

**RAILROAD COMMISSION OF TEXAS
HEARINGS DIVISION**

**OIL AND GAS DOCKET
NO. 05-0282660**

**IN THE AQUILA VADO (EAGLE FORD)
FIELD, BRAZOS, GRIMES, LEON,
MADISON, AND ROBERTSON
COUNTIES, TEXAS**

**FINAL ORDER
ESTABLISHING THE MOST EFFICIENT RATE OF PRODUCTION
FOR THE AQUILA VADO (EAGLE FORD) FIELD
BRAZOS, GRIMES, LEON, MADISON,
AND ROBERTSON COUNTIES, TEXAS**

The Commission finds that after statutory notice in the above-numbered docket heard on June 27, 2013, the presiding examiner has made and filed a report and recommendation containing findings of fact and conclusions of law, for which service was not required; that the proposed application is in compliance with all statutory requirements; and that this proceeding was duly submitted to the Railroad Commission of Texas at conference held in its offices in Austin, Texas.

The Commission, after review and due consideration of the examiner's report and recommendation, the findings of fact and conclusions of law contained therein, hereby adopts as its own the findings of fact and conclusions of law contained therein, and incorporates said findings of fact and conclusions of law as if fully set out and separately stated herein.

Therefore, it is ordered by the Railroad Commission of Texas that the most efficient rate of production at the current time for the each well in the Aquila Vado (Eagle Ford) Field is 1,000 BOPD. It is further ordered that all overproduction in the Aquila Vado (Eagle Ford) Field is hereby canceled.

Done this 6th day of August, 2013.

RAILROAD COMMISSION OF TEXAS

**(Order approved and signatures
affixed by Hearings Divisions'
Unprotested Master Order dated
August 6, 2013)**

spacing for the first and last take points, a 50 foot "box" rule and "off-lease" penetration point for horizontal drainhole wells;

3. 160 acre units for gas wells, assignment of additional acreage to a horizontal well based on a special formula, 40 acre tolerance, no maximum diagonal, no proration plat requirements;
4. Allocation based on 95% acreage and 5% per well, top allowable for oil wells on 160 acre units of 250 BOPD;
5. Stacked lateral rules.

The examiners recommend that field rules for the McLeod, North (CV) Field be amended as proposed by Stroud Petroleum.

DISCUSSION OF THE EVIDENCE

The McLeod, North (CV) Field was discovered in March 2000 at approximately 10,128' subsurface depth. The field operates under statewide rules. There are no wells listed on the current proration schedule, however Stroud Petroleum has one completion in the field that have not yet been processed by the Commission.

Stroud Petroleum is amending the existing field rules in the McLeod, North (CV) Field to adopt horizontal rules to allow efficient and orderly development of the McLeod, North (CV) Field with horizontal wells. Currently the field rules only provide for vertical well development. The proposed horizontal rules are similar to horizontal rules found in other fields anticipating horizontal development in the State.

There is currently no defined correlative interval for the field. Stroud Petroleum requests that the field be defined as the correlative interval from 9,720 feet to 10,400 feet as seen on the log of Reef Exploration's Arkla Lease, Well No. 1 (API No. 42-067-30693), Collum Survey, Abstract 167, Cass County, Texas. The correlative interval includes the Upper Bossier and the lower most portion of the Cotton Valley formation. The rock matrix is a very limey sandstone with a high carbonate content. Stroud Petroleum believes the proposed field interval with it's high carbonate content, is brittle, and naturally fractured.

Stroud Petroleum requests adoption of 330' lease line spacing, 0' between-well spacing and dual lease line spacing to be consistent with the spacing rules of other fields being developed with horizontal wells. Stroud Petroleum is requesting a spacing rule requiring a minimum of 100 feet to the lease line from the first and last take points of a horizontal drainhole, with 330 feet from lease lines on all points on the drainhole perpendicular to the lease line. The 100-foot lease line spacing for the first and last take points allows maximum recovery from natural vertical fractures believed to exist in the area within the formation. The 0' between-well spacing will allow the drilling of horizontal wells with maximum flexibility to maximize oil recovery.

Stroud Petroleum requests several other standard provisions that are commonly adopted when horizontal well development is anticipated. The provisions include take point language to allow flexible drilling of the laterals and off-lease penetration to allow the additional recovery of reserves by allowing the lateral to be horizontal at a legal lease line location. Off-lease penetration will allow increased hydrocarbon recovery as the lateral will make greater contact with the formation as the well is turned from vertical to lateral adjacent to the lease. Off-lease penetration will allow the first take point to be closer to the lease line. An additional stage frac will be placed on each lateral if off lease penetration is allowed.

Stroud Petroleum proposes that a 160-acre density rule be adopted that provides for a multiplying factor for acreage assignment to horizontal wells. Stroud Petroleum requests a formula with a factor of .11488 to be multiplied by the length of the lateral and added to 160 acres. This formula will give operators in the field slightly larger acreage assignments than Rule 86 would give. The proposed factor and density is similar to other naturally fractured reservoirs such as the Giddings (Austin Chalk-3) Field in various counties and the Huxley (Fredericksburg) Field in Shelby County. Drainage area calculations could not be performed as production data is limited. The McLeod, North (CV) Field is on trend with the Linden, East (Cotton Valley) Field to the west. The Linden, East (Cotton Valley) Field produces from the same Cotton Valley section and is believed to be naturally fractured. The fracture variability of the formation in the Linden, East (Cotton Valley) Field is evidenced by the great variability in oil production from wells. The wells oil production in the Linden, East (Cotton Valley) Field vary from 1,783 BO to over 320,000 BO. The Linden, East (Cotton Valley) Field rules provide for 160 acre density and special rules for horizontal development.

The gross thickness of the Cotton Valley interval in this field is 680 feet. The interval is thick enough to support "stacked" horizontal drilling. There is a secondary thicker zone with adequate porosity that could be developed with a second lateral. Amending the rule as proposed will allow stacked lateral drainholes to be simultaneously drilled from multiple surface locations. The stacked lateral rules also require that each point of a stacked lateral horizontal drainhole be no more than 300 feet in a horizontal direction from any point along any other horizontal drainhole of the same stacked lateral well.

Stroud Petroleum proposes a 50 foot "box rule" for horizontal drainhole wells that would allow drainholes to deviate 50 feet from either side of their permitted track without the necessity of obtaining a Statewide Rule 37 exception. Stroud Petroleum requests that the allocation formula for the field be amended to provide for an allocation based on 95% acreage and 5% per well, with a top allowable for oil wells based on a 250 BOPD top allowable.

FINDINGS OF FACT

1. Notice of this hearing was given to all operators of wells in the McLeod, North

(CV) Field at least ten days prior to the date of hearing.

2. The McLeod, North (CV) Field was discovered in March 2000 at approximately 10,128' subsurface depth.
3. There are no wells listed on the current proration schedule, however Stroud Petroleum has one completion in the field that have not yet been processed by the Commission.
4. The field operates on Statewide rules that provide for 467'-1,200' well spacing, 40-acre density and 100% acreage allocation. There are currently no rules for horizontal drilling.
5. Field rules that provide for 330 feet lease line spacing, eliminate between well spacing for all wells in the field, take point language, off lease penetration and a "box rule" for horizontal wells will provide consistency with other fields under going horizontal drilling.
6. The proposed 50 foot "box rule" is necessary to allow operators reasonable minor deviations from the wellbore track that has been permitted.
7. Allowing off-lease penetration will allow an additional stage frac to be placed on each lateral causing the recovery of additional reserves that would otherwise be left in the ground.
8. Adoption of a 160-acre density and a formula to assign additional acreage above the 160-acre density for the field is appropriate.
 - a. Drainage area calculations could not be performed as production data is limited.
 - b. The proposed factor and density is similar to other naturally fractured reservoirs such as the Giddings (Austin Chalk-3) Field in various counties and the Huxley (Fredericksburg) Field in Shelby County.
 - c. The McLeod, North (CV) Field is on trend with the Linden, East (Cotton Valley) Field to the west.
 - d. The Linden, East (Cotton Valley) Field produces from the same Cotton Valley section and is believed to be naturally fractured. The fracture variability of the formation in the Linden, East (Cotton Valley) Field is evidenced by the great variability in oil production from wells.
 - e. The Linden, East (Cotton Valley) Field rules provide for 160 acre density and special rules for horizontal development.

9. The gross thickness of the Cotton Valley interval in this field is 680 feet. The interval is thick enough to support "stacked" horizontal drilling. There is a secondary thicker zone with adequate porosity that could be developed with a second lateral.
10. Allocation based on 95% acreage and 5% per well is a reasonable formula which will protect correlative rights of mineral owners in the field.

CONCLUSIONS OF LAW

1. Proper notice of this hearing was given to all persons legally entitled to notice.
2. All things have occurred or been accomplished to give the Railroad Commission jurisdiction in this matter.
3. Adopting permanent field rules as proposed by Stroud Petroleum, Inc. is necessary to prevent waste and protect correlative rights.

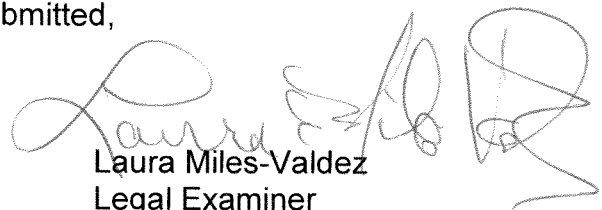
EXAMINERS' RECOMMENDATION

Based on the above findings and conclusions, the examiner recommends that field rules be permanently adopted for the McLeod, North (CV) Field to reduce lease line spacing to 330 feet, eliminate between-well spacing for all wells, 160 acre density, add take points, allow off lease penetration, a 50 foot "box" rule and add stacked-lateral rules.

Respectfully submitted,



Andres J. Trevino, P.E.
Technical Examiner



Laura Miles-Valdez
Legal Examiner