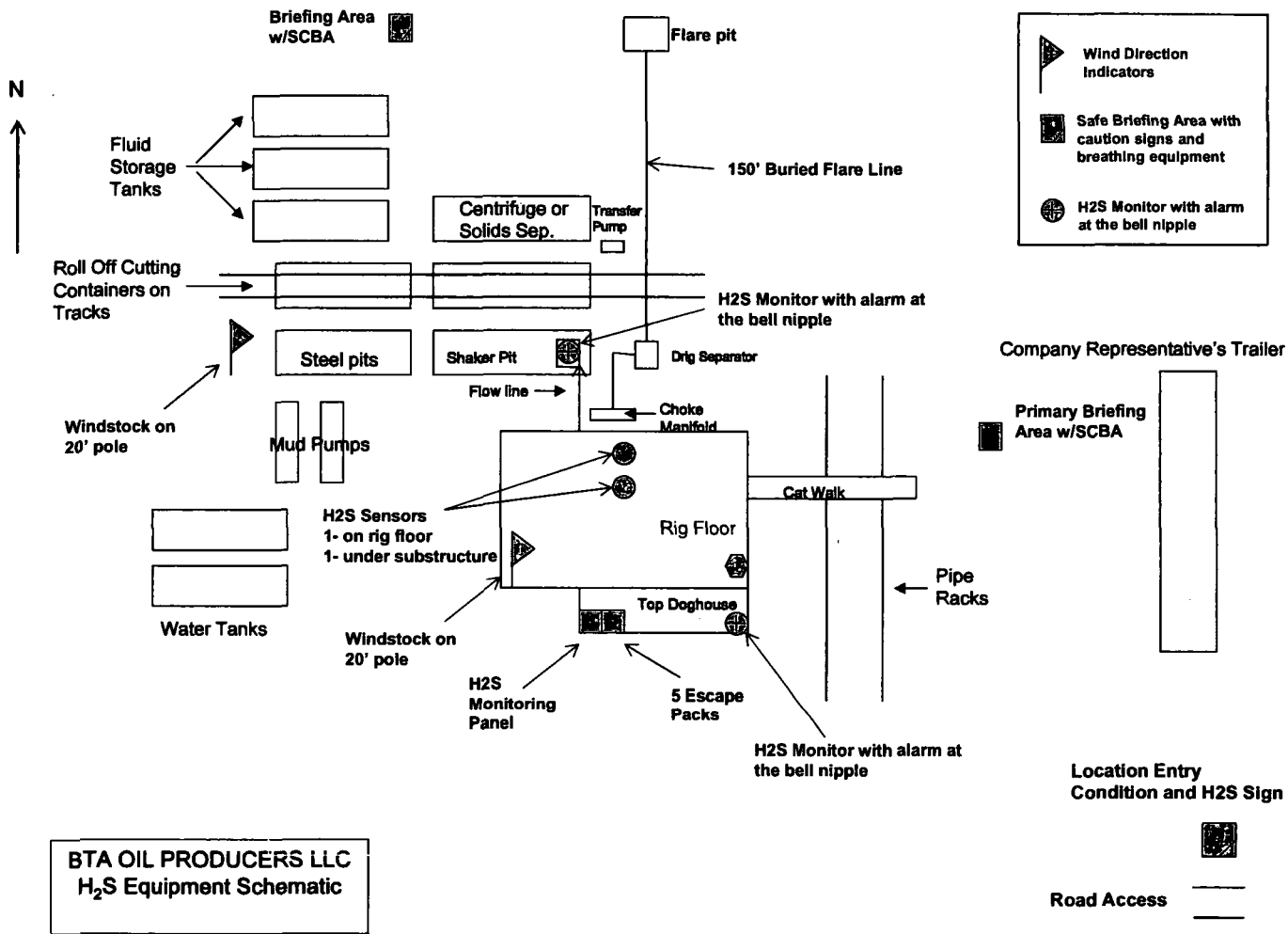
# **W A R N I N G**

**YOU ARE ENTERING AN H<sub>2</sub>S AREA  
AUTHORIZED PERSONNEL ONLY**

- 1. BEARDS OR CONTACT LENSES NOT ALLOWED**
- 2. HARD HATS REQUIRED**
- 3. SMOKING IN DESIGNATED AREAS ONLY**
- 4. BE WIND CONSCIOUS AT ALL TIMES**
- 5. CK WITH BTA OIL PRODUCERS LLC FOREMAN AT MAIN OFFICE**

**BTA OIL PRODUCERS LLC**

**1-432-682-3753**







## Multi-Bowl System

13-5/8" x 9-5/8" x 7"

With 4-1/2" liner  
downhole

### Tubing head

13-5/8" 10M x 7-1/16" 10M

7-1/16-10M

13-5/8" 10M

### Casing spool

13-5/8" 5M x 13-5/8" 10M

13-5/8" x 7" C-22  
Csg hanger

1-1/2" VR Plug

13-5/8"-5M

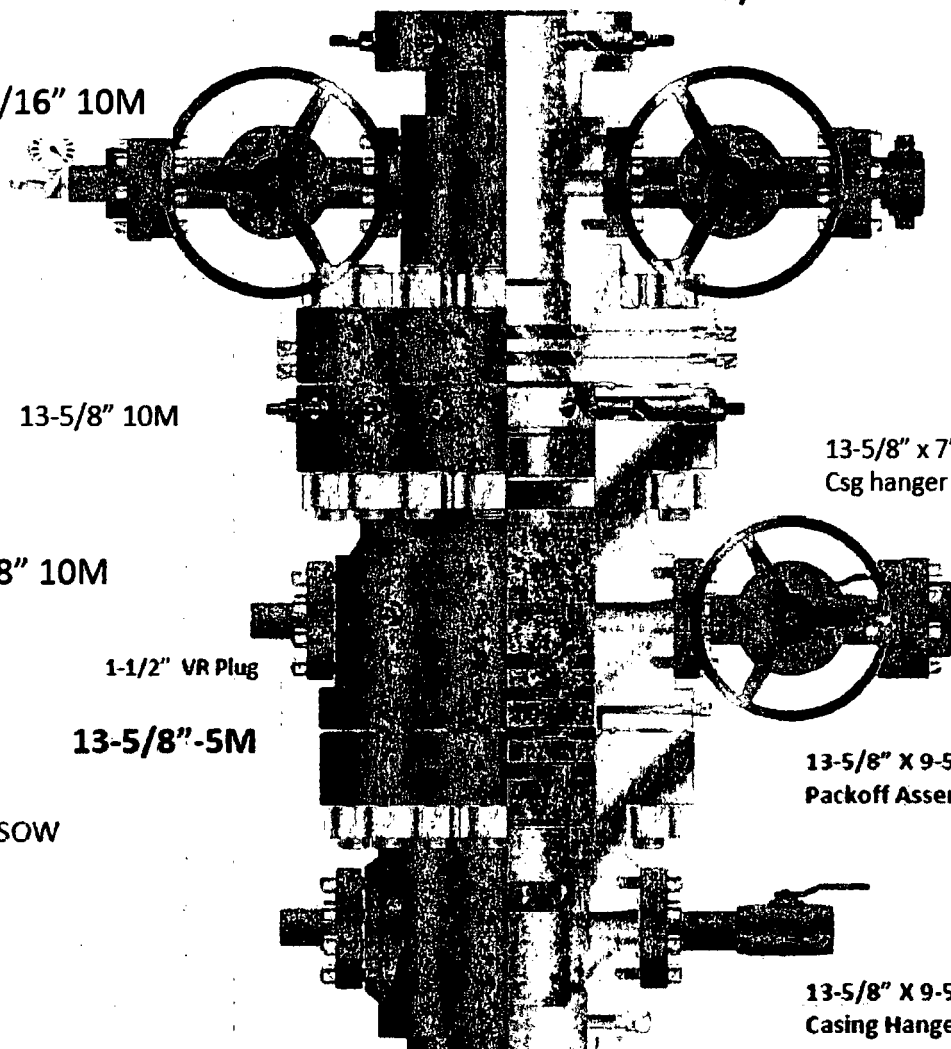
### Casing Head- MBS

13-5/8"-5M x 13-3/8" SOW

13-5/8" x 9-5/8" MBS  
Packoff Assembly

13-5/8" x 9-5/8" Mandrel  
Casing Hanger

13-3/8" SOW





# Weatherford®

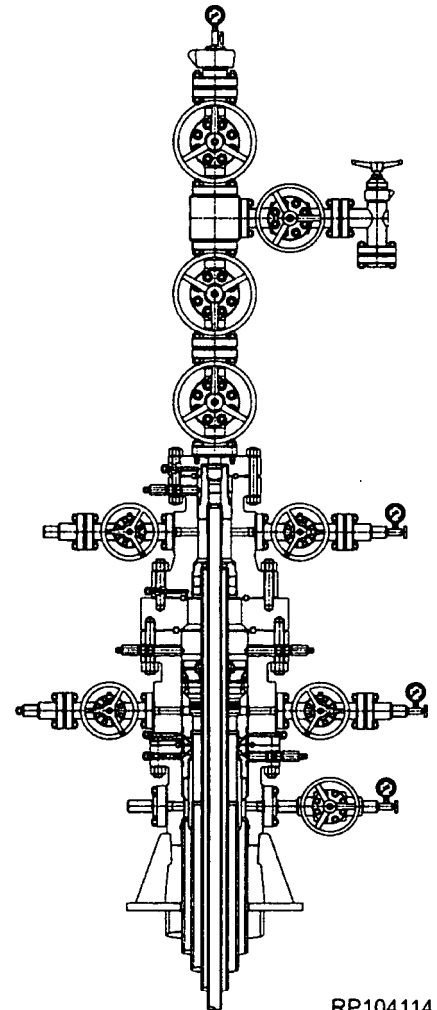


## Wellhead Field Service Manual

### WFT-SB Wellhead System Running Procedure


Publication: SM-11-1

Release Date: December 2014



RP104114



©2014 Weatherford International Ltd. All Rights Reserved

|  |                                 |                              |                        |                             |                |
|--|---------------------------------|------------------------------|------------------------|-----------------------------|----------------|
| <br><b>Weatherford</b><br>5-3-GL-GL-WES-00XXX | <b>Field Service<br/>Manual</b> | Prepared By:                 | Reviewed By:           | Approved By:                | <b>SM-11-1</b> |
|  |                                 | <i>Marion Robertson</i>      | <i>Bruce Ross</i>      | <i>Manuel Zaragoza</i>      | <b>Rev WIP</b> |
|  |                                 | Marion Robertson<br>Dec 2014 | Bruce Ross<br>Dec 2014 | Manuel Zaragoza<br>Dec 2014 | Page 1 of 24   |

## Table of Content

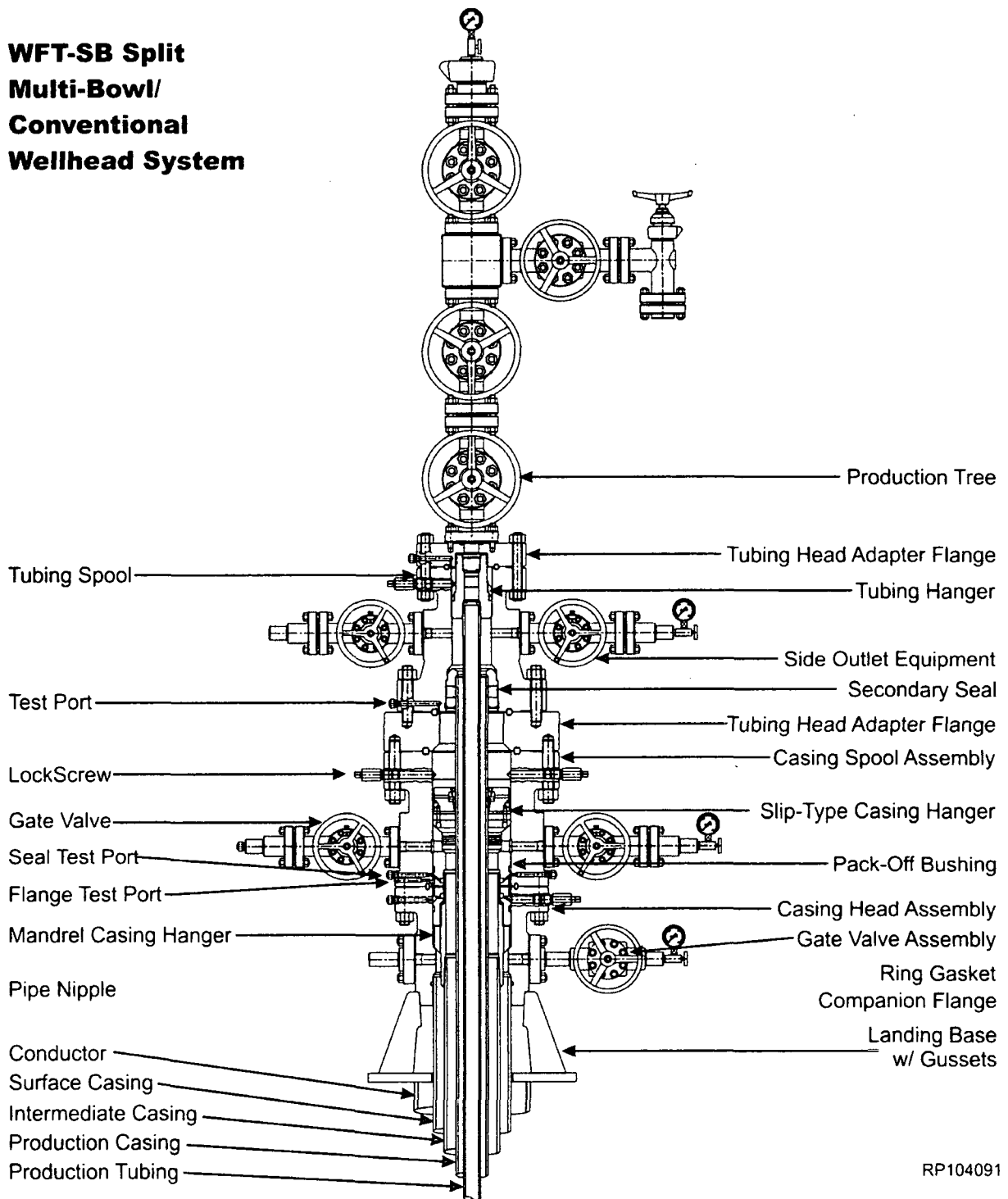
### WFT-Split Bowl (SB) Wellhead System

|   |    |
|---|----|
| Wellhead System Assembly Drawing .....                                  | 3  |
| <b>Running Procedure</b>  |    |
| Casing Head/Spool Assembly Rig-Up and Installation .....                | 4  |
| Testing the BOP .....   | 5  |
| Running and Retrieving the Long Bowl Protector .....                    | 3  |
| Running the Bowl Protector Prior to Drilling .....                      | 6  |
| Retrieving the Bowl Protector After Drilling .....                      | 7  |
| Hanging Off the Intermediate Casing .....                               | 7  |
| Hanging Off the Intermediate Casing- Contingency Completion .....       | 9  |
| Installation of the Pack-Off Bushing and Energizing the Seals .....     | 10 |
| Installation .....  | 10 |
| Energizing the Seal .....   | 12 |
| Retesting the BOP Stack .....   | 14 |
| Running and Retrieving the Short Bowl Protector .....                   | 15 |
| Running Short Bowl Protector .....                                      | 15 |
| Retrieving the Short Bowl Protector .....                               | 16 |
| Running the Production Casing .....                                     | 16 |
| Installation of the Slip-Type Casing Hanger Under the BOP Stack .....   | 16 |
| Installation of the Slip-Type Casing Hanger Through the BOP Stack ..... | 17 |
| Hanging Off the Production Casing .....                                 | 18 |
| Installation and Testing the Tubing Spool Assembly .....                | 20 |
| Installation .....  | 20 |
| Testing the Secondary Seal and Flange Connection .....                  | 20 |
| Testing the BOP .....   | 21 |
| Hanging Off the Production Tubing String .....                          | 22 |
| Installing and Testing of the Production Tree .....                     | 23 |
| Installation .....  | 23 |
| Testing .....   | 24 |

|  |                                  |   |              |                 |                |
|--|----------------------------------|---|--------------|-----------------|----------------|
| <br><b>Weatherford</b><br>5-3-GL-GL-WES-00XXX | <b>Field Services<br/>Manual</b> | Prepared By:  | Reviewed By: | Approved By:    | <b>SM-13-1</b> |
|  |                                  |  | Brad Franks  | Manual Zaragoza | <b>Rev WIP</b> |
|  |                                  | Marion Robertson  | Brad Franks  | Manual Zaragoza | Page 2 of 24   |
|  |                                  | Dec 2014  | Dec 2014     | Dec 2014        |                |

## WFT Split Bowl (SB) Wellhead System

### WFT-SB Split Multi-Bowl/ Conventional Wellhead System



RP104091



**Weatherford**

5-3-GL-GL-WES-00XXX

### Field Service Manual

Prepared By:

*Marion Robertson*

Marion Robertson

December 2014

Reviewed By:

Brad Franks

Brad Franks

December 2014

Approved By:

Manual Zaragoza

Manual Zaragoza

December 2014

**SM-13-1**

**Rev WIP**

Page 3 of 24

## WFT Split Bowl (SB) Multi-Bowl/Conventional Wellhead System (Continued)

### WFT-SB Casing Head/Spool Assembly Rig Up and Installation

1. Determine the correct elevation for the wellhead system, and cut the conductor pipe at a comfortable elevation, below the surface casing final cut.

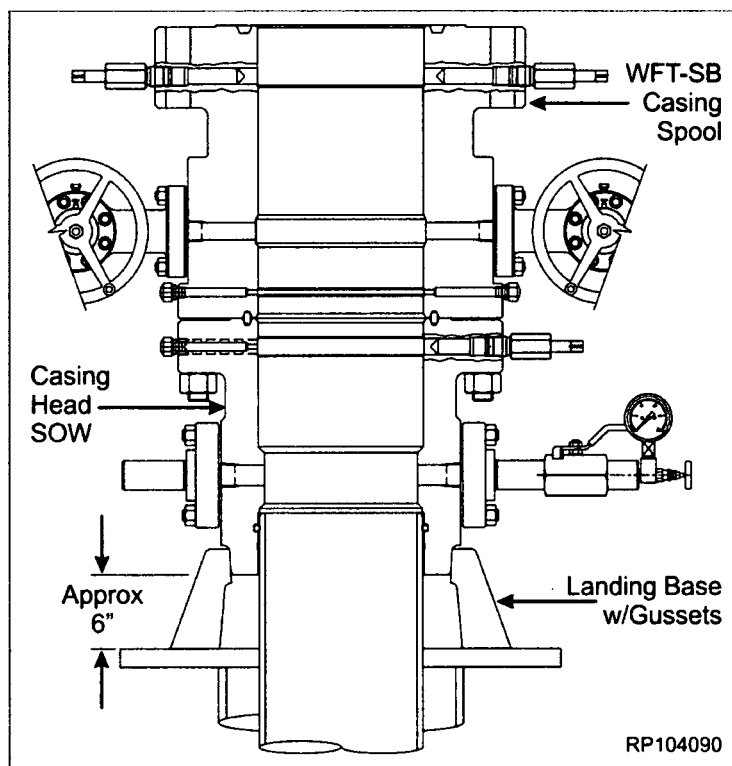
#### NOTE

Ensure that the cut on the conductor is level, as this will determine the orientation of all remaining wellhead equipment.

2. Remove any excess conductor pipe and set aside.
3. Grind the conductor pipe and remove any sharp edges, ensuring that the conductor pipe cut is level.
4. Run the surface casing to the required depth and cement casing in place. Allow the cement to set.
5. Lift the blow-out preventer (BOP) or diverter and prepare to cut off the surface casing at a sufficient height above the cellar deck to facilitate the installation of the WFT-SB Casing Head/Spool Assembly with Base Plate.
6. Once the surface casing is released from the rig floor, cut it approximately 12 inches (or more) above the final cut location.
7. Remove the excess surface casing, and the BOP or diverter, and set aside.
8. Bevel the surface casing outer diameter (3/16" x 3/8") and inner diameter (1/8" x 45 degrees). Remove any sharp edges.

9. Examine the Casing Head with Slip-On Weld (SOW) bottom prep. Verify the following:

- O-ring seal, bore, ports and exposed ring grooves are clean and in good condition.
- Test fittings, studs and nuts, valves, flanges and bull plugs are intact and in good condition.



10. Determine the correct elevation for the wellhead assembly. Measure depth of the surface casing socket in SOW with O-ring bottom prep.
11. Lightly lubricate the casing stub with an oil or light grease.

#### WARNING

Excessive oil or grease will prevent a positive seal from forming.

12. Align and level the WFT-SB Casing Head/Spool Assembly over the casing stub, orienting the outlets to drilling equipment, per the drilling supervisor's direction.



#### Field Service Manual

|                         |               |                 |              |
|-------------------------|---------------|-----------------|--------------|
| Prepared By:            | Reviewed By:  | Approved By:    | SM-13-1      |
| <i>Marion Robertson</i> | Brad Franks   | Manual Zaragoza | Rev WIP      |
| Marion Robertson        | Brad Franks   | Manual Zaragoza | Page 4 of 24 |
| December 2014           | December 2014 | December 2014   |              |

## WFT Split Bowl (SB) Wellhead System (Continued)

14. Slowly and carefully lower the assembly over the casing stub until the stub bottoms in the casing socket.
15. Remove the test fitting from the casing head test port, and set aside.
16. Ensure that the WFT-SB Casing Head/Spool Assembly is plumb and level.
17. Weld and test the surface casing using the recommended welding procedure located in the Appendices Section of this manual.

### Testing the BOP Stack

1. Examine the Test Plug/Running & Retrieval Tool. Verify the following:
  - Elastomer seals, threads and plugs are intact and in good condition.
  - Drill pipe threads are correct size, clean and in good condition.
2. Install a new, appropriately sized ring gasket in the ring groove of the WFT-SB Spool and make up the BOP stack.

### NOTE

Immediately after make-up of the BOP stack and periodically during drilling of hole for the casing string, the BOP stack (flanged connections and rams) must be tested.

3. Orient the test plug with elastomer down/ACME threads up, and make up a joint of drill pipe to the test plug.

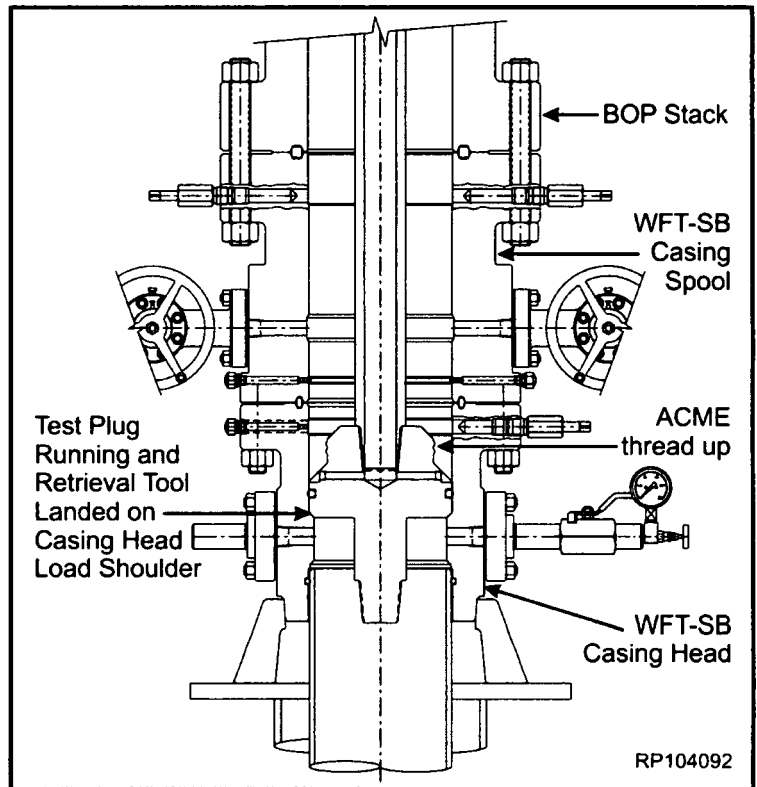
### NOTE


If pressure is to be supplied through the drill pipe, remove the pipe plug from the weep port.

### CAUTION

Ensure that the test plug elastomer is down and Acme threads are up when testing.

4. Fully retract all lockscrews in the entire WFT-SB casing head/spool assembly.
5. Lubricate the test plug elastomer seal with a light oil or grease.
6. Lower the test plug through the BOP stack into the WFT-SB assembly, until it lands on the casing head load shoulder.



|  |                             |                                   |                              |                                  |                |
|--|-----------------------------|-----------------------------------|------------------------------|----------------------------------|----------------|
| <br><b>Weatherford</b><br>5-3-GL-GL-WES-00XXX | <b>Field Service Manual</b> | Prepared By:                      | Reviewed By:                 | Approved By:                     | <b>SM-13-1</b> |
|  |                             | <i>Marion Robertson</i>           | Brad Franks                  | Manual Zaragoza                  | <b>Rev WIP</b> |
|  |                             | Marion Robertson<br>December 2014 | Brad Franks<br>December 2014 | Manual Zaragoza<br>December 2014 | Page 5 of 24   |

## WFT Split Bowl (SB) Wellhead System (Continued)

7. Open lower casing head side outlet valve. Monitor any leakage past the test plug seal.
8. Close the BOP rams on the drill pipe, and test to **5,000 psi or as required by the drilling supervisor**.
9. After a satisfactory test is achieved, release pressure and open the rams.
10. Remove as much fluid from the BOP stack as possible.
11. Retrieve the test plug assembly slowly to avoid damage to the seal.
12. Close all outlet valves on WFT-SB Casing Head/Spool Assembly.
13. Repeat Steps 1 thru 12, as required during drilling of the hole.

### Running and Retrieval of the Long Bowl Protector

#### NOTE

Always use a bowl protector while drilling to protect wellhead load shoulders from damage by drill bit or rotating drill pipe. The bowl protector must be retrieved prior to running the casing string.

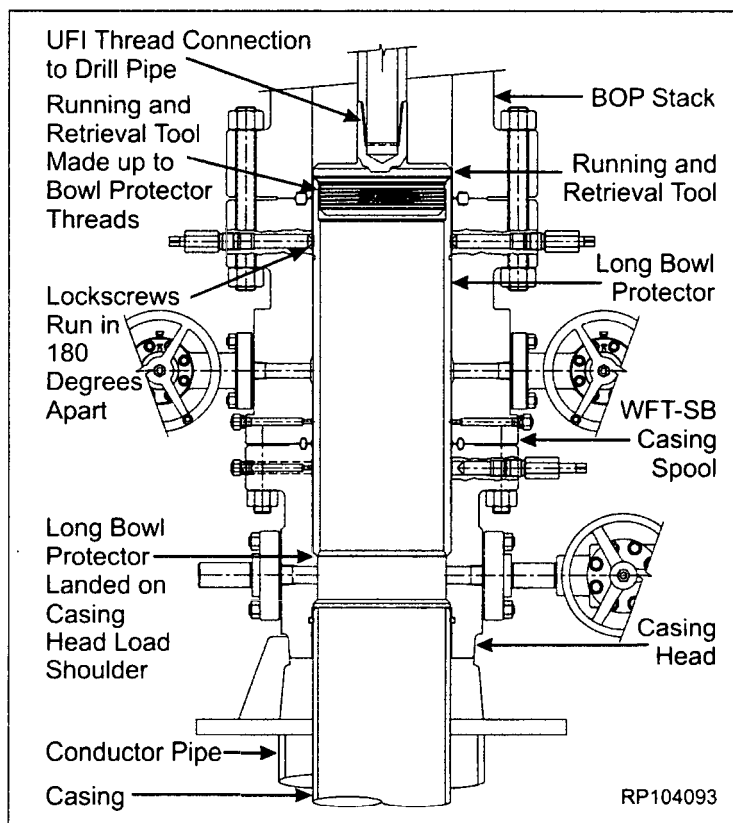
#### Running in the Bowl Protector prior to Drilling

1. Examine the Long Bowl Protector. Verify the following:
  - Bore drift is correct size, clean, in good condition, and free of debris
  - Threads are clean and undamaged
  - O-ring seals are properly installed, clean, and undamaged.


2. Examine the Bowl Protector Running/Retrieval Tool. Verify the following:
  - Threads are clean, undamaged and free of debris
  - Ports are clean and unobstructed.
  - Drill Pipe threads are correct size, clean and in good condition.
3. Orient the Bowl Protector Running Tool with Acme threads down.



Ensure that the left hand (LH) Acme threads are down prior to engaging Bowl Protector Running Tool into Long Bowl Protector.



RP104093

|  |                             |                         |               |                 |                |
|--|-----------------------------|-------------------------|---------------|-----------------|----------------|
| <br><b>Weatherford</b><br>5-3-GL-GL-WES-00XXX | <b>Field Service Manual</b> | Prepared By:            | Reviewed By:  | Approved By:    | <b>SM-13-1</b> |
|  |                             | <i>Marion Robertson</i> | Brad Franks   | Manual Zaragoza | <b>Rev WIP</b> |
|  |                             | Marion Robertson        | Brad Franks   | Manual Zaragoza | Page 6 of 24   |
|  |                             | December 2014           | December 2014 | December 2014   |                |

## WFT Split Bowl (SB) Wellhead System (Continued)

4. Make-up a drill pipe joint to the Running Tool.
5. Thread Running Tool into the Long Bowl Protector, rotating two turns counterclockwise.
6. Verify that all lockscrews in the WFT-SB Casing Head/Spool Assembly are fully retracted.
7. Slowly lower the Running Tool/Bowl Protector Assembly through the BOP stack and into the WFT-SB Casing Head/Spool Assembly, until it lands securely on the casing head load shoulder.
8. On WFT-SB Casing Spool, run in two Lockscrews ("snug" tight **ONLY**), 180 degrees apart, to hold Bowl Protector in place.

### **WARNING**

**Do NOT over tighten the lockscrews, as this will cause damage to the Bowl Protector and the lockscrews.**

9. Remove the running tool from the bowl protector, by rotating the drill pipe clockwise two turns while lifting straight up.
10. Drill out and prepare to run the casing string per the drilling supervisor's instruction.

### **Retrieving the Bowl Protector after Drilling**

1. Make-up the retrieval tool to the drill pipe, with Acme threads down.
2. Slowly lower the retrieval tool through the BOP Stack into the Bowl Protector.
3. Rotate the retrieval Tool counterclockwise, two turns, to engage with bowl protector Acme threads.

4. Fully retract both lockscrews on the WFT-SB casing spool, and retrieve the bowl protector.

### **NOTE**

**Ensure that all lockscrews in both the upper flange (casing spool) and lower flange (casing head) of the wellhead Assembly are fully retracted from well bore.**

5. Remove the bowl protector and the running and retrieval tool from the drill floor.

### **Hanging off the Intermediate Casing**

1. Run the intermediate casing as required and space out appropriately for the mandrel casing hanger.



### **NOTE**

**If the intermediate casing becomes stuck and the mandrel casing hanger cannot be landed, refer to STAGE 4B.**

2. Examine the WFT-SBD-SN Mandrel Casing Hanger. Verify the following:
  - Bore drift is correct size, clean and free of debris
  - All threads are clean and undamaged.
  - Flow-By flutes are clear and unobstructed.
  - Slick Neck seal area is clean and undamaged.
3. Examine the Mandrel Casing Hanger Running Tool. Verify the following:
  - Threads are clean and in good condition.
  - O-ring seals are clean and undamaged.
4. Thread the mandrel hanger onto the last joint of casing to be run. Torque the connection thread to manufacturer's optimum "make-up" torque value.
5. Make up a landing joint to the top of the running tool. Torque the connection to thread manufacturer's maximum "make-up" torque valve.

### **CAUTION**

**If Steps 4 and 5 were performed prior to being shipped to location, the hanger running tool should be backed off and made back up to ensure it will back off freely.**

|  |                             |   |               |                 |                |
|--|-----------------------------|---|---------------|-----------------|----------------|
| <br><b>Weatherford</b><br>5-3-GL-GL-WES-00XXX | <b>Field Service Manual</b> | Prepared By:  | Reviewed By:  | Approved By:    | <b>SM-13-1</b> |
|  |                             |  | Brad Franks   | Manual Zaragoza | <b>Rev WIP</b> |
|  |                             | Marion Robertson  | Brad Franks   | Manual Zaragoza | Page 7 of 24   |
|  |                             | December 2014   | December 2014 | December 2014   |                |



## WFT Split Bowl (SB) Wellhead System (Continued)

6. Liberally lubricate the outer diameter of the hanger neck and inner diameter of the running tool O-ring seals with a light oil or grease.



**Do NOT use pipe dope or other metal based compounds. This will cause galling.**

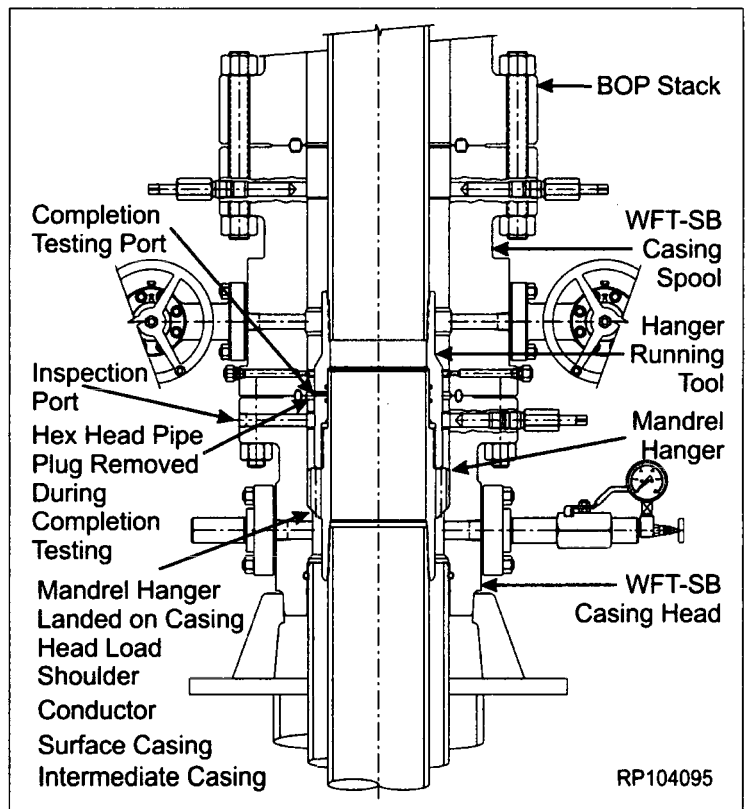
7. Maintaining a neutral weight, rotate the hanger running tool with chain tongs, first clockwise until a thread "jump" can be felt, then counterclockwise, approximately eight turns, to a positive stop, and then back off (clockwise) one quarter (1/4) turn.




**Do NOT torque the running tool to the casing hanger connection. Do NOT back off more than one quarter (1/4) turn.**

8. Remove the flush fitting hex head pipe plug from the outer diameter of the running tool and attach a test pump.
9. Apply hydraulic test pressure to **5,000 psi and hold for 15 minutes or as required by the drilling supervisor.**
10. Upon completion of a successful test, bleed off test pressure through the test pump and remove the pump. Replace the pipe plug.
11. Locate indicator groove machined in outer diameter of Running Tool, coat with white paint.

12. Verify that all lockscrews in the WFT-SB casing head/casing spool assembly are fully retracted.
13. Slowly and carefully lower the mandrel hanger through the BOP stack, and land the hanger onto the casing head load shoulder.
14. Slack off weight on the casing.
15. Check that the well is stable and no pressure buildup or mud flow is occurring.



|  |                             |                         |               |                 |                |
|--|-----------------------------|-------------------------|---------------|-----------------|----------------|
| <br><b>Weatherford</b><br>5-3-GL-GL-WES-00XXX | <b>Field Service Manual</b> | Prepared By:            | Reviewed By:  | Approved By:    | <b>SM-13-1</b> |
|  |                             | <i>Marion Robertson</i> | Brad Franks   | Manual Zaragoza | <b>Rev WIP</b> |
|  |                             | Marion Robertson        | Brad Franks   | Manual Zaragoza | Page 8 of 24   |
|  |                             | December 2014           | December 2014 | December 2014   |                |

## WFT Split Bowl (SB) Wellhead System (Continued)

16. Drain the BOP stack through the casing head side outlet valves.
17. Remove the pipe plug from the casing head flange port marked "Inspection Port."
18. Visually verify that the running tool groove is in the center of the inspection port, and that the mandrel hanger has landed properly.
19. Reinstall the pipe plug and tighten securely.
20. Place a paint mark on the landing joint level with the rig floor, and cement casing as required.

### NOTE

If the casing is to be reciprocated during cementing, it is advisable to pick up the mandrel hanger a minimum of eight feet above the landing point. Place a mark on the landing joint, level with the rig floor, and then reciprocate above that point. If at any time resistance is felt, land the mandrel casing hanger immediately.



21. Retrieve the hanger running tool and landing joint by rotating landing joint clockwise (to the right), fourteen full turns.

## Hanging off Intermediate Casing – Contingency Completion

### NOTE

The following procedure should **ONLY** be followed if the intermediate casing should become stuck in the hole. If the casing did **NOT** get stuck and is successfully hung off with the mandrel casing hanger, skip this stage.

1. Cement the intermediate casing in accordance with the program, taking returns through the flow-by flutes of the mandrel casing hanger as required.
2. Drain the casing head bowl through the side outlet.
3. Separate the WFT-SB casing spool from the casing head.
4. Pull up on WFT-SB casing spool and suspend it above casing head, high enough to install a WFT-21 Slip Type Casing Hanger.
5. Wash out as required.
6. Examine the WFT-21 slip type casing hanger. Verify the following:
  - Hanger is correct size, clean and undamaged.
  - Slip segments are sharp and in proper position.
  - All screws are in place.
7. Remove the latch screw to open the slip type hanger.
8. Place two boards on the casing head flange, against the casing, to support the hanger.
9. Wrap the hanger around the casing and replace the latch screw.
10. Prepare to lower the hanger into the casing head bowl.
11. Grease the WFT-21 slip type casing hanger body and remove the slip retaining cap screws.
12. Remove the boards and allow the hanger to slide down into the casing head.

|  |                             |   |               |                 |                |
|--|-----------------------------|---|---------------|-----------------|----------------|
| <br><b>Weatherford</b><br>5-3-GL-GL-WES-00XXX | <b>Field Service Manual</b> | Prepared By:  | Reviewed By:  | Approved By:    | <b>SM-13-1</b> |
|  |                             |  | Brad Franks   | Manual Zaragoza | <b>Rev WIP</b> |
|  |                             | Marion Robertson  | Brad Franks   | Manual Zaragoza | Page 9 of 24   |
|  |                             | December 2014   | December 2014 | December 2014   |                |

## WFT Split Bowl (SB) Wellhead System (Continued)

13. Once the hanger has landed securely on the casing head bowl load shoulder, pull tension on the casing to the desired hanging weight, and then slack off.

### NOTE

A sharp decrease on weight indicator will signify that the hanger has taken weight. If this does not occur, pull tension again and slack once more.

14. Rough cut the casing approximately eight inches, or more, above the top of the casing head flange. Remove the excess casing.
15. Final cut the casing at  $2\frac{1}{2}" \pm 1/8"$  above casing head flange.
16. Bevel the casing outer diameter ( $1/4" \times 30$  degrees) and inner diameter ( $1/8" \times 30$  degrees).
17. Remove and discard the used gasket ring from the casing head.
18. Clean the mating ring grooves on the WFT-SB casing spool and casing head. Lightly wipe with oil or grease.

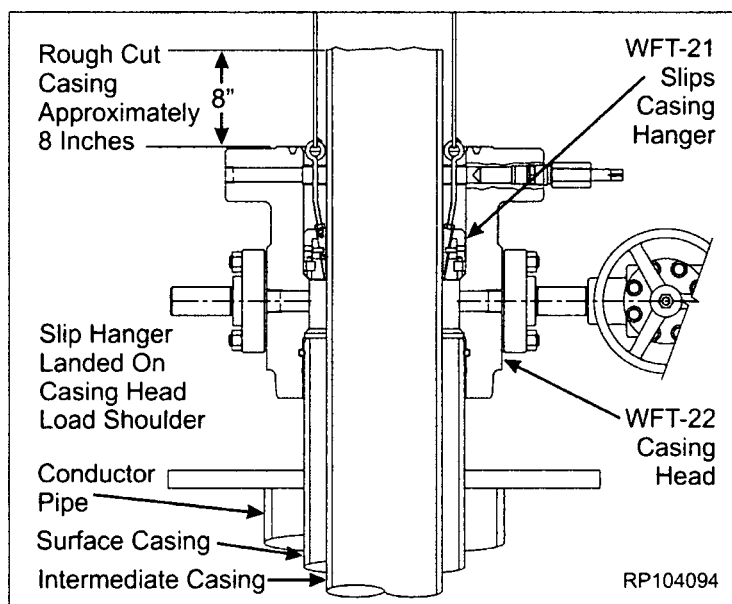
### WARNING

Excessive oil or grease will prevent a positive seal from forming.

19. Install a new appropriately sized ring gasket into the casing head groove.
20. Loosely reconnect or make up the WFT-SB casing spool to the casing head.

### NOTE

The casing spool to casing head connection will be fully tightened after the pack-off bushing is run and proper setting is verified.




## Installation of the Pack-Off Bushing and Energizing the P-Seals

### WFT-SB Pack-Off Bushing Installation

### NOTE

Installation procedure is identical for both Standard and Emergency WFT-SB Pack-Off Bushings.

- Determine which pack-off bushing to use:
  - If casing has been run normally and is hung off with a mandrel casing hanger, use a standard packoff bushing.
- Examine the appropriate pack-off bushing. Verify the following:
  - All elastomer seals are in place and undamaged.
  - Bore, ports and alignment lugs are clean and in good condition.
  - Coat the lockscrew relief groove with white paint.
- Liberal lubricate the inner diameter of the double P-seal grooves and outer diameter of dovetail seals with a light oil or grease.

|  |                             |                         |               |                 |                |
|--|-----------------------------|-------------------------|---------------|-----------------|----------------|
| <br><b>Weatherford</b><br>5-3-GL-GL-WES-00XXX | <b>Field Service Manual</b> | Prepared By:            | Reviewed By:  | Approved By:    | <b>SM-13-1</b> |
|  |                             | <i>Marion Robertson</i> | Brad Franks   | Manual Zaragoza | <b>Rev WIP</b> |
|  |                             | Marion Robertson        | Brad Franks   | Manual Zaragoza | Page 10 of 24  |
|  |                             | December 2014           | December 2014 | December 2014   |                |

## WFT Split Bowl (SB) Wellhead System (Continued)

4. Examine the pack-off bushing running tool. Verify the following:
  - All elastomer seals are properly installed, clean and undamaged
  - Threads are clean, undamaged and free of debris
  - Bore and ports are clean and unobstructed.
5. Make-up a landing joint to the running tool and rack back assembly.
6. Run two or three stands of heavy weight drill pipe or collars in the hole and set floor slips.

### NOTE

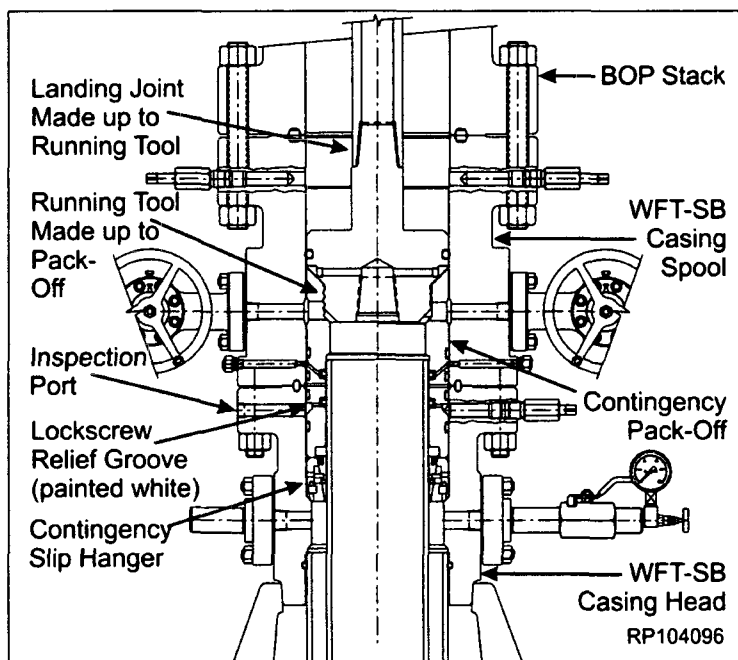
Use heavy weight drill pipe or drill collars. Weight required to push Pack-Off Bushing into Casing Head, over Mandrel Hanger slick neck, is approximately 14,000 lbs.

### WARNING


When lowering the drill pipe into the well, extreme caution must be taken to not damage the top of the mandrel hanger with the end of the drill pipe. It is recommended that the drill pipe be centralized to the hanger inner diameter, as closely as possible, when entering the hanger.

7. Carefully lower the bushing over the drill pipe and set it on top of floor slips.
8. Make up the landing joint/running tool assembly to the drill pipe suspended in floor slips.
9. Carefully pick up the pack-off bushing, thread the bushing into the running tool, then rotate the bushing approximately two turns counterclockwise (to the left), coming to a positive stop.

10. Lower the assembly through the BOP Stack and the WFT-SB spool assembly until the pack-off bushing lands on the casing hanger.



11. Verify, through inspection port that the pack-off bushing has landed properly after:
  - ensuring well is stable and no pressure buildup or mud flow is occurring.
  - drain BOP Stack through Casing Head side outlet valves.
  - remove Pipe Plug (1"-NPT) from Casing Head flange port marked "Inspection Port".
  - Check, to ensure, bottom of Lockscrew relief groove (painted white) on Support Bushing is at bottom of inspection port.
  - Reinstall Pipe Plug and tighten securely.
12. Fully run in all Casing Head Lockscrews (lower flange), in an alternating cross pattern.
13. Using two chain tongs, 180° apart, rotate Landing Joint/Running Tool approximately 2 turns clockwise (to the

|  |                             |                         |               |                 |                |
|--|-----------------------------|-------------------------|---------------|-----------------|----------------|
| <br><b>Weatherford</b><br>5-3-GL-GL-WES-00XXX | <b>Field Service Manual</b> | Prepared By:            | Reviewed By:  | Approved By:    | <b>SM-13-1</b> |
|  |                             | <i>Marion Robertson</i> | Brad Franks   | Manual Zaragoza | <b>Rev WIP</b> |
|  |                             | Marion Robertson        | Brad Franks   | Manual Zaragoza | Page 11 of 24  |
|  |                             | December 2014           | December 2014 | December 2014   |                |

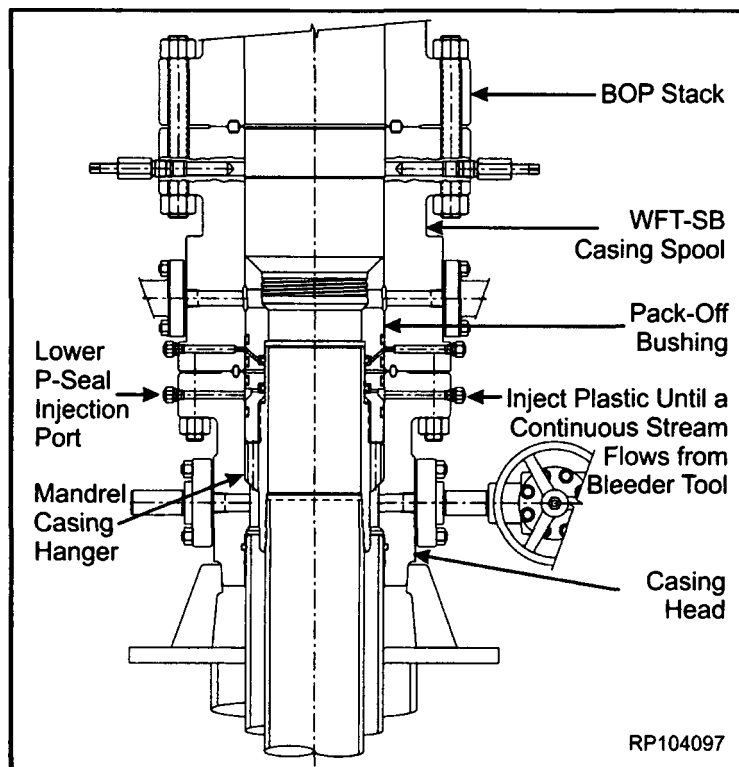
right), coming to a stop and carefully lift tool to Drill Floor, set aside.

### NOTE

If the Contingency Pack-Off Bushing is being installed, it is now necessary to make up the Speed Head Casing Head/Casing Spool connection. Tighten all studs in an alternating cross pattern until the flange bolting is fully made up.

#### Energizing the P-Seals


1. Locate the two lower injection fittings ("INJ"), located 180 degrees apart on the casing head. Remove the dust cap from one fitting and remove the second fitting entirely.
2. Attach a bleeder tool to the injection fitting without the dust cap, in the casing head. Open the bleeder tool.
3. Attach a plastic injection tool to the open port and inject plastic packing into the port until a continuous stream flows from the bleeder tool. Close the bleeder tool.
4. Remove the injection tool. Reinstall the injection fitting into the open port and remove the dust cap. Reattach the injection tool.
5. Continue injecting plastic packing to **5,000 psi. or to 80% of casing collapse pressure, whichever is less.**



### NOTE

The strength of a mandrel casing hanger slick neck is equivalent to P110 Grade casing with the same weight as run in the casing string.

6. Hold and monitor pressure for 15 minutes or as required by the drilling supervisor.
7. If pressure drops, the plastic packing has not filled the seal area completely. Open the bleeder tool, bleed off the pressure and repeat Steps 5 and 6, until pressure is stabilized.
8. Remove the plastic injection tool and bleeder tool. Reinstall the dust caps on both injection fittings.
9. Repeat Steps 1 thru 8 to pack off and energize the upper P-Seal.

|  |                             |                         |               |                 |                |
|--|-----------------------------|-------------------------|---------------|-----------------|----------------|
| <br><b>Weatherford</b><br>5-3-GL-GL-WES-00XXX | <b>Field Service Manual</b> | Prepared By:            | Reviewed By:  | Approved By:    | <b>SM-13-1</b> |
|  |                             | <i>Marion Robertson</i> | Brad Franks   | Manual Zaragoza | <b>Rev WIP</b> |
|  |                             | Marion Robertson        | Brad Franks   | Manual Zaragoza | Page 12 of 24  |
|  |                             | December 2014           | December 2014 | December 2014   |                |

## WFT Split Bowl (SB) Wellhead System (Continued)

10. Locate the "SEAL TEST" fitting, slightly below and 90 degrees from the injection fittings. Remove the dust cap from this fitting.
11. Attach a test pump to the fitting.
12. Pump clean test fluid between the P-Seals until a test pressure of 5,000 psi or 80% of casing collapse pressure is attained, whichever is lower.

### WARNING

Do NOT exceed 80% of casing collapse pressure when a slip type casing hanger and contingency pack-off bushing are utilized.

13. Hold test pressure for 15 minutes or as required by the drilling supervisor.
14. If pressure drops, a leak has developed. Take the appropriate action per the following table:

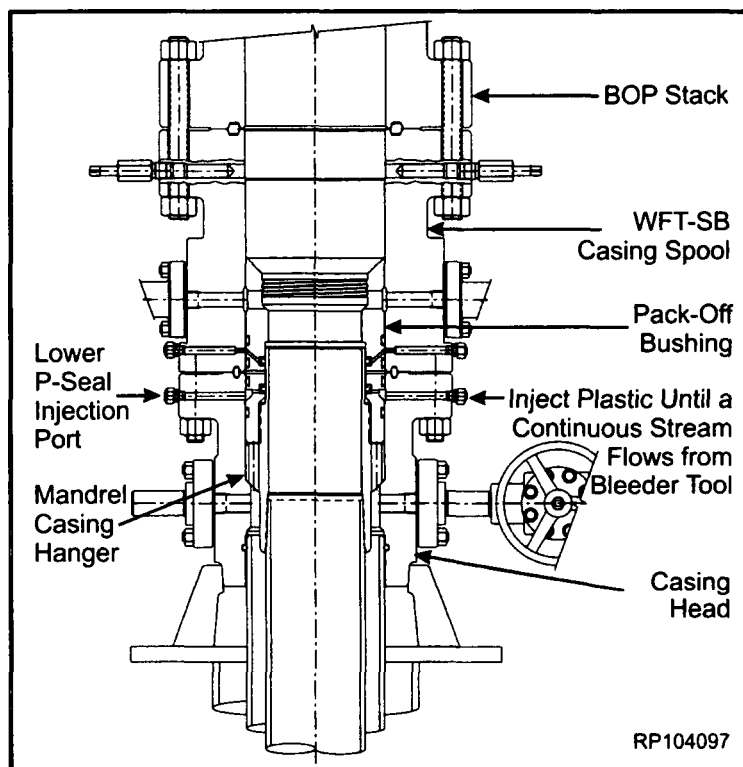
| Leak Location                    | Cause                | Action   |
|----------------------------------|----------------------|--|
| Into the bore of the casing head | Upper P-seal leaking | Bleed off pressure and re-inject plastic packing into leaking upper P-seal port. |
| Around the casing                | Lower P-Seal leaking | Bleed off pressure and re-inject plastic packing into lower P-seal port.         |


15. Repeat Steps 12 thru 14 until a satisfactory test is achieved.
16. Once a satisfactory test is achieved, carefully bleed off pressure and remove Test Pump.
17. Attach the bleeder tool to the test port fitting and open the tool to vent any remaining trapped pressure.

### CAUTION

Always direct the bleeder tool port away from people and property.

18. Remove the bleeder tool and reinstall dust cap in Test Port Fitting.



|  |                             |                         |               |                 |                |
|--|-----------------------------|-------------------------|---------------|-----------------|----------------|
| <br><b>Weatherford</b><br>5-3-GL-GL-WES-00XXX | <b>Field Service Manual</b> | Prepared By:            | Reviewed By:  | Approved By:    | <b>SM-13-1</b> |
|  |                             | <i>Marion Robertson</i> | Brad Franks   | Manual Zaragoza | <b>Rev WIP</b> |
|  |                             | Marion Robertson        | Brad Franks   | Manual Zaragoza | Page 13 of 24  |
|  |                             | December 2014           | December 2014 | December 2014   |                |

## WFT Split Bowl (SB) Wellhead System (Continued)

### Retesting the BOP Stack

1. Examine the Test Plug/Running Tool. Verify the following:

- Elastomer seals are intact and in good condition.
- Drill pipe threads are clean and in good condition.

#### NOTE

Immediately after testing the support bushing seals and periodically during conditioning of the hole prior to running tubing, the BOP stack (flanged connections and rams) must be tested.

2. Orient the test plug with elastomer down/ACME threads up. Make up a joint of drill pipe to the test plug.

#### NOTE

Remove the pipe plug from the weep port if pressure is to be supplied through the drill pipe.

#### CAUTION

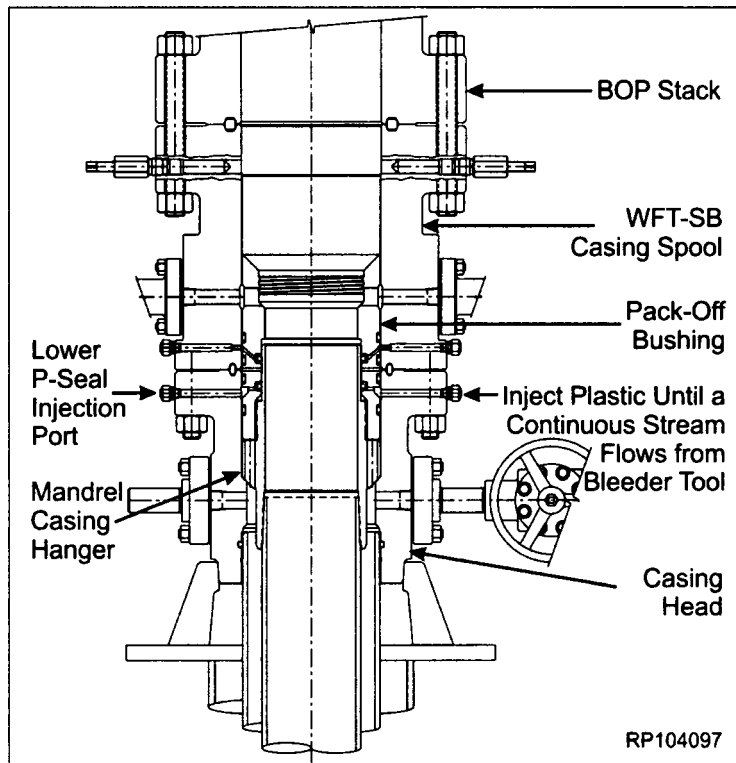
Make sure the elastomer is down and ACME threads are up when testing.

3. Fully retract all lockscrews in the upper WFT-SB Spool Assembly.

#### WARNING


Do NOT retract the lockscrews located in the casing head (lower flange). Doing so could allow the pack-off support bushing to rise out of position.

4. Lubricate the test plug elastomer seal with light oil or grease.



RP104097

5. Lower the test plug through the BOP stack into the WFT-SB spool assembly until it lands on top of the pack-off bushing.
6. Open the upper WFT-SB casing spool side outlet valves. Monitor for any leakage past the test plug seal.
7. Close the BOP rams on the drill pipe and test to **10,000 psi or as required by the drilling supervisor**.
8. After a satisfactory test is achieved, release all pressure and open the rams.
9. Remove as much fluid from the BOP stack as possible.
10. Retrieve the test plug assembly slowly to avoid damage to the seal.
11. Close all outlet valves on the WFT-SB casing head/spool assembly.

|  |                             |                         |               |                 |                |
|--|-----------------------------|-------------------------|---------------|-----------------|----------------|
| <br><b>Weatherford</b><br>5-3-GL-GL-WES-00XXX | <b>Field Service Manual</b> | Prepared By:            | Reviewed By:  | Approved By:    | <b>SM-13-1</b> |
|  |                             | <i>Marion Robertson</i> | Brad Franks   | Manual Zaragoza | <b>Rev WIP</b> |
|  |                             | Marion Robertson        | Brad Franks   | Manual Zaragoza | Page 14 of 24  |
|  |                             | December 2014           | December 2014 | December 2014   |                |

## WFT Split Bowl (SB) Wellhead System (Continued)

### Running and Retrieving the Short Bowl Protector

#### NOTE

Always use a bowl protector while drilling to protect the wellhead load shoulders from damage by the drill bit or rotating drill pipe. The bowl protector must be retrieved prior to running the casing string!

#### Running the Bowl Protector Prior to Drilling

1. Examine the short bowl protector. Verify the following:
  - Bore drift is correct size, is clean, in good condition, and free of debris.
  - Threads are correct size and type.
  - Threads are clean and in good condition.
2. Orient the bowl protector running tool with ACME threads down.

#### NOTE

The running tool is the same tool used for handling the long bowl protector.

#### CAUTION

Make sure that the left hand (LH) ACME threads are down prior to engaging the bowl protector running tool into the short bowl protector.

3. Make-up a drill pipe joint to the running tool.
4. Thread the running tool into the short bowl protector, rotating two turns counterclockwise (to the left).
5. Verify that all upper lockscrews in the WFT-SB spool assembly are fully retracted. Slowly lower the running

tool/bowl protector assembly through the BOP stack into the WFT-SB spool assembly until it lands on top of the pack-off bushing.

#### WARNING

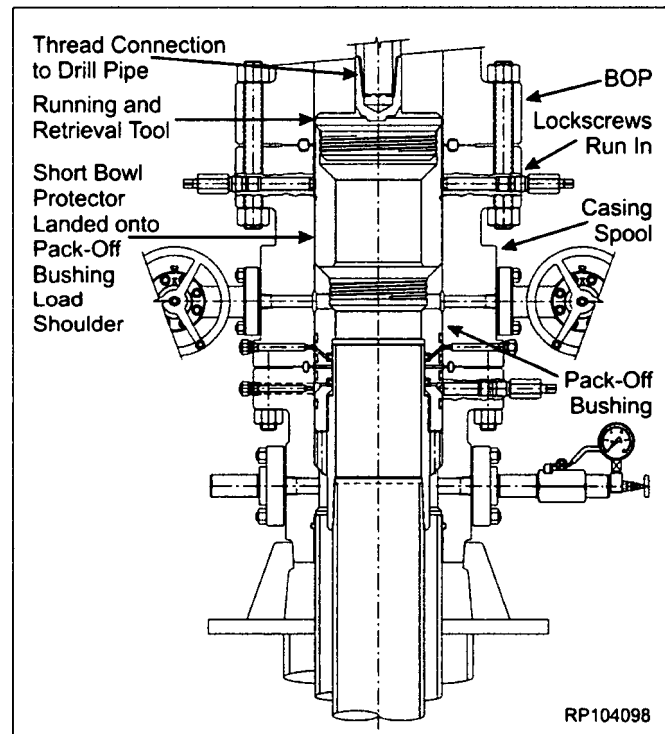
Do NOT retract the lower lockscrews located in the WFT-SB casing head, as this could allow the pack-off bushing to rise out of position.



6. On the upper WFT-SB spool assembly, run in two lockscrews ("snug" tight ONLY), 180 degrees apart, to hold the bowl protector in place.

#### WARNING

Do NOT over tighten the lockscrews, as this will cause damage to both the bowl protector and lockscrews.

7. Remove the running tool from the bowl protector, by rotating the drill pipe clockwise two turns while lifting straight up.
8. Drill out and prepare to the production casing string per the drilling supervisor's instructions.



|  |                             |   |               |                 |                |
|--|-----------------------------|---|---------------|-----------------|----------------|
| <br><b>Weatherford</b><br>5-3-GL-GL-WES-00XXX | <b>Field Service Manual</b> | Prepared By:  | Reviewed By:  | Approved By:    | <b>SM-13-1</b> |
|  |                             |  | Brad Franks   | Manual Zaragoza | <b>Rev WIP</b> |
|  |                             | Marion Robertson  | Brad Franks   | Manual Zaragoza | Page 15 of     |
|  |                             | December 2014   | December 2014 | December 2014   | 24             |



## WFT Split Bowl (SB) Wellhead System (Continued)

### Retrieval of the Short Bowl Protector After Drilling

1. Make up the retrieval tool to the drill pipe with ACME threads down.
2. Slowly lower the retrieval tool into the bowl protector.
3. Rotate the retrieval tool counterclockwise, two turns, to engage with the bowl protector ACME threads.
4. Fully retract both lockscrews on the casing spool (upper flange), and retrieve the bowl protector.
5. Remove the bowl protector and retrieval tool from the drill string.

### Running the Production Casing

1. Run the production casing to necessary depth and cement as required.

#### NOTE

There are two methods for installing WFT-22 Slip Type Casing Hangers:

- Under the BOP stack.
- Through the BOP stack.

### Installation of the Slip-Type Casing Hanger Under the BOP Stack

1. Drain the casing head through the uppermost side outlet valve.
2. Lift and suspend the BOP stack above the WFT-SB spool assembly to a minimum of 18 inches.
3. Wash out the WFT-SB casing head/spool assembly as required.
4. Confirm that ONLY the lockscrews in the casing spool (upper flange) are fully retracted.

5. Examine the WFT-22 slip-type casing hanger. Verify the following:

- Slip segments are clean and undamaged.
- All screws are in place.
- Packing element is clean and undamaged.

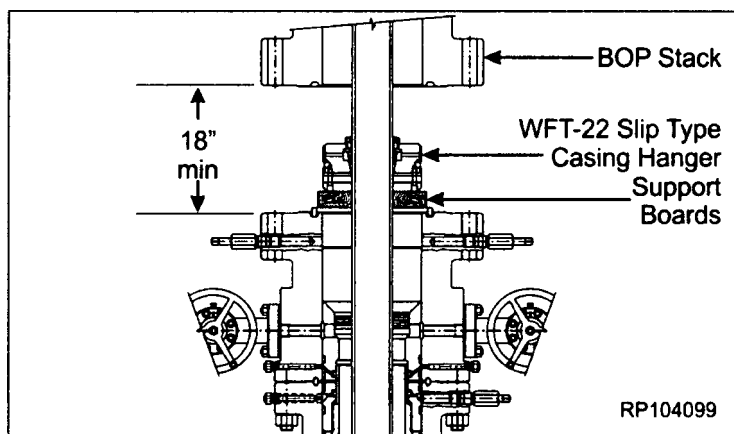
#### CAUTION


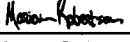
The packing element should not protrude past the casing hanger outer diameter. If the packing element does extend past the outer diameter, loosen the cap screws in the bottom of the hanger.

6. Place two boards across the casing spool face, against the casing, to support the hanger.
7. Disengage the spring loaded latch, open the hanger and wrap the hanger around the casing, allowing the support boards to carry weight.
8. Re-engage the casing hanger spring loaded latch.
9. Remove the slip retaining cap screws from the outer diameter of the hanger body, allowing the slip segments to settle around the casing.
10. Supporting the weight of the casing hanger, remove the support boards and lower the hanger into the WFT-SB casing head/spool assembly until it lands on the pack-off bushing load shoulder.

#### CAUTION

Do NOT drop the hanger; lower it carefully.



|  |                             |   |               |                 |                |
|--|-----------------------------|---|---------------|-----------------|----------------|
| <br><b>Weatherford</b><br>5-3-GL-GL-WES-00XXX | <b>Field Service Manual</b> | Prepared By:  | Reviewed By:  | Approved By:    | <b>SM-13-1</b> |
|  |                             |  | Brad Franks   | Manual Zaragoza | <b>Rev WIP</b> |
|  |                             | Marion Robertson  | Brad Franks   | Manual Zaragoza | Page 16 of 24  |
|  |                             | December 2014   | December 2014 | December 2014   |                |

## WFT Split Bowl (SB) Wellhead System (Continued)

### Installation of the Slip-Type Casing Hanger through the BOP Stack

1. Drain the WFT-SB casing head/spool assembly and BOP stack through the side outlet valves on the spool assembly.
2. Wash out the wellhead assembly until clean returns are seen.
3. Examine the slip type casing hanger. Verify the following:
  - slip segments are clean and undamaged
  - all screws are in place
  - Packing Element is clean and undamaged.

### **CAUTION**

The packing element should not protrude past the casing hanger outer diameter. If the packing element does extend past the outer diameter, loosen the cap screws in the bottom of the hanger.

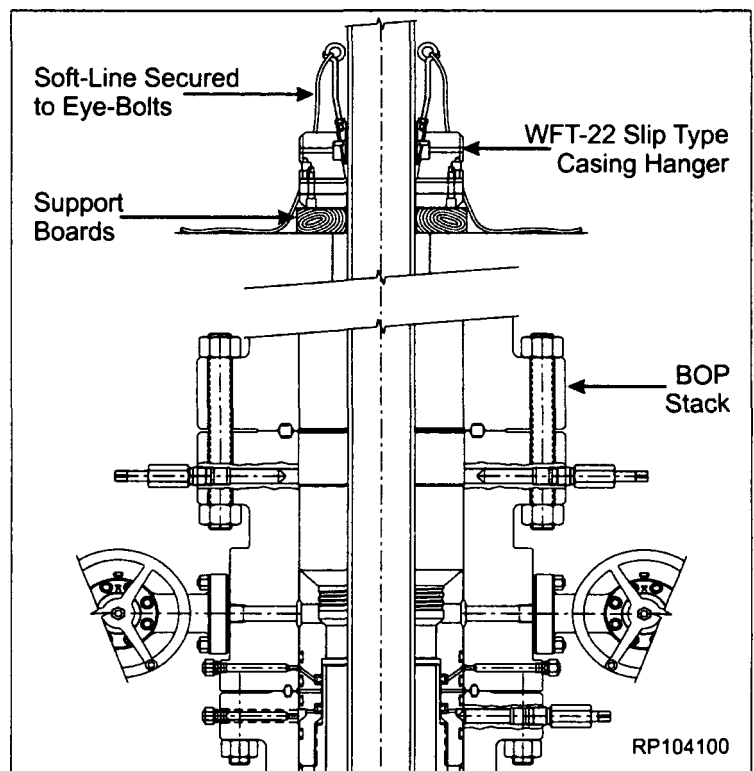
4. Place two boards across the rotary table, against the casing, to support the hanger.
5. Disengage the spring loaded latch, open the hanger and wrap it around the casing, allowing the support boards to carry the weight.
6. Re-engage the casing hanger's spring loaded latch.
7. Measure the distance from the top flange of the WFT-SB casing spool to the drilling rig floor (RKB).
8. Measure out two lengths of soft-line cord (rope) to the same length as the


RKB measurement, and adding an additional 10 feet to each line.

9. Mark the soft line cord at the required length.
10. Install two eyebolts into the tapped holes in the top of the casing hanger slip segments, 180 degrees apart.
11. Securely tie the soft-line cord to the eyebolts.

### **NOTE**

Measuring the soft-line cord and installing the eyebolts into the hanger segments should be done offline.



|  |                             |                         |               |                 |                |
|--|-----------------------------|-------------------------|---------------|-----------------|----------------|
| <br><b>Weatherford</b><br>5-3-GL-GL-WES-00XXX | <b>Field Service Manual</b> | Prepared By:            | Reviewed By:  | Approved By:    | <b>SM-13-1</b> |
|  |                             | <i>Marion Robertson</i> | Brad Franks   | Manual Zaragoza | <b>Rev WIP</b> |
|  |                             | Marion Robertson        | Brad Franks   | Manual Zaragoza | Page 17 of 24  |
|  |                             | December 2014           | December 2014 | December 2014   |                |

## WFT Split Bowl (SB) Wellhead System (Continued)

12. Remove the slip retaining cap screws from the outer diameter of the hanger body, allowing the slip segments to settle around the casing.
13. Supporting the weight of the casing hanger, remove the support boards and carefully lower the hanger through the BOP stack into the WFT-SB casing head/spool assembly, until it securely lands on the pack-off bushing load shoulder.



Do NOT drop hanger; lower it carefully.

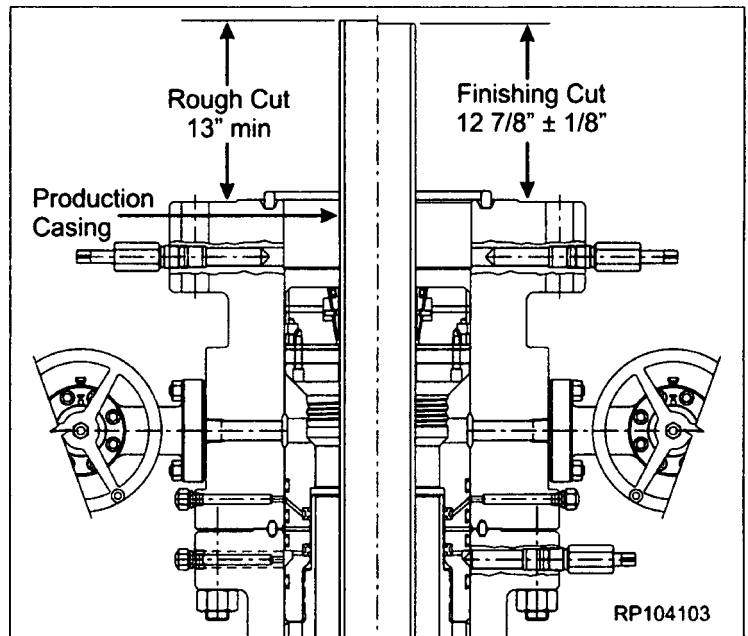
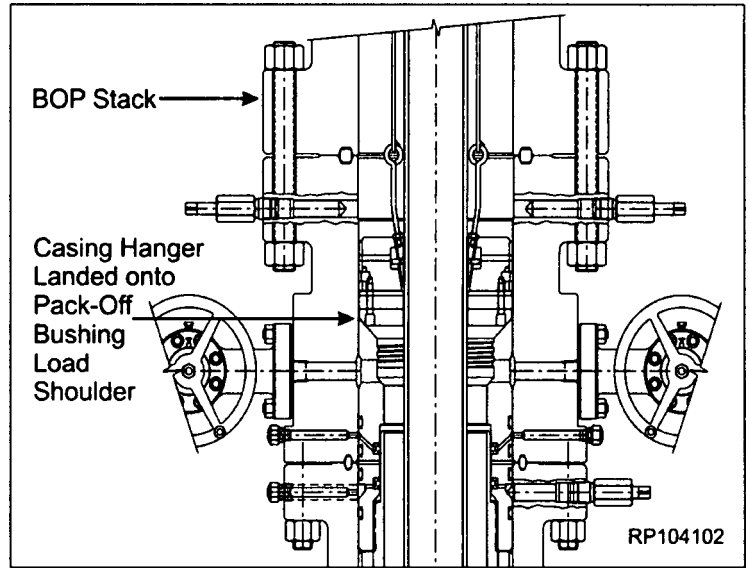
### Hanging off the Production Casing


1. With the casing hanger now landed onto the pack-off bushing load shoulder, pull tension on the casing to the desired hanging weight, and then slack off.

#### NOTE

A sharp decrease on the weight indicator will signify that the hanger has taken weight. If this does not occur, pull tension again and slack off once more.

2. Rough cut casing approximately 16" above top of WFT-SB Spool top flange. Remove excess casing.
3. Carefully remove BOP stack, set aside.
4. Final cut the casing at about 12 7/8" +/- 1/8" above the face of the WFT-SB spool, which will allow room for the double studded adapter flange.
5. Grind the casing stub level and bevel the casing outer diameter (1/4" x 1/8") and inner diameter (1/8" x 45 degrees).



|  |                             |                         |               |                 |                |
|--|-----------------------------|-------------------------|---------------|-----------------|----------------|
| <br><b>Weatherford</b><br>5-3-GL-GL-WES-00XXX | <b>Field Service Manual</b> | Prepared By:            | Reviewed By:  | Approved By:    | <b>SM-13-1</b> |
|  |                             | <i>Marion Robertson</i> | Brad Franks   | Manual Zaragoza | <b>Rev WIP</b> |
|  |                             | Marion Robertson        | Brad Franks   | Manual Zaragoza | Page 18 of 24  |
|  |                             | December 2014           | December 2014 | December 2014   |                |

## WFT Split Bowl (SB) Wellhead System (Continued)

### Installation of the Double-Studded Adapter (DSA) Flange

1. Examine the double studded adapter (DSA) Flange. Verify the following:
  - Ring grooves are clean and undamaged.
  - Stud threads are clean and undamaged.
2. Orient the DSA flange with the 10M side down.
3. Thoroughly clean the mating grooves of the DSA flange and the WFT-SB spool assembly. Wipe lightly with oil or grease.

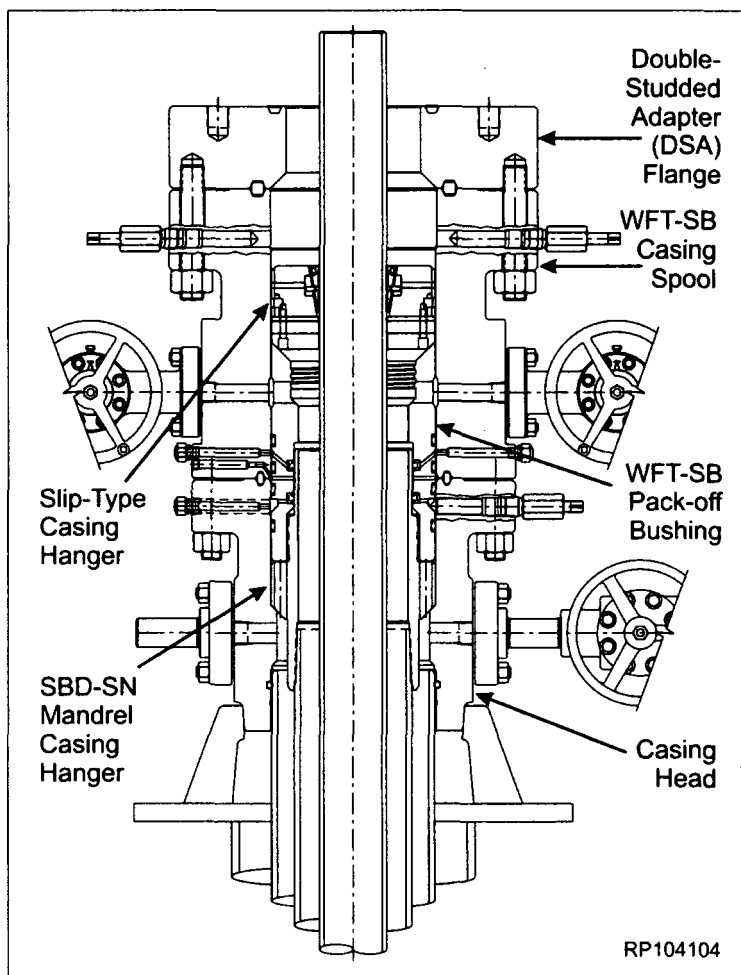


**Excessive oil or grease will prevent a positive seal from forming.**

4. Install a new appropriately sized ring gasket into the WFT-SB spool assembly groove.
5. Lift, while holding level, and carefully lower the DSA over the production casing stub until it lands on the ring gasket.
6. Make-up the flange connection with appropriate nuts, tightening in alternate cross pattern, as required by API 6A.
7. Fill the void area in the DSA around the production casing with a light weight oil.
8. Continue filling with a light weight oil to the top of the DSA.



**Do NOT allow oil to run into the ring groove. This may prevent a positive seal from forming.**



RP104104



**Weatherford**

5-3-GL-GL-WES-00XXX

**Field Service  
Manual**

|                         |               |                 |                |
|-------------------------|---------------|-----------------|----------------|
| Prepared By:            | Reviewed By:  | Approved By:    | <b>SM-13-1</b> |
| <i>Marion Robertson</i> | Brad Franks   | Manual Zaragoza | <b>Rev WIP</b> |
| Marion Robertson        | Brad Franks   | Manual Zaragoza | Page 19 of 24  |
| December 2014           | December 2014 | December 2014   |                |

## WFT Split Bowl (SB) Wellhead System (Continued)

### Installation and Testing of the Tubing Spool Assembly

#### Installation of the TCM Tubing Spool Assembly

1. Examine the tubing spool assembly. Verify the following:
  - bore is clean and free of debris
  - ring grooves and seals are clean and undamaged
  - PE-seal assembly is properly installed, clean and undamaged.
2. Thoroughly clean the mating ring grooves of the WFT-TCM Tubing Spool and WFT-SB Casing Spool.
3. Lightly lubricate the inner diameter of the PE-seal and outer diameter of the casing stub with oil or grease.

#### **WARNING**

Excessive oil or grease will prevent a positive seal from forming.

4. Install a new appropriately sized ring gasket into the WFT-SB casing spool assembly groove.
5. Orient the tubing spool assembly as required and carefully lower it over the casing stub, until it lands on the ring gasket.
6. Make up the flange connection with the appropriate studs and nuts, tightening in an alternating cross pattern, as required by API 6A.

#### Testing the Secondary Seal and Flange Connection Test

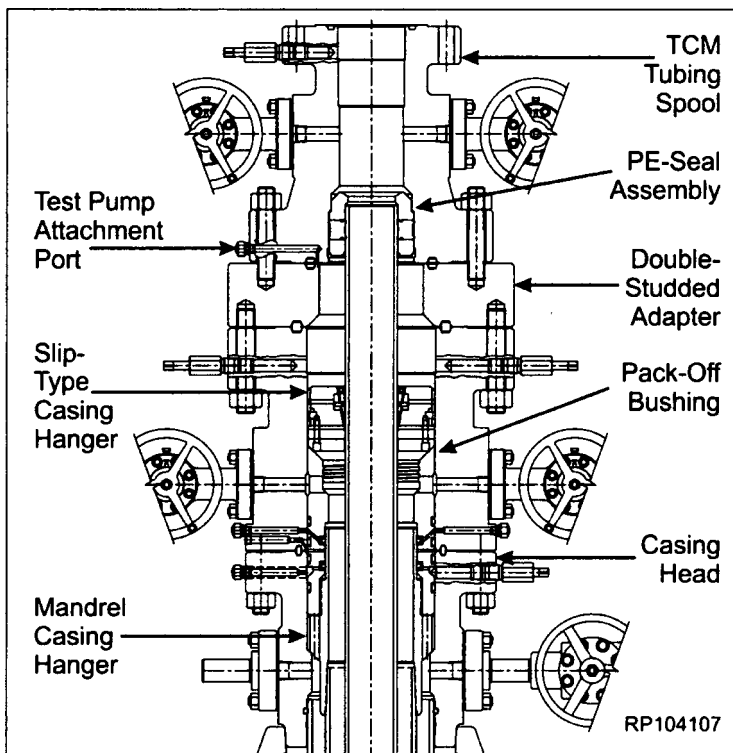
1. Locate the test port fitting on the OD of the tubing spool lower flange. Remove the dust cap from the fitting.
2. Attach a test pump to the test port fitting.


3. Pump clean test fluid into the void area between the flanges until a test pressure of **10,000 psi or 80% of casing collapse pressure is attained**, whichever is lower.
4. Hold and monitor pressure for 15 minutes or as required by the drilling supervisor.
5. Once a satisfactory test is achieved, carefully bleed off pressure and remove the test pump
6. Attach a bleeder tool to the test port fitting and open the tool to vent any remaining trapped pressure.

#### **CAUTION**

Always direct the bleeder tool port away from people and property.

7. Remove the bleeder tool and reinstall the dust cap on the test port fitting.
8. Install a new appropriately sized ring gasket into the tubing spool groove.



|  |                             |                         |               |                 |                |
|--|-----------------------------|-------------------------|---------------|-----------------|----------------|
| <br><b>Weatherford</b><br>5-3-GL-GL-WES-00XXX | <b>Field Service Manual</b> | Prepared By:            | Reviewed By:  | Approved By:    | <b>SM-13-1</b> |
|  |                             | <i>Marion Robertson</i> | Brad Franks   | Manual Zaragoza | <b>Rev WIP</b> |
|  |                             | Marion Robertson        | Brad Franks   | Manual Zaragoza | Page 20 of 24  |
|  |                             | December 2014           | December 2014 | December 2014   |                |

## WFT Split Bowl (SB) Wellhead System (Continued)

### Testing the BOP

#### NOTE

Immediately after the make-up of the BOP Stack and periodically during drilling of hole for the next string, the BOP stack (flanged connections and rams) must be tested.

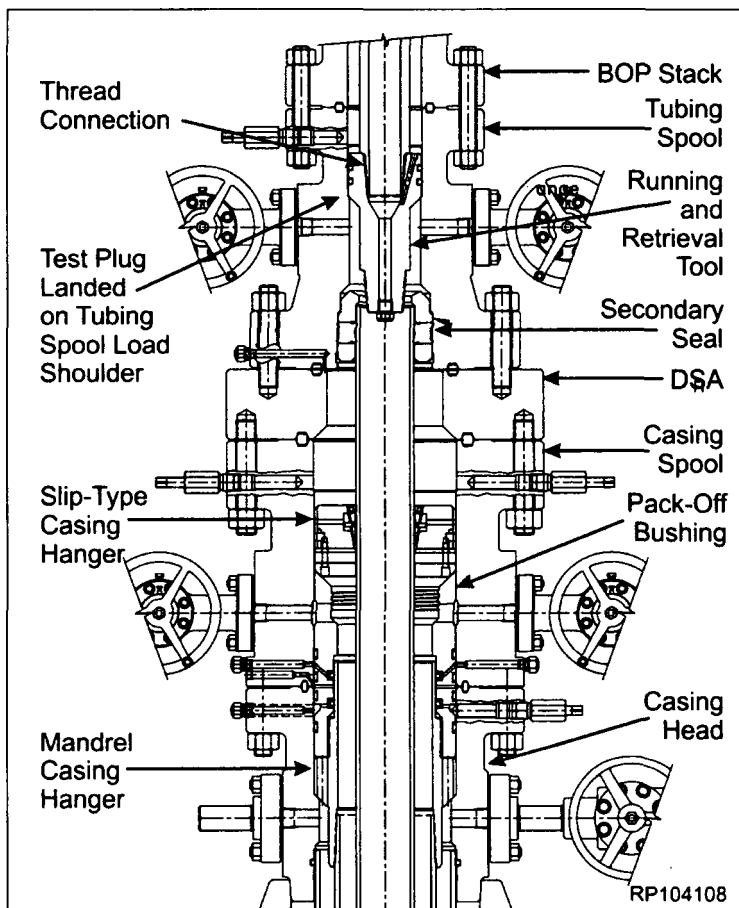
1. Examine the test plug. Verify that:
  - O-ring seals and plugs are properly installed, clean and undamaged.
  - All threads are clean and undamaged.
2. Orient the test plug with O-ring seals up and drill pipe pin connection down.
3. Make up a joint of drill pipe to the top of the test plug.


#### NOTE

If pressure is to be supplied through the drill pipe, the pipe plug should be removed from the weep port.

4. Fully retract all lockscrews on the WFT-TCM tubing spool assembly.
5. Open the side outlet valves on the tubing spool.
6. Wipe the test plug O-ring seals with a light oil or grease.
7. Lower the test plug through the BOP until it lands on the tubing spool load shoulder.
8. Close the BOP rams on the drill pipe and test to 10,000 psi maximum.
9. Monitor the open outlets for signs of leakage past the test plug.

10. Once a satisfactory test is achieved, release pressure and open the rams.
11. Close the side outlet valves.
12. Remove as much fluid from the BOP stack as possible.
13. Slowly retrieve the test plug, avoiding damage to the seals.
14. Repeat this procedure, as required, during drilling or conditioning of the hole.

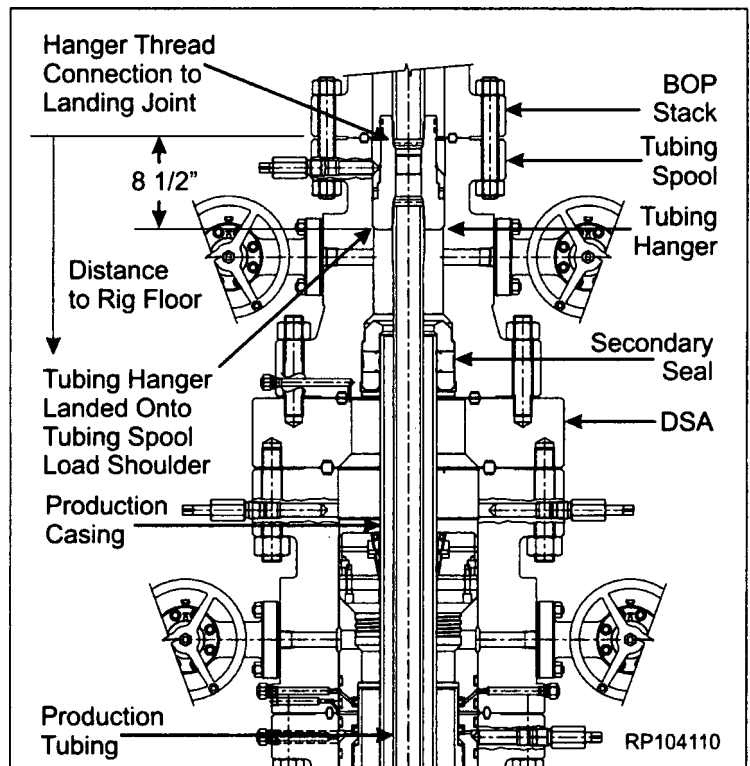


|  |                             |                         |               |                 |                |
|--|-----------------------------|-------------------------|---------------|-----------------|----------------|
| <br><b>Weatherford</b><br>5-3-GL-GL-WES-00XXX | <b>Field Service Manual</b> | Prepared By:            | Reviewed By:  | Approved By:    | <b>SM-13-1</b> |
|  |                             | <i>Marion Robertson</i> | Brad Franks   | Manual Zaragoza | <b>Rev WIP</b> |
|  |                             | Marion Robertson        | Brad Franks   | Manual Zaragoza | Page 21 of 24  |
|  |                             | December 2014           | December 2014 | December 2014   |                |

## WFT Split Bowl (SB) Wellhead System (Continued)


### Hanging off the Production Tubing String

1. Run the production tubing and space out appropriately for the tubing hanger.
2. Examine the TC1AEN Tubing Hanger. Verify the following:
  - Packing element is clean and undamaged.
  - S-seals are properly installed.
  - S-seals are clean and undamaged.
  - All threads are clean and undamaged.
3. Make-up a short handling joint to the top of the tubing hanger.
4. Pick up the tubing hanger and make it up to the tubing string, tightening the connection to the thread manufacturer's recommended optimum torque value.
5. Remove the short handling joint from the top of the hanger. Make up the landing joint to the top of the tubing hanger, tightening the connection to the thread manufacturer's recommended minimum torque values.
6. Ensure that all tubing spool lockscrews are fully retracted from the bore and open side outlet valves. Drain the BOP stack.
7. Calculate the distance from the tubing spool load shoulder to the rig floor. Measure from the face of the tubing spool.
8. Carefully lower the tubing hanger into the well, tallying the tubing every five feet, until the tubing hanger lands securely on the tubing spool load shoulder.
9. Run in all tubing spool lockscrews, in an alternating cross pattern, to 300 ft-lbs, in 75 ft-lb increments.
10. Remove the landing joint from the tubing hanger, and set it aside.



### NOTE

The side outlet valves should remain open while landing the tubing hanger.

|  |                             |                         |               |                 |                |
|--|-----------------------------|-------------------------|---------------|-----------------|----------------|
| <br><b>Weatherford</b><br>5-3-GL-GL-WES-00XXX | <b>Field Service Manual</b> | Prepared By:            | Reviewed By:  | Approved By:    | <b>SM-13-1</b> |
|  |                             | <i>Marion Robertson</i> | Brad Franks   | Manual Zaragoza | <b>Rev WIP</b> |
|  |                             | Marion Robertson        | Brad Franks   | Manual Zaragoza | Page 22 of 24  |
|  |                             | December 2014           | December 2014 | December 2014   |                |

## WFT Split Bowl (SB) Wellhead System (Continued)

11. Install the Type H Back Pressure Valve, carefully lowering the BPV through the BOP stack into the tubing hanger. Rotate the BPV counterclockwise (to the left) until it bottoms out in the tubing hanger BPV prep. Continue rotating counterclockwise, approximately 7 turns, to retrieve the running tool.
12. With the well safe and under control, the BOP stack may be removed.

### Installation and Testing of the Production Tree

#### Installation

1. Examine the production tree assembly. Verify the following:
  - Bore is clean and free of debris.
  - All valves are in the fully open position.
  - All threads and seal areas are clean and undamaged.
  - All fittings, nuts and handwheels are intact and undamaged.
2. Thoroughly clean all exposed portions of the tubing hanger, tubing head adapter flange and bottom prep of the tubing head adapter.
3. Thoroughly clean mating ring grooves of the tubing head adapter flange and WFT-TCM tubing spool.
4. Lightly lubricate the tubing hanger neck outer diameter and tubing head adapter flange bottom prep with oil or grease.



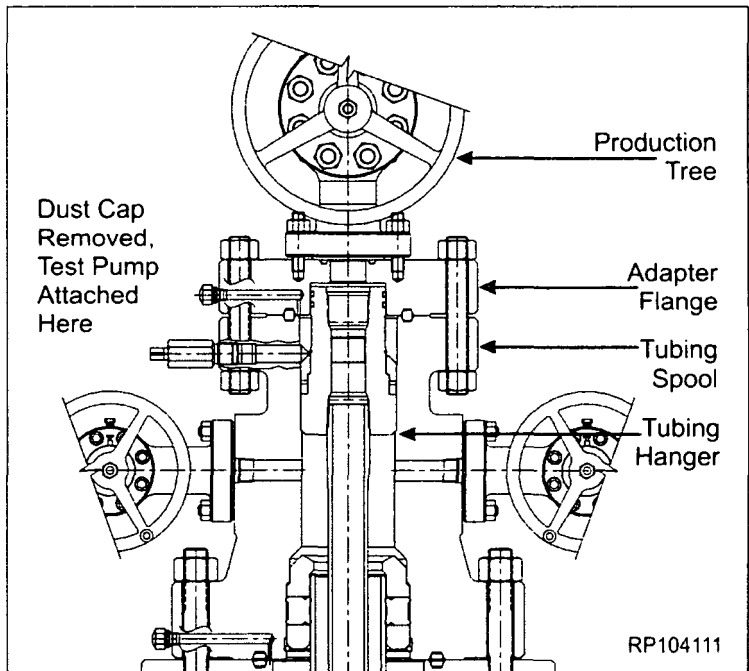
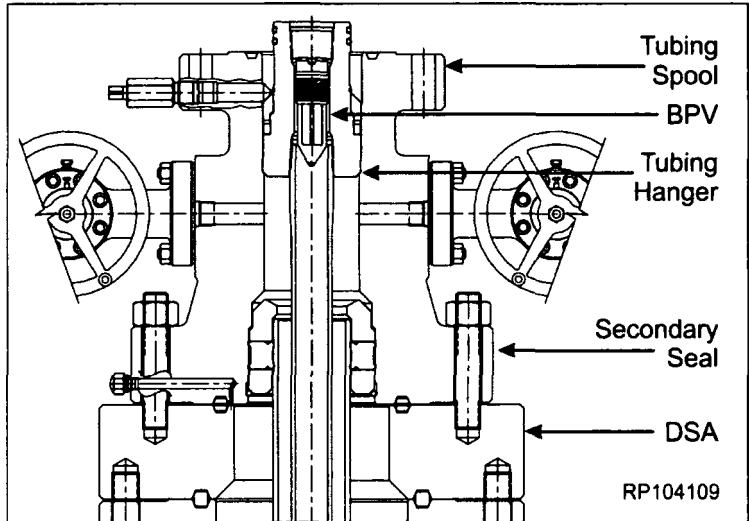
**Excessive oil or grease will prevent a positive seal from forming.**

5. Install a new appropriately sized ring gasket into the WFT-TCM tubing spool groove.

6. Fill the void area around the hanger with hydraulic fluid, to the top of the tubing spool assembly.



**Do NOT overfill the void area, allowing oil to run into the ring groove. This may prevent a positive seal from forming.**



**Weatherford**

5-3-GL-GL-WES-00XXX

**Field Service  
Manual**

|                         |               |                 |                |
|-------------------------|---------------|-----------------|----------------|
| Prepared By:            | Reviewed By:  | Approved By:    | <b>SM-13-1</b> |
| <i>Marion Robertson</i> | Brad Franks   | Manual Zaragoza | <b>Rev WIP</b> |
| Marion Robertson        | Brad Franks   | Manual Zaragoza | Page 23 of 24  |
| December 2014           | December 2014 | December 2014   |                |





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

## SUPO Data Report

11/30/2018

APD ID: 10400029777

Submission Date: 05/22/2018

Operator Name: BTA OIL PRODUCERS LLC

Well Name: VACA DRAW 9418 10 FED

Well Number: 19H

Well Type: OIL WELL

Well Work Type: Drill



[Show Final Text](#)

### Section 1 - Existing Roads

Will existing roads be used? YES

Existing Road Map:

Vaca\_Draw\_9418\_10\_Fed\_19H\_Vicinity\_Map\_20180424125154.pdf

Existing Road Purpose: ACCESS,FLUID TRANSPORT

Row(s) Exist? NO

ROW ID(s)

ID:

Do the existing roads need to be improved? NO

Existing Road Improvement Description:

Existing Road Improvement Attachment:

### Section 2 - New or Reconstructed Access Roads

Will new roads be needed? YES

New Road Map:

Vaca\_Draw\_9418\_10\_Fed\_19H\_Topographical\_\_Access\_Rd\_20180424125208.pdf

New road type: RESOURCE

Length: 340

Feet

Width (ft.): 25

Max slope (%): 2

Max grade (%): 2

Army Corp of Engineers (ACOE) permit required? NO

ACOE Permit Number(s):

New road travel width: 15

New road access erosion control: Road construction requirements and regular maintenance would alleviate potential impacts to the access road from water erosion damage.

New road access plan or profile prepared? NO

New road access plan attachment:

Access road engineering design? NO

Access road engineering design attachment:

**Operator Name:** BTA OIL PRODUCERS LLC

**Well Name:** VACA DRAW 9418 10 FED

**Well Number:** 19H

**Access surfacing type:** OTHER

**Access topsoil source:** BOTH

**Access surfacing type description:** Native Caliche

**Access onsite topsoil source depth:** 6

**Offsite topsoil source description:** Material will be obtained from the closest existing caliche pit as designated by the BLM.

**Onsite topsoil removal process:** The top 6 inches of topsoil is pushed off and stockpiled along the side of the location. An approximate 160' X 160' area is used within the proposed well site to remove caliche. Subsoil is removed and stockpiled within the pad site to build the location and road. Then subsoil is pushed back in the hole and caliche is spread accordingly across proposed access road.

**Access other construction information:**

**Access miscellaneous information:**

**Number of access turnouts:**

**Access turnout map:**

### Drainage Control

**New road drainage crossing:** OTHER

**Drainage Control comments:** Proposed access road will be crowned and ditched and constructed of 6 inch rolled and compacted caliche. Water will be diverted where necessary to avoid ponding, maintain good drainage, and to be consistent with local drainage patterns.

**Road Drainage Control Structures (DCS) description:** Any ditches will be at 3:1 slope and 3 feet wide.

**Road Drainage Control Structures (DCS) attachment:**

### Access Additional Attachments

**Additional Attachment(s):**

### Section 3 - Location of Existing Wells

**Existing Wells Map?** YES

**Attach Well map:**

Vaca\_Draw\_9418\_10\_Fed\_\_19H\_\_1mi\_Radius\_Map\_20180522152406.pdf

**Existing Wells description:**

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

**Submit or defer a Proposed Production Facilities plan?** SUBMIT

**Production Facilities description:** If well is productive, we will use the existing well pad for the tank battery and all necessary production facilities. If any plans change in regarding the production facility or other infrastructure, we will submit a sundry notice or right of way (if applicable) prior to installation or construction.

**Production Facilities map:**

Production\_Facility\_20180420101402.pdf

**Operator Name:** BTA OIL PRODUCERS LLC

**Well Name:** VACA DRAW 9418 10 FED

**Well Number:** 19H

## Section 5 - Location and Types of Water Supply

### Water Source Table

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

**Describe type:** Sec. 11, T26S, R33E

**Source latitude:**

**Source datum:** NAD83

**Water source permit type:** OTHER

**Source land ownership:** FEDERAL

**Water source transport method:** PIPELINE,TRUCKING

**Source transportation land ownership:** FEDERAL

**Water source volume (barrels):** 100000

**Source volume (gal):** 4200000

**Water source type:** OTHER

**Source longitude:**

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

**Describe type:** Sec. 1, T26S, R33E

**Source latitude:**

**Source datum:** NAD83

**Water source permit type:** OTHER

**Source land ownership:** FEDERAL

**Water source transport method:** PIPELINE,TRUCKING

**Source transportation land ownership:** FEDERAL

**Water source volume (barrels):** 100000

**Source volume (gal):** 4200000

**Water source type:** OTHER

**Source longitude:**

**Source volume (acre-feet):** 12.88931

**Water source and transportation map:**

Vaca\_Draw\_9418\_10\_Fed\_\_\_Water\_Source\_and\_Transportation\_Map\_20180424071743.pdf

**Water source comments:**

**New water well?** NO

### New Water Well Info

**Well latitude:**

**Well Longitude:**

**Well datum:**

**Well target aquifer:**

**Operator Name:** BTA OIL PRODUCERS LLC

**Well Name:** VACA DRAW 9418 10 FED

**Well Number:** 19H

**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**

**Construction Materials description:** Caliche used for construction of the drilling pad and access road will be obtained from the closest existing caliche pit as approved by the BLM or from prevailing deposits found under the location. If there is not sufficient material available, caliche will be purchased from the nearest caliche pit located in Section 1, T25S, R33E Lea County, NM. Alternative location if original location closes will be located in Section 34, T24S, R33E.

**Construction Materials source location attachment:**

## **Section 7 - Methods for Handling Waste**

**Waste type:** DRILLING

**Waste content description:** Drilling fluids and cuttings.

**Amount of waste:** 3990 barrels

**Waste disposal frequency :** One Time Only

**Safe containment description:** All drilling fluids will be stored safely and disposed of properly.

**Safe containmant attachment:**

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

**Disposal type description:**

**Disposal location description:** Trucked to an approved disposal facility.

**Waste type:** SEWAGE

**Waste content description:** Human waste and grey water

**Amount of waste:** 1000 gallons

**Waste disposal frequency :** One Time Only

**Operator Name:** BTA OIL PRODUCERS LLC

**Well Name:** VACA DRAW 9418 10 FED

**Well Number:** 19H

**Safe containment description:** Waste material will be stored safely and disposed of properly.

**Safe containmant attachment:**

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

**Disposal type description:**

**Disposal location description:** Trucked to an approved disposal facility.

**Waste type:** GARBAGE

**Waste content description:** Trash

**Amount of waste:** 500                      pounds

**Waste disposal frequency :** One Time Only

**Safe containment description:** Trash produced during drilling and completion operations will be collected in a trash container and disposed of properly.

**Safe containmant attachment:**

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

**Disposal type description:**

**Disposal location description:** Trucked to an approved 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?**

**Operator Name:** BTA OIL PRODUCERS LLC

**Well Name:** VACA DRAW 9418 10 FED

**Well Number:** 19H

**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:** It is possible that a mobile home will be used at the well site during drilling operations.

## Section 9 - Well Site Layout

**Well Site Layout Diagram:**

Vaca\_Draw\_9418\_10\_Fed\_19H\_Well\_Site\_Plan\_20180424125631.pdf

**Comments:** Should the well be successfully completed for production, the original topsoil from the site will be returned to the location. The drill site will be contoured as close as possible to the original state.

## Section 10 - Plans for Surface Reclamation

**Type of disturbance:** New Surface Disturbance

**Multiple Well Pad Name:** VACA DRAW 9418 10 FED

**Multiple Well Pad Number:** 16H-19H

**Recontouring attachment:**

**Drainage/Erosion control construction:** During construction proper erosion control methods will be used to control erosion, runoff and siltation of the surrounding area.

**Drainage/Erosion control reclamation:** Proper erosion control methods will be used on the area to control erosion, runoff and siltation of the surrounding area.

|  |   |   |
|--|---|---|
| <b>Well pad proposed disturbance (acres):</b> 0  | <b>Well pad interim reclamation (acres):</b> 3.07 | <b>Well pad long term disturbance (acres):</b> 2.34 |
| <b>Road proposed disturbance (acres):</b> 0      | <b>Road interim reclamation (acres):</b> 0.234    | <b>Road long term disturbance (acres):</b> 0.234    |
| <b>Powerline proposed disturbance (acres):</b> 0 | <b>Powerline interim reclamation (acres):</b> 0   | <b>Powerline long term disturbance (acres):</b> 0   |
| <b>Pipeline proposed disturbance (acres):</b> 0  | <b>Pipeline interim reclamation (acres):</b> 0    | <b>Pipeline long term disturbance (acres):</b> 0    |
| <b>Other proposed disturbance (acres):</b> 0     | <b>Other interim reclamation (acres):</b> 0       | <b>Other long term disturbance (acres):</b> 0       |
| <b>Total proposed disturbance:</b> 0             | <b>Total interim reclamation:</b> 3.304           | <b>Total long term disturbance:</b> 2.574           |

**Disturbance Comments:**

**Reconstruction method:** The areas planned for interim reclamation will then be recontoured to the original contour if feasible, or if not feasible, to an interim contour that blends with the surrounding topography as much as possible. Where applicable, the fill material of the well pad will be backfilled into the cut to bring the area back to the original contour. The interim cut and fill slopes prior to re-seeding will not be steeper than a 3:1 ratio, unless the adjacent native topography is steeper. Note: Constructed slopes may be much steeper during drilling, but will be recontoured to the above ratios during

**Operator Name:** BTA OIL PRODUCERS LLC

**Well Name:** VACA DRAW 9418 10 FED

**Well Number:** 19H

interim reclamation.

**Topsoil redistribution:** Topsoil will be evenly respread and aggressively revegetated over the entire disturbed area not needed for all-weather operations.

**Soil treatment:** To seed the area, the proper BLM seed mixture, free of noxious weeds, will be used. Final seedbed preparation will consist of contour cultivating to a depth of 4 to 6 inches within 24 hours prior to seeding, dozer tracking, or other imprinting in order to break the soil crust and create seed germination micro-sites.

**Existing Vegetation at the well pad:** The historic climax plant community is a grassland dominated by black grama, dropseeds, and blue stems with sand sage and shinnery oak distributed evenly throughout. Current landscape displays mesquite, shinnery oak, yucca, desert sage, fourwing saltbush, snakeweed, and bunch grasses.

**Existing Vegetation at the well pad attachment:**

**Existing Vegetation Community at the road:** Refer to "Existing Vegetation at the well pad"

**Existing Vegetation Community at the road attachment:**

**Existing Vegetation Community at the pipeline:** Refer to "Existing Vegetation at the well pad"

**Existing Vegetation Community at the pipeline attachment:**

**Existing Vegetation Community at other disturbances:** Refer to "Existing Vegetation at the well pad"

**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

**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:**

**Operator Name:** BTA OIL PRODUCERS LLC

**Well Name:** VACA DRAW 9418 10 FED

**Well Number:** 19H

**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:**

**Last Name:**

**Phone:**

**Email:**

**Seedbed prep:**

**Seed BMP:**

**Seed method:**

**Existing invasive species?** NO

**Existing invasive species treatment description:**

**Existing invasive species treatment attachment:**

**Weed treatment plan description:** No invasive species present. Standard regular maintenance to maintain a clear location and road.

**Weed treatment plan attachment:**

**Monitoring plan description:** Identify areas supporting weeds prior to construction; prevent the introduction and spread of weeds from construction equipment during construction; and contain weed seeds and propagules by preventing segregated topsoil from being spread to adjacent areas. No invasive species present. Standard regular maintenance to maintain a clear location and road.

**Monitoring plan attachment:**

**Success standards:** To maintain all disturbed areas as per Gold Book standards.

**Pit closure description:** N/A

**Pit closure attachment:**

**Section 11 - Surface Ownership**

**Disturbance type:** WELL PAD

**Describe:**

**Surface Owner:** BUREAU OF LAND MANAGEMENT

**Other surface owner description:**

**BIA Local Office:**

**BOR Local Office:**



**Operator Name:** BTA OIL PRODUCERS LLC

**Well Name:** VACA DRAW 9418 10 FED

**Well Number:** 19H

**COE Local Office:**

**DOD Local Office:**

**NPS Local Office:**

**State Local Office:**

**Military Local Office:**

**USFWS Local Office:**

**Other Local Office:**

**USFS Region:**

**USFS Forest/Grassland:**

**USFS Ranger District:**

**Disturbance type:** NEW ACCESS ROAD

**Describe:**

**Surface Owner:** BUREAU OF LAND MANAGEMENT

**Other surface owner description:**

**BIA Local Office:**

**BOR Local Office:**

**COE Local Office:**

**DOD Local Office:**

**NPS Local Office:**

**State Local Office:**

**Military Local Office:**

**USFWS Local Office:**

**Other Local Office:**

**USFS Region:**

**USFS Forest/Grassland:**

**USFS Ranger District:**

**Operator Name:** BTA OIL PRODUCERS LLC

**Well Name:** VACA DRAW 9418 10 FED

**Well Number:** 19H

### Section 12 - Other Information

**Right of Way needed?** NO

**Use APD as ROW?**

**ROW Type(s):**

#### ROW Applications

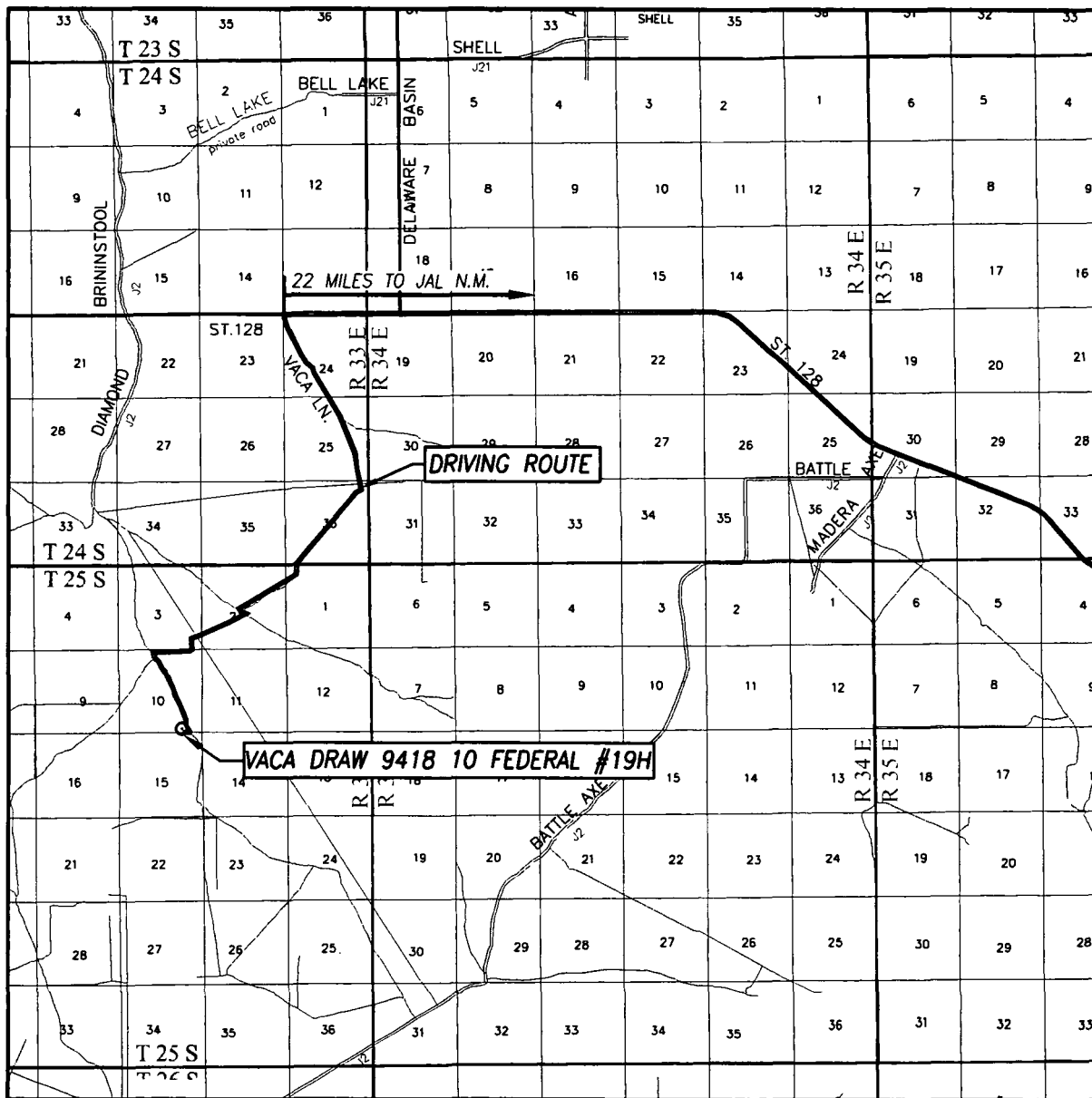
**SUPO Additional Information:**

**Use a previously conducted onsite?** YES

**Previous Onsite information:** Onsite was conducted Thursday, February 15, 2017 by Fernando Banos & Vance Wolf.

#### Other SUPO Attachment

# VICINITY MAP



SCALE: 1" = 2 MILES

DRIVING ROUTE: SEE TOPOGRAPHICAL AND ACCESS ROAD MAP

SEC. 10 TWP. 25-S RGE. 33-E

SURVEY N.M.P.M.

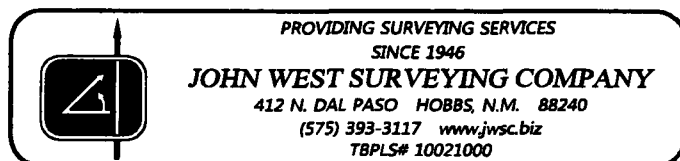
COUNTY LEA STATE NEW MEXICO

DESCRIPTION 220' FSL & 1275' FEL

ELEVATION 3377'

OPERATOR BTA OIL PRODUCERS, LLC

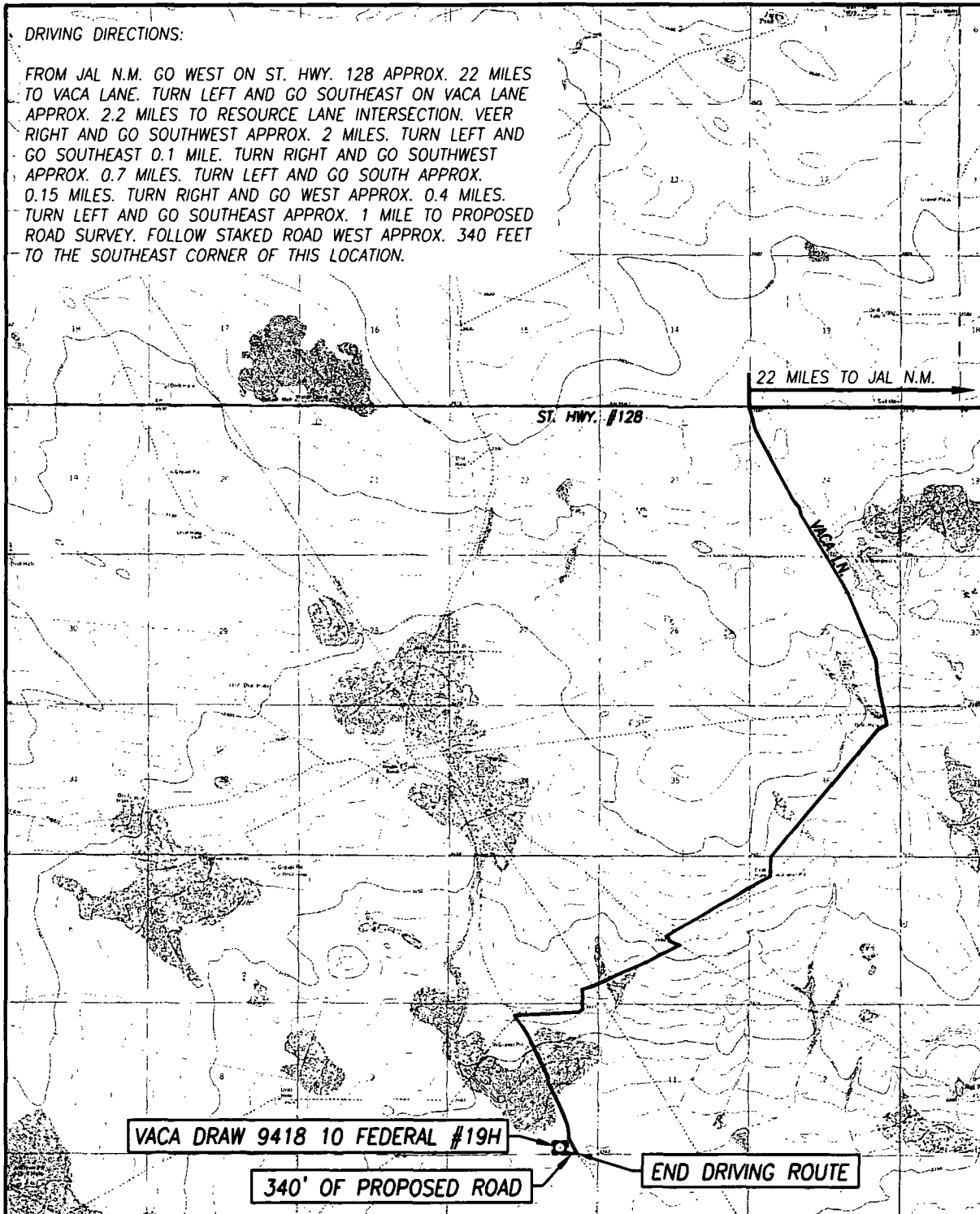
LEASE VACA DRAW 9418 10 FEDERAL



# TOPOGRAPHIC AND ACCESS ROAD MAP

## DRIVING DIRECTIONS:

FROM JAL N.M. GO WEST ON ST. HWY. 128 APPROX. 22 MILES TO VACA LANE. TURN LEFT AND GO SOUTHEAST ON VACA LANE APPROX. 2.2 MILES TO RESOURCE LANE INTERSECTION. VEER RIGHT AND GO SOUTHWEST APPROX. 2 MILES. TURN LEFT AND GO SOUTHEAST 0.1 MILE. TURN RIGHT AND GO SOUTHWEST APPROX. 0.7 MILES. TURN LEFT AND GO SOUTH APPROX. 0.15 MILES. TURN RIGHT AND GO WEST APPROX. 0.4 MILES. TURN LEFT AND GO SOUTHEAST APPROX. 1 MILE TO PROPOSED ROAD SURVEY. FOLLOW STAKED ROAD WEST APPROX. 340 FEET TO THE SOUTHEAST CORNER OF THIS LOCATION.



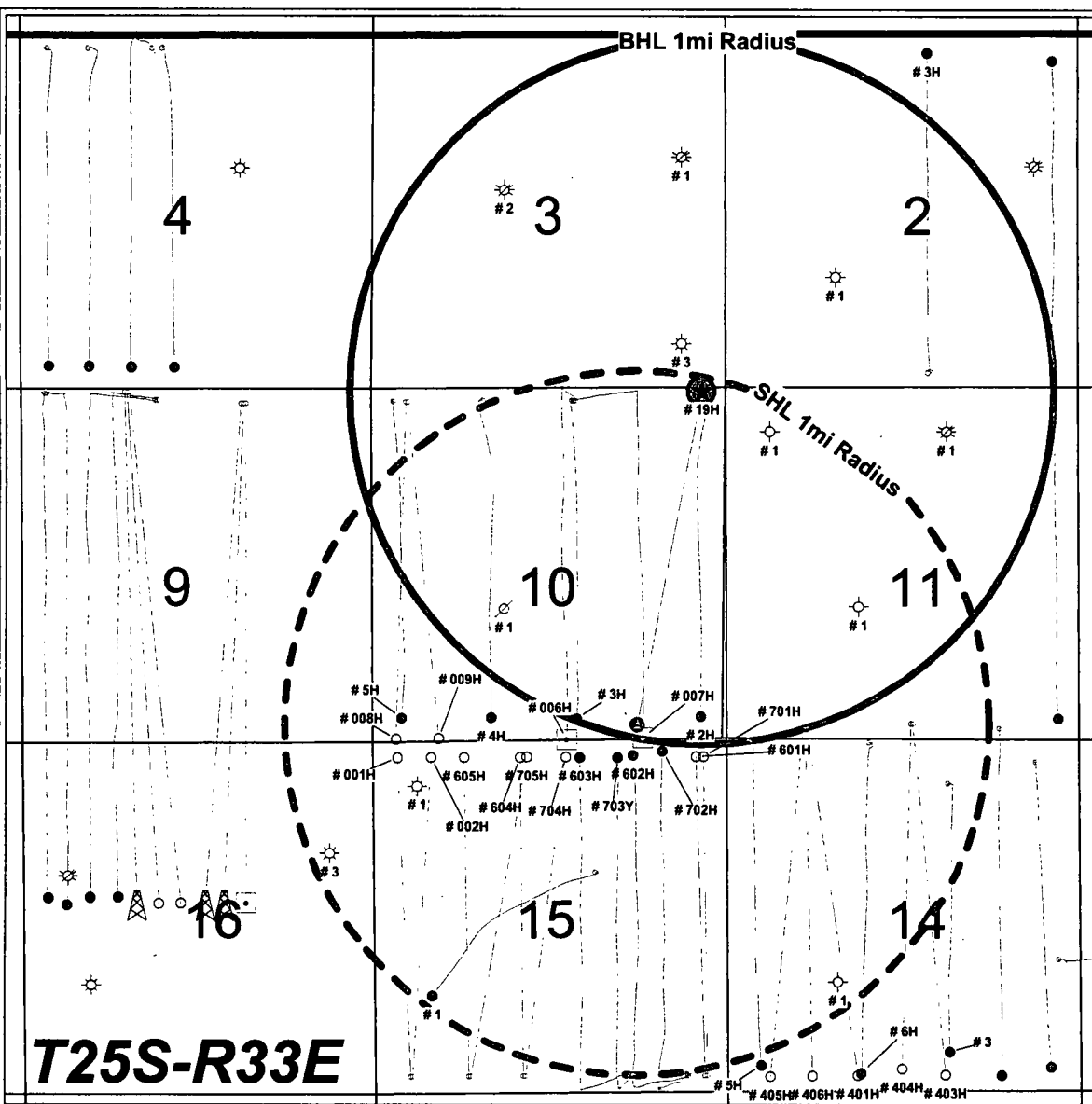
SEC. 10 TWP. 25-S RGE. 33-E  
 COUNTY LEA STATE NEW MEXICO  
 DESCRIPTION 220' FSL & 1275' FEL  
 ELEVATION 3377'  
 OPERATOR BTA OIL PRODUCERS, LLC  
 LEASE VACA DRAW 9418 10 FEDERAL  
 U.S.G.S. TOPOGRAPHIC MAP  
 BELL LAKE, N.M. SURVEY N.M.P.M.

SCALE: 1" = 5280'

CONTOUR INTERVAL:  
 BELL LAKE, N.M. - 10'



PROVIDING SURVEYING SERVICES  
 SINCE 1946  
**JOHN WEST SURVEYING COMPANY**  
 412 N. DAL PASO HOBBS, N.M. 88240  
 (575) 393-3117 [www.jwsc.biz](http://www.jwsc.biz)  
 TBPLS# 10021000



**BTA Oil Producers, LLC**










**Vaca Draw 9418 10 Fed #19H - 1mi Radius**

SHL:220'FSL&amp;1275'FEL. Sec.10. T25S-R33

SHL:50'FNL&amp;350'FEL. Sec. 10. T25S-R33

Lea County, New Mexico

## WELL SYMBOLS

- WELL SYMBOLS**
- |   |                                |
|---|--------------------------------|
|  | Proposed Location              |
|  | Permitted Location             |
|  | Drilling Well                  |
|  | Drilled, Waiting on Completion |
|  | Oil Well                       |
|  | Gas Well                       |
|  | Dry Hole                       |
|  | Injection Well                 |
|  | Plugged & Abandoned Gas Well   |

## REMARKS

Vaca Draw 9418 10 Fed #19H Highlighted In Yellow

Bottom Hole Location 1 Mile Radius Outlined in Red

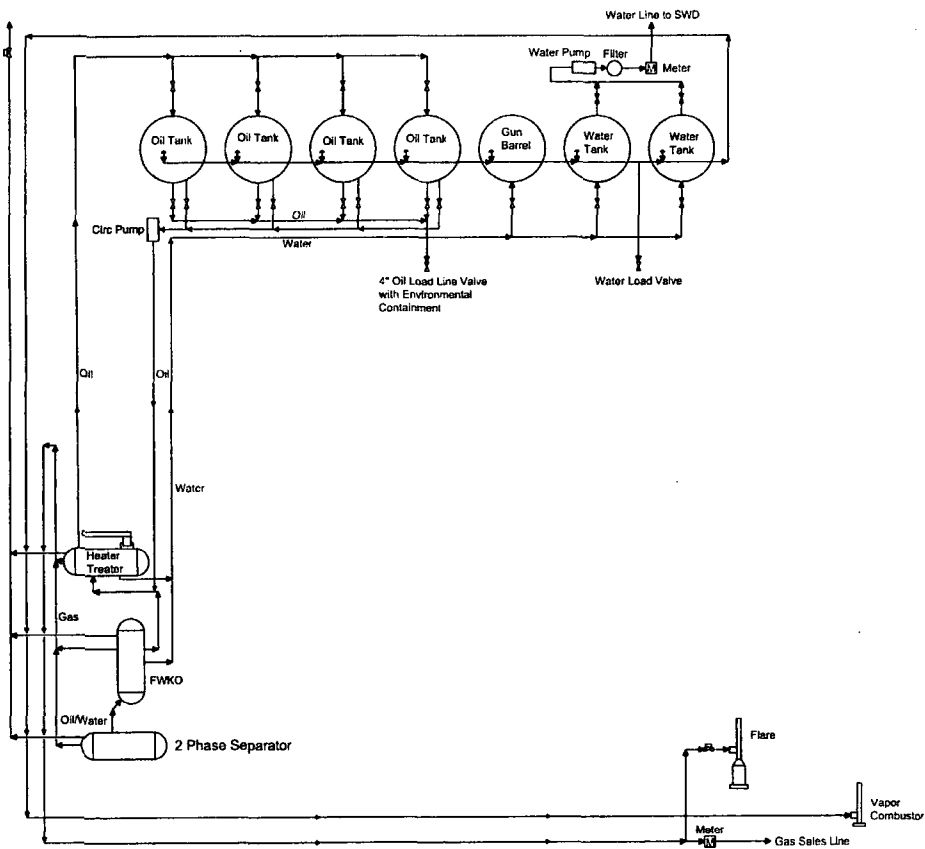
Surface Hole Location 1 Mile Radius Outlined in Red Dash

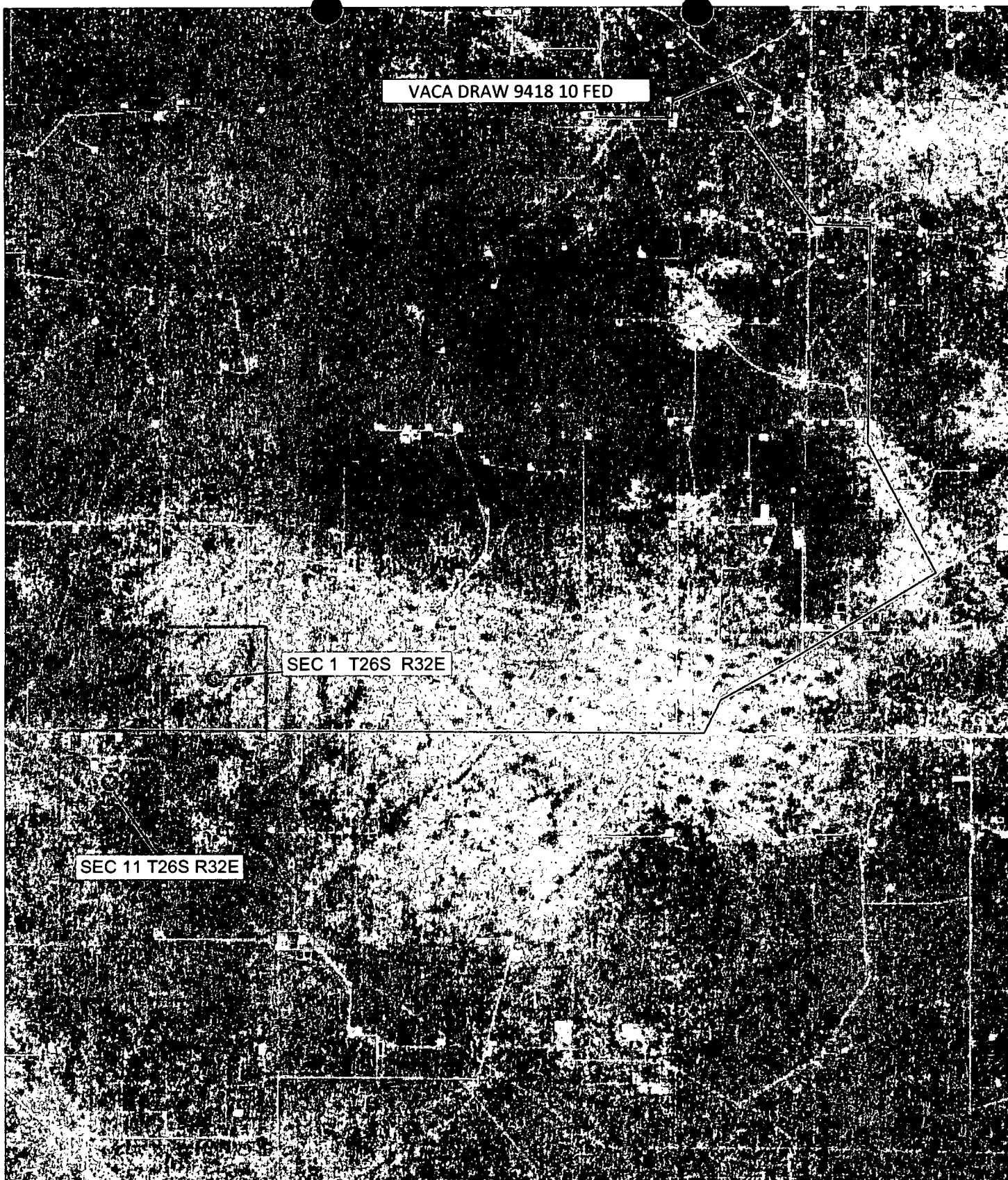
SEE ATTACHED WELL LIST FOR DETAILED WELL INFORMATION

By: JHB

| Vaca Draw 9418 10 Fed #19H - 1mi Radius Well Data |                        |                           |        |     |     |     |            |              |            |              |                     |         |        |
|---|------------------------|---------------------------|--------|-----|-----|-----|------------|--------------|------------|--------------|---------------------|---------|--------|
| API #   | Operator               | Well Name                 | Well # | Sec | Twp | Rng | Surf Lat   | Surf Lon     | Bot Lat    | Bot Lon      | SHL Ftg Calls       | TD      | Status |
| 3002534604  | EOG RESOURCES INC      | TRISTE DRAW '2' STATE     | 1      | 2   | 25S | 33E | 32.1566726 | -103.5458578 | 0          | 0            | 1650'FSL & 1260'FWL | 13,870' | GAS    |
| 3002541907  | EOG RESOURCES INC      | RED HILLS 2 25 33         | 3H     | 2   | 25S | 33E | 32.1527082 | -103.5414191 | 32.165849  | -103.5413893 | 215'FSL & 2650'FEL  | 14,105' | OIL    |
| 3002534518  | EOG RESOURCES INC      | TRISTE DRAW '3' FEDERAL   | 1      | 3   | 25S | 33E | 32.1616392 | -103.5533008 | 0          | 0            | 1826'FNL & 660'FEL  | 13,886' | PAGW   |
| 3002534585  | EOG RESOURCES INC      | TRISTE DRAW '3' FEDERAL   | 2      | 3   | 25S | 33E | 32.1603171 | -103.5618741 | 0          | 0            | 2310'FNL & 1980'FWL | 13,915' | PAGW   |
| 3002535072  | COG OPERATING LLC      | TRISTE DRAW '3' FEDERAL   | 3      | 3   | 25S | 33E | 32.1539753 | -103.5533329 | 0          | 0            | 660'FSL & 660'FEL   | 13,920' | GAS    |
| 3002533639  | BTA OIL PRODUCERS, LLC | 9418 JV-P VACA DRAW       | 1      | 10  | 25S | 33E | 32.1431333 | -103.5619686 | 0          | 0            | 1980'FSL & 1980'FWL | 12,581' | INJ    |
| 3002541621  | BTA OIL PRODUCERS, LLC | VACA DRAW 9418 JV-P       | 2H     | 10  | 25S | 33E | 32.151639  | -103.5522829 | 32.1386688 | -103.5523774 | 190'FNL & 330'FEL   | 14,018' | OIL    |
| 3002541622  | BTA OIL PRODUCERS, LLC | VACA DRAW 9418 JV-P       | 3H     | 10  | 25S | 33E | 32.1516391 | -103.558672  | 32.1385988 | -103.5583841 | 190'FNL & 2310'FEL  | 15,626' | OIL    |
| 3002541623  | BTA OIL PRODUCERS, LLC | VACA DRAW 9418 JV-P       | 4H     | 10  | 25S | 33E | 32.1516604 | -103.5629645 | 32.1386573 | -103.5625122 | 190'FNL & 1650'FWL  | 13,918' | OIL    |
| 3002541624  | BTA OIL PRODUCERS, LLC | VACA DRAW 9418 JV-P       | 5H     | 10  | 25S | 33E | 32.1516389 | -103.5673083 | 32.1386544 | -103.5668624 | 190'FNL & 330'FWL   | 13,910' | OIL    |
| 3002543611  | BTA OIL PRODUCERS, LLC | VACA DRAW 9418 10 FEDERAL | 006H   | 10  | 25S | 33E | 32.1516391 | -103.5585783 | 32.1377351 | -103.5589616 | 190'FNL & 2281'FEL  | 14,478' | WOC    |
| 3002543612  | BTA OIL PRODUCERS, LLC | VACA DRAW 9418 10 FEDERAL | 007H   | 10  | 25S | 33E | 32.151639  | -103.5584813 | 32.1377982 | -103.5552764 | 190'FNL & 2251'FEL  | 14,512' | WOC    |
| 3002544250  | BTA OIL PRODUCERS, LLC | VACA DRAW 9418 10 FEDERAL | 008H   | 10  | 25S | 33E | 32.1516115 | -103.5666944 | 32.1377948 | -103.5672286 | 200'FNL & 520'FWL   |         | LOC    |
| 3002544251  | BTA OIL PRODUCERS, LLC | VACA DRAW 9418 10 FEDERAL | 009H   | 10  | 25S | 33E | 32.1516115 | -103.5665975 | 32.137808  | -103.5651612 | 200'FNL & 550'FWL   |         | LOC    |
| Vaca Draw 9418 10 Fed #19H - 1mi Radius Well Data |                        |                           |        |     |     |     |            |              |            |              |                     |         |        |
| 3002508382  | HANKAMER CURTIS CORP   | MUSE-FEDERAL              | 1      | 11  | 25S | 33E | 32.1503375 | -103.5490778 | 0          | 0            | 660'FNL & 660'FWL   | 5,297'  | DRY    |
| 3002526729  | CHEVRON                | BELL LAKE '11' FEDERAL    | 1      | 11  | 25S | 33E | 32.1502991 | -103.5405217 | 0          | 0            | 660'FNL & 1980'FEL  | 15,930' | PAGW   |
| 3002534635  | ENRON O&G CO           | TRISTE DRAW '11' FEDERAL  | 1      | 11  | 25S | 33E | 32.1431419 | -103.5448215 | 0          | 0            | 1980'FSL & 1980'FWL | 13,900' | DRY    |
| 3002542887  | EOG RESOURCES INC      | VACA 11 FEDERAL           | 403H   | 11  | 25S | 33E | 32.1383067 | -103.5422214 | 32.1237821 | -103.5407001 | 240'FSL & 2500'FEL  |         | LOC    |
| 3002542888  | EOG RESOURCES INC      | VACA 11 FEDERAL           | 404H   | 11  | 25S | 33E | 32.1383067 | -103.5423183 | 32.124046  | -103.5428061 | 240'FSL & 2530'FEL  |         | LOC    |
| 3002542889  | EOG RESOURCES INC      | VACA 11 FEDERAL COM       | 405H   | 11  | 25S | 33E | 32.1381152 | -103.5475129 | 32.1237582 | -103.5491763 | 170'FSL & 1140'FWL  |         | LOC    |
| 3002542890  | EOG RESOURCES INC      | VACA 11 FEDERAL COM       | 406H   | 11  | 25S | 33E | 32.1381152 | -103.547416  | 32.123772  | -103.5471415 | 170'FSL & 1170'FWL  |         | LOC    |
| 3002542900  | EOG RESOURCES INC      | VACA 11 FEDERAL           | 401H   | 11  | 25S | 33E | 32.1381151 | -103.5473191 | 32.1237829 | -103.5449451 | 170'FSL & 1200'FWL  |         | LOC    |
| 3002534118  | ENRON O&G CO           | VACA '14' FEDERAL         | 1      | 14  | 25S | 33E | 32.1276596 | -103.5458945 | 0          | 0            | 1650'FSL & 1650'FWL | 12,602' | DRY    |
| 3002539327  | EOG RESOURCES INC      | VACA 14 FEDERAL           | 3      | 14  | 25S | 33E | 32.1358471 | -103.5405528 | 32.1247461 | -103.5404125 | 660'FNL & 1980'FEL  | 13,200' | OIL    |
| 3002539943  | EOG RESOURCES INC      | VACA '14' FEDERAL         | 6H     | 14  | 25S | 33E | 32.1375576 | -103.5443433 | 32.1238734 | -103.5446782 | 50'FNL & 2130'FWL   | 14,150' | OIL    |
| 3002539944  | EOG RESOURCES INC      | VACA '14' FEDERAL COM     | 5H     | 14  | 25S | 33E | 32.1376092 | -103.5501581 | 32.1242319 | -103.5495132 | 50'FNL & 330'FWL    | 14,092' | OIL    |
| 3002527623  | EOG RESOURCES INC      | OCHOA FEDERAL             | 1      | 15  | 25S | 33E | 32.1322743 | -103.5576199 | 32.1271688 | -103.5655106 | 1980'FNL & 1980'FEL | 15,185' | OIL    |
| 3002535445  | EOG RESOURCES INC      | VACA DRAW '15' FEDERAL    | 1      | 15  | 25S | 33E | 32.1358493 | -103.5662158 | 0          | 0            | 660'FNL & 660'FWL   | 13,779' | GAS    |
| 3002542860  | EOG RESOURCES INC      | STREETCAR 15 FEDERAL      | 001H   | 15  | 25S | 33E | 32.1238277 | -103.5665771 | 32.1370191 | -103.567165  | 250'FSL & 530'FWL   |         | LOC    |
| 3002542861  | EOG RESOURCES INC      | STREETCAR 15 FEDERAL      | 605H   | 15  | 25S | 33E | 32.1238268 | -103.5637662 | 32.1370182 | -103.5639374 | 250'FSL & 1400'FWL  |         | LOC    |
| 3002542862  | EOG RESOURCES INC      | STREETCAR 15 FEDERAL      | 705H   | 15  | 25S | 33E | 32.1238267 | -103.5636693 | 32.1370291 | -103.5609008 | 250'FSL & 1430'FWL  |         | LOC    |
| 3002542863  | EOG RESOURCES INC      | STREETCAR 15 FEDERAL      | 704H   | 15  | 25S | 33E | 32.1238257 | -103.5610364 | 32.1370226 | -103.5590174 | 250'FSL & 2245'FWL  |         | LOC    |
| 3002542864  | EOG RESOURCES INC      | STREETCAR 15 FEDERAL      | 603H   | 15  | 25S | 33E | 32.1238237 | -103.5559638 | 32.1369975 | -103.5584247 | 250'FSL & 1480'FEL  | 17,081' | OIL    |
| 3002542865  | EOG RESOURCES INC      | STREETCAR 15 FEDERAL      | 602H   | 15  | 25S | 33E | 32.1238225 | -103.5532598 | 32.1370771 | -103.5558544 | 250'FSL & 643'FEL   | 17,112' | OIL    |
| 3002542866  | EOG RESOURCES INC      | STREETCAR 15 FEDERAL      | 702H   | 15  | 25S | 33E | 32.1238224 | -103.5531435 | 32.1372469 | -103.5544373 | 250'FSL & 607'FEL   | 17,355' | OIL    |
| 3002542877  | EOG RESOURCES INC      | STREETCAR 15 FEDERAL      | 002H   | 15  | 25S | 33E | 32.1238276 | -103.5664802 | 32.1370273 | -103.5655369 | 250'FSL & 560'FWL   |         | LOC    |
| 3002542878  | EOG RESOURCES INC      | STREETCAR 15 FEDERAL      | 604H   | 15  | 25S | 33E | 32.1238258 | -103.5611333 | 32.1370145 | -103.5612173 | 250'FSL & 2215'FWL  |         | LOC    |
| 3002543999  | EOG RESOURCES INC      | STREETCAR 15 FEDERAL      | 703Y   | 15  | 25S | 33E | 32.1238236 | -103.5558022 | 32.1369971 | -103.5565988 | 250'FSL & 1430'FEL  | 17,221' | OIL    |
| 3002544536  | EOG RESOURCES INC      | STREETCAR 15 FED          | 601H   | 15  | 25S | 33E | 32.1238193 | -103.5523391 | 32.1370135 | -103.5527106 | 249'FSL & 358'FEL   |         | LOC    |
| 3002544537  | EOG RESOURCES INC      | STREETCAR 15 FEDERAL      | 701H   | 15  | 25S | 33E | 32.1238192 | -103.5552226 | 32.1370162 | -103.5523552 | 249'FSL & 323'FEL   |         | LOC    |
| 3002534909  | EOG RESOURCES INC      | VACA DRAW '16' STATE      | 3      | 16  | 25S | 33E | 32.1331205 | -103.5704628 | 0          | 0            | 1650'FNL & 660'FEL  | 14,250' | GAS    |

# PRODUCTION FACILITY LAYOUT



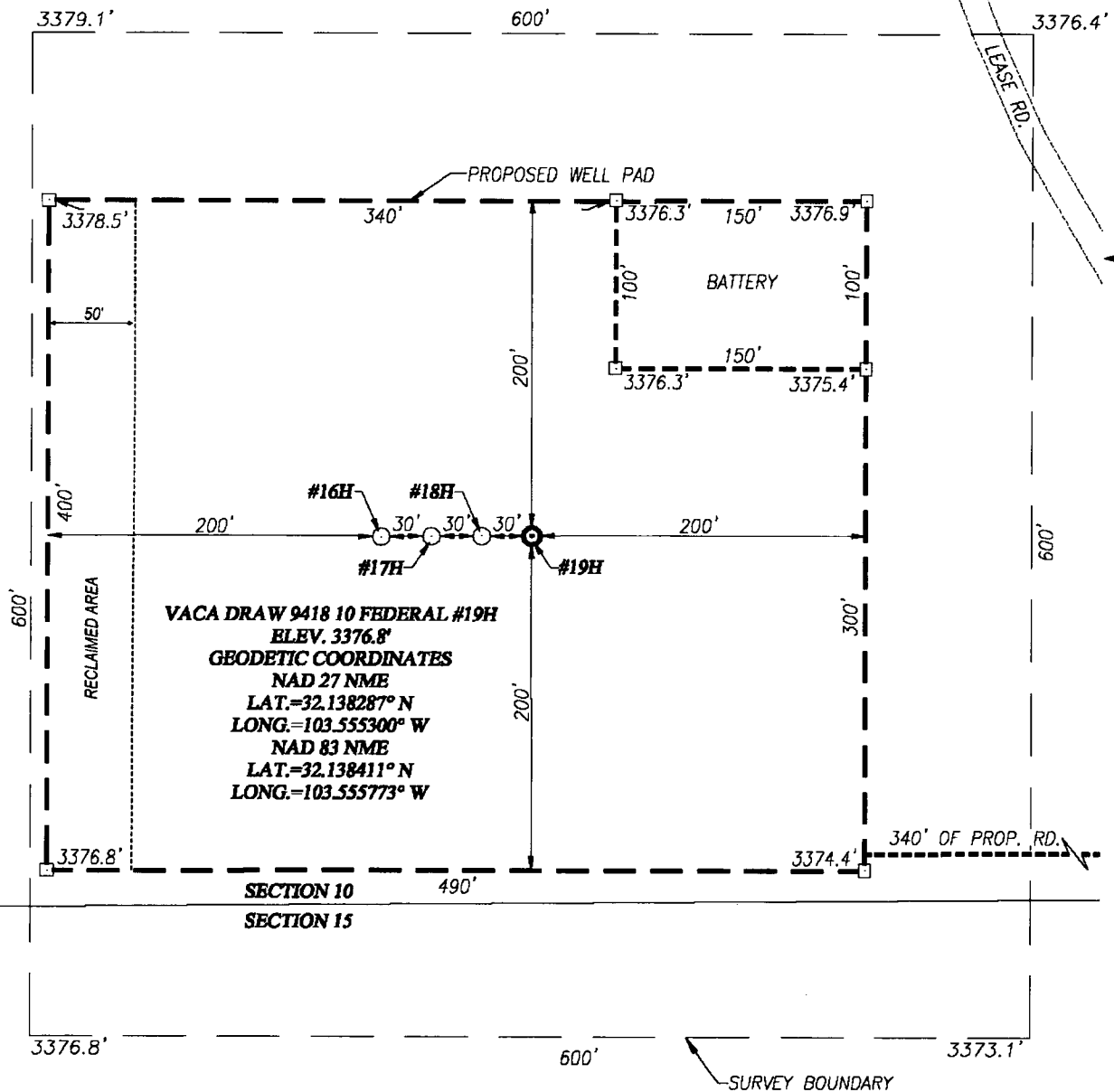


## WATER SOURCE AND TRANSPORTATION MAP

BTA OIL PRODUCERS, LLC  
VACA DRAW 9418 10 FEDERAL  
SEC 10 T25S R33E  
LEA COUNTY, NM



# WELL SITE PLAN

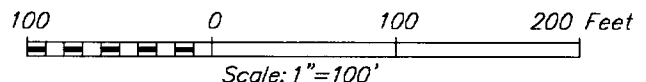


## DRIVING DIRECTIONS:

FROM JAL N.M. GO WEST ON ST. HWY. 128 APPROX. 22 MILES TO VACA LANE. TURN LEFT AND GO SOUTHEAST ON VACA LANE APPROX. 2.2 MILES TO RESOURCE LANE INTERSECTION. VEER RIGHT AND GO SOUTHWEST APPROX. 2 MILES. TURN LEFT AND GO SOUTHEAST 0.1 MILE. TURN RIGHT AND GO SOUTHWEST APPROX. 0.7 MILES. TURN LEFT AND GO SOUTH APPROX. 0.15 MILES. TURN RIGHT AND GO WEST APPROX. 0.4 MILES. TURN LEFT AND GO SOUTHEAST APPROX. 1 MILE TO PROPOSED ROAD SURVEY. FOLLOW STAKED ROAD WEST APPROX. 340 FEET TO THE SOUTHEAST CORNER OF THIS LOCATION.

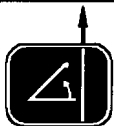
## NOTE:

SEE "TOPOGRAPHICAL AND ACCESS ROAD MAP" FOR PROPOSED ROAD LOCATION.



## BTA OIL PRODUCERS, LLC

**VACA DRAW 9418 10 FEDERAL #19H WELL LOCATED**  
**220 FEET FROM THE SOUTH LINE AND 1275 FEET FROM THE**  
**EAST LINE OF SECTION 10, TOWNSHIP 25 SOUTH,**  
**RANGE 33 EAST, N.M.P.M., LEA COUNTY, NEW MEXICO**



**PROVIDING SURVEYING SERVICES**  
**SINCE 1946**  
**JOHN WEST SURVEYING COMPANY**  
**412 N. DAL PASO HOBBS, N.M. 88240**  
**(575) 393-3117 www.jwsc.biz**  
**TBPLS# 10021000**

|                      |                   |               |
|----------------------|-------------------|---------------|
| Survey Date: 3/21/17 | CAD Date: 4/04/17 | Drawn By: ACK |
| W.O. No.: 17110241   | Rev: .            | Rel. W.O.:    |
|                      |                   | Sheet 1 of 1  |



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

## PWD Data Report

11/30/2018

### 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:

Describe 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:

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 surface owner:

PWD disturbance (acres):

Unlined pit PWD on or off channel:

Unlined pit PWD discharge volume (bbl/day):

Unlined pit specifications:

Precipitated solids disposal:

Describe 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?

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):**

**Other PWD type description:**

**Other PWD type attachment:**

**Have other regulatory requirements been met?**

**Other regulatory requirements attachment:**



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

## Bond Info Data Report

11/30/2018

### Bond Information

Federal/Indian APD: FED

BLM Bond number: NM1195

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:



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

## Drilling Plan Data Report

11/30/2018

APD ID: 10400029777

Submission Date: 05/22/2018

Operator Name: BTA OIL PRODUCERS LLC

Well Name: VACA DRAW 9418 10 FED

Well Number: 19H

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     | 3388      | 0                   | 0              | ALLUVIUM    | NONE              | No                  |
| 2            | RUSTLER        | 1947      | 1441                | 1441           |             | NONE              | No                  |
| 3            | TOP SALT       | 657       | 2731                | 2731           | SALT        | NONE              | No                  |
| 4            | BASE OF SALT   | -1053     | 4441                | 4441           | SALT        | NONE              | No                  |
| 5            | DELAWARE       | -1653     | 5041                | 5041           |             | NATURAL GAS,OIL   | No                  |
| 6            | BONE SPRING    | -5842     | 9230                | 9230           |             | NATURAL GAS,OIL   | No                  |
| 7            | WOLFCAMP       | -8931     | 12319               | 12319          |             | NATURAL GAS,OIL   | Yes                 |

### Section 2 - Blowout Prevention

Pressure Rating (PSI): 10M

Rating Depth: 15000

**Equipment:** The 13-5/8" blowout preventer equipment (BOP) shown in Exhibit A will consist of a (10M system) double ram type (10000 psi WP) preventer and a bag-type (Hydril) preventer (10000 psi WP). Both units will be hydraulically operated and the ram type preventer will be equipped with blind rams on top and 4-1/2" drill pipe rams on bottom. The BOP's will be installed on the 13 3/8" surface casing and utilized continuously until total depth is reached. All BOP's and associated equipment will be tested as per BLM drilling Operations Order No. 2. A 2" kill line and 3" choke line will be incorporated in the drilling spool below the ram-type BOP. Other accessory BOP equipment will include a Kelly cock, floor safety valve, choke lines, and choke manifold having a 10000 psi WP rating.

**Requesting Variance?** YES

**Variance request:** 10M variance request for the 6-1/8" hole. (10M annular variance and 5M annular well control plan attached.)

**Testing Procedure:** Pipe rams will be operated and checked each 24-hour period and each time the drill pipe is out of the hole. These functional tests will be documented on the daily driller's log.

**Choke Diagram Attachment:**

10M\_Choke\_Schematic\_20180420092627.pdf

**BOP Diagram Attachment:**

10M\_Annular\_Variance\_20180420092914.pdf

## WFT Split Bowl (SB) Wellhead System (Continued)

7. Align and level the production tree above the tubing hanger and carefully lower it over the tubing hanger neck, landing it on the ring gasket.



**Do NOT damage the hanger neck seals, as this will impair their sealing ability.**

8. Make up the connection using the appropriate studs and nuts, and tightening in an alternating cross pattern, as required by API 6A.

### Testing the Production Tree Connection

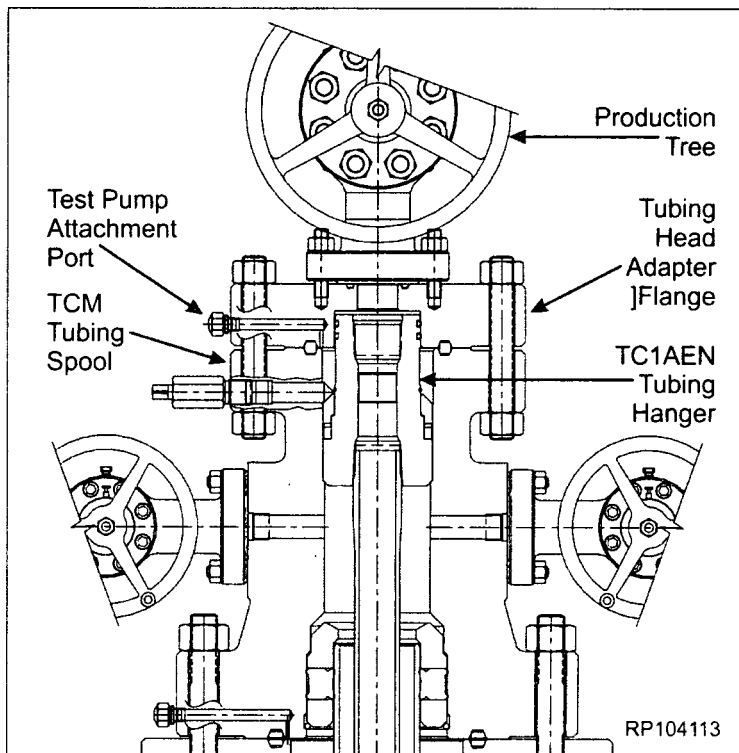
1. Locate the test port fitting on the outer diameter of the tubing head adapter flange. Remove the dust cap from the fitting.
2. Attach a test pump to test port fitting, and open the pump.
3. Pump clean test fluid into void area between flanges, test to 10,000 psi maximum.
4. Hold and monitor pressure for **15 minutes or as required by the production supervisor.**
5. Once a satisfactory test is achieved, carefully bleed off test pressure and remove the test pump.
6. Attach a bleeder tool to the test port fitting, and open the tool to vent any remaining trapped pressure.




**Always direct the bleeder tool away from people and property.**

7. Remove the bleeder tool and reinstall the dust cap on the test port fitting.

8. Remove the type 'H' back pressure valve (BPV) through the production tree.
9. Ensure that the well is safe and secure by closing all gate valves.



|  |                             |                         |               |                 |                |
|--|-----------------------------|-------------------------|---------------|-----------------|----------------|
| <br><b>Weatherford</b><br>5-3-GL-GL-WES-00XXX | <b>Field Service Manual</b> | Prepared By:            | Reviewed By:  | Approved By:    | <b>SM-13-1</b> |
|  |                             | <i>Marion Robertson</i> | Brad Franks   | Manual Zaragoza | <b>Rev WIP</b> |
|  |                             | Marion Robertson        | Brad Franks   | Manual Zaragoza | Page 24 of 24  |
|  |                             | December 2014           | December 2014 | December 2014   |                |