



**Maljamar AGI #2  
30-025-42628  
Frontier Field Services  
Conditions of Approval**

**Original COA still applies except for the replacement of the Drilling Operations Requirements Section. See the following for this replacement.**

**A. DRILLING OPERATIONS REQUIREMENTS**

**The Operator shall prove the Wolfcamp is non-productive or non-commercial prior to completing the well for injection. This production test of the Wolfcamp may be conducted by either the drilling rig or by the completion rig: Proof via logs and DST required to prove no paying production. Operator to evaluate and submit evaluation with documentation to BLM for approval.**

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

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

**Lea County**

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

1. A Hydrogen Sulfide (H<sub>2</sub>S) Drilling Plan shall be activated 500 feet prior to drilling into the **Grayburg** formation. **As a result, the Hydrogen Sulfide area must meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, please provide measured values and formations to the BLM.**
2. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval. **If the drilling rig is removed without approval – an Incident of Non-Compliance will be written and will be a “Major” violation.**
3. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works is located, this does not include the dog house or stairway area.

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

## **B. CASING**

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

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

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.

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

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

### **RISKS:**

Possibility of water flows in the Artesia Group, Salado, Queen, and Wolfcamp.  
Possibility of lost circulation in the Red Beds, Artesia Group, Rustler, Grayburg, San Andres, and Glorieta.

Abnormal pressures may be encountered within the Wolfcamp formation.

Operator should consider increase their mud weight for the production hole to ensure that this interval is not underbalanced.

1. The **20 inch** surface casing shall be set at approximately **890 feet** (a minimum of 25 feet into the Rustler Anhydrite and above the salt) and cemented to the surface. **If salt is encountered, set casing at least 25 feet above the salt.**
  - a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.
  - b. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry.**
  - c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.
  - d. If cement falls back, remedial cementing will be done prior to drilling out that string.

**Operator shall run a circumferential cement bond log for the 20 inch surface casing. The log will be run after drilling out the shoe and prior to running the next casing string. All anomalies in cement bond quality are to be discussed with BLM before proceeding.**

2. The minimum required fill of cement behind the **13 3/8 inch** 1st Intermediate casing is:

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

**Operator shall run a circumferential cement bond log for the 13 3/8 inch 1st intermediate casing. The log will be run after drilling out the shoe and prior to running the next casing string. All anomalies in cement bond quality are to be discussed with BLM before proceeding.**

**Formation below the 13 3/8 shoe to be tested according to Onshore Order 2.III.B.1.i. Test to be done as a mud equivalency test using the mud weight necessary for the pore pressure of the formation below the shoe (not the mud weight required to prevent dissolving the salt formation) and the mud weight for the bottom of the hole. Report results to BLM office.**

3. The minimum required fill of cement behind the 9 5/8 inch 2nd Intermediate casing is:

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

**Operator shall run a circumferential cement bond log for the 9 5/8 inch 1st intermediate casing. The log will be run after drilling out the shoe and prior to running the next casing string. All anomalies in cement bond quality are to be discussed with BLM before proceeding.**

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

**Operator to provide a precise tally of the 7 inch production casing with CRA Packer joint(s) identified to the BLM.**

4. The minimum required fill of cement behind the 7 inch Production casing is:

**Operator has proposed DV tool at depth of 9665 feet. Operator is to submit sundry if DV tool depth varies by more than 100 feet from approved depth.**

- a. **First stage using Class H lead to DV tool and acid resistant CORROSACEM cement Tail:**

- Cement to circulate. If cement does not circulate, contact the appropriate BLM office before proceeding with second stage cement job. Operator should have plans as to how they will achieve circulation on the next stage.

- b. Second stage above DV tool:

- Cement to surface. If cement does not circulate, contact the appropriate BLM office. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to acid gas injection. Excess calculates to 17% - Additional cement may be required.**

**Operator shall run a circumferential cement bond log for the 7 inch production casing. The log shall be capable of providing casing condition baseline, such as a Corrosion Evaluation log. The log is to be calibrated for the hole, with the calibration strip to be clearly labeled and included with the final print and digital data file. Any identified anomalies in cement bond quality are to be discussed with BLM before proceeding.**

4. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.

### C. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API 53.
2. **In the case where the only BOP installed is an annular preventer, it shall be tested to a minimum of 2000 psi (which may require upgrading to 3M or 5M annular).**
3. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **2000 (2M) psi.**
4. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the **13 3/8 inch** intermediate casing shoe shall be **5000 (5M) psi. 5M system requires an HCR valve, remote kill line and annular to match. The remote kill line is to be installed prior to testing the system and tested to stack pressure.**
5. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.
  - a. For acid gas injection wells: 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.
  - b. The tests shall be done by an independent service company utilizing a test plug **not a cup or J-packer.**
  - c. 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.
  - d. The results of the test shall be reported to the appropriate BLM office.

- 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 if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.
- 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.

#### **D. 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.

#### **E. DRILL STEM TEST**

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

#### **F. WELL COMPLETION**

**A NOI sundry with the procedure to complete this well in compliance with BLM and NMOCD requirements shall be submitted and approved prior to commencing completion work.**

**The procedure will be reviewed to verify that the completion will allow the operator to restrict the injection fluid to the approved formation. NOTE: The sundry shall include data from the conventional core analysis and logs with detailed analysis of the reservoir seal depth related to the perforation interval and the packer setting depth. It may also need to include previously submitted information.**

**DO NOT install injection tubing until approval is received**

**NOTE: (include with NOI sundry) prior to beginning Acid Gas Injection at the well, the Operator shall provide all Operators of existing wells within a 1 mile radius with a notice of beginning injection operations and include a map of the possible worst case scenario H2S exposure area(s). BLM is to be copied on this notice mailing. (H2S Public Protection Plan)**

**An MIT test must be conducted annually and submitted to the BLM via subsequent sundry.**

**G. 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.

**KGR 12082015**