



RAILROAD COMMISSION OF TEXAS

HEARINGS DIVISION

OIL AND GAS DOCKET NO. 08-0284260

THE APPLICATION OF COG OPERATING LLC TO AMEND FIELD RULES FOR THE PARKS (CONSOLIDATED) FIELD, MIDLAND COUNTY, TEXAS

OIL AND GAS DOCKET NO. 7C-0284261

THE APPLICATION OF COG OPERATING LLC TO AMEND FIELD RULES FOR THE PEGASUS (CONSOLIDATED) FIELD, UPTON COUNTY, TEXAS

HEARD BY: Richard D. Atkins, P.E. - Technical Examiner
Marshall F. Enquist - Legal Examiner

HEARING DATE: September 25, 2013

APPEARANCES: **REPRESENTING:**

APPLICANT:

Greg Cloud

COG Operating LLC

EXAMINERS' REPORT AND RECOMMENDATION

STATEMENT OF THE CASE

Field Rules for the Parks (Consolidated) Field were adopted in Final Order No. 08-0260768, effective March 11, 2009, as amended. The current Field Rules in effect for the field are summarized as follows:

1. Designation of the field as the correlative interval from 6,190 feet to 11,700 feet as shown on the log of the COG Operating LLC - Parks Field Unit 2, Well No. 2208 (API No. 42-329-31235);
2. 330'-0' well spacing;

3. 160 acre units with optional 20 acre density and the filing of Form P-15 without proration unit plats;
4. Gas allocation based on 75% acres and 25% per well with AOF status and oil allocation based on 75% acres and 25% per well with a top oil allowable based on the 1965 Yardstick Allowable of 679 barrels of oil per day.

Field Rules for the Pegasus (Consolidated) Field were adopted in Final Order No. 7C-0264718, effective April 20, 2010. The current Field Rules in effect for the field are summarized as follows:

1. Designation of the field as the correlative interval from 6,815 feet to 11,375 feet as shown on the log of the COG Operating LLC (previously operated by Mobil Producing TX. & N.M. Inc.) - Pegasus Field Unit 3, Well No. 156 (API No. 42-329-10082);
2. 467'-0' well spacing;
3. 80 acre units with optional 40 acre density;
4. Gas allocation based on 75% acres and 25% per well with AOF status and oil allocation based on 75% acres and 25% per well with a top oil allowable based on the 1965 Yardstick Allowable of 300 barrels of oil per day.

COG Operating LLC ("COG") requests that the Field Rules for both subject fields be amended to provide for 330'-0' well spacing with special provisions for "take points", 100' lease line spacing for the first and last take points, 50' "box" rule and "off-lease" penetration point for horizontal drainhole wells, 20 acre optional density, a top MER oil allowable of 2,000 barrels of oil per day and special provisions for stacked laterals in horizontal drainhole wells.

The applications are unopposed and the examiners recommend that the Field Rules for both subject fields be amended, as proposed by COG.

DISCUSSION OF EVIDENCE

The Parks (Consolidated) Field was created in March 2009 by the consolidation of four fields at an average depth of 6,200 feet. The field is classified as associated-100%AOF and there are 206 producing oil wells, 1 producing gas well and 10 operators carried on the proration schedules. The field operates under Field Rules that provide for 330'-0' well spacing and 160 acre units with optional 20 acre density. Cumulative production from the field through August 2013 is 4.6 MMBO and 8.9 BCFG.

The Pegasus (Consolidated) Field was created in April 2010 by the consolidation of three fields at an average depth of 6,800 feet. The field is classified as associated-

Exempt and there are 196 producing oil wells, 1 producing gas well and 2 operators carried on the proration schedules. The field operates under Field Rules that provide for 467'-0' well spacing and 80 acre units with optional 40 acre density. Cumulative production from the field through August 2013 is 2.7 MMBO and 12.5 BCFG.

COG is developing both subject fields with horizontal drainhole wells and requests that the Field Rules be amended to promote the efficient and effective development of the remaining hydrocarbons. COG proposes 330'-0' well spacing with special provisions for "take points", 100' lease line spacing for the first and last take points, 50' "box" rule and "off-lease" penetration point for horizontal drainhole wells, 20 acre optional density, a top MER oil allowable of 2,000 barrels of oil per day and special provisions for stacked laterals in horizontal drainhole wells. COG argues that the proposed between well spacing is necessary to allow the drilling of horizontal drainhole wells, which may have to be placed very near vertical wells in some cases. Since the two subject fields are within the boundaries of the Spraberry (Trend Area) Field, COG is requesting the same horizontal drainhole well field rules that are in Spraberry (Trend Area) Field. Similar Field Rules have been adopted in other tight reservoirs, including the Eagle Ford, Wolfcamp, Bone Spring, Cotton Valley and Barnett Shale formations.

COG requests that a Field Rule be adopted which includes language relevant to the measurement of distances to lease lines for horizontal drainhole wells. COG's proposed rule specifies that, for purposes of lease line spacing, the nearest "take point" in a horizontal well be used. This take-point could be a perforation in a horizontal well that is cased and cemented, an external casing packer in a cased well, or any open-hole section in an uncased well. For purposes of the assignment of additional acreage pursuant to Statewide Rule 86, it is proposed that the distance between the first and last take-point in a horizontal drainhole well be used.

By allowing a 100' leaseline spacing for the first and last take points, an additional 230 feet of the reservoir is exposed to the horizontal drainhole well lateral and drained. These reserves would go unrecovered if the 100' leaseline spacing for the first and last take points is not approved. COG also proposes a 50' "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. As drilled wells for which all points are located within the "box" would be considered in compliance with their drilling permits.

In some cases, it is beneficial to penetrate the reservoir off lease, while still having "take points" no closer to lease lines than allowed under the field rules. COG requests that Field Rules for the subject field provide for an "off-lease" penetration point. Statewide Rule 86 requires that the penetration point of a horizontal drainhole well be on the lease. In this field, a well generally requires approximately 600 feet of horizontal displacement to make the 90 degree turn from vertical to horizontal. If the penetration point is required to be on the lease, then the first point of production would be about 600 feet from the lease line.

The proposed rule will allow approximately 230 feet of additional producing drainhole, which will result in the recovery of additional reserves. The Commission has adopted similar rules allowing offsite penetration points in other fields, after the operator has given notice to the mineral owners of the off-lease tract on which the penetration point is to be located and received no protest.

COG requests that a Field Rule be adopted to accommodate the drilling of stacked horizontal lateral wells. The gross thickness of the field interval is over 5,000 feet. COG believes that several separate laterals may be necessary to effectively develop the reservoir with horizontal wells. The rule would allow stacked horizontal laterals within the correlative interval that are drilled from different surface locations to be considered a single well for regulatory purposes. It is proposed that a stacked lateral be defined to be multiple horizontal drainholes which are drilled from different surface locations.

COG calculated an average estimated ultimate recovery for 39 wells in the Pegasus (Consolidated) Field to be 88,000 barrels per well. From log data on three wells, COG estimated an average porosity of 5%, an average saltwater saturation of 35%, an average net pay thickness of 396 feet and a recovery factor of 7%. Based on this data, COG calculated a drainage area of 18 acres per well and opined that optional 20 acre density was appropriate for the Pegasus (Consolidated) Field.

COG requests that proration unit plats not be required for individual wells, but that Form P-15 be filed to designate the number of acres to be assigned to each well with no maximum diagonal limitation. The two fields are in the later stages of primary development and are lenticular and heterogeneous. The horizontal drainhole wells are encountering undrained sand lenses and have initial potentials over 1,000 barrels of oil per day. COG requests a top MER oil allowable of 2,000 barrels of oil per day and proposes that the gas allocation formulas remain suspended, as there is a 100% market demand for all of the gas produced from the two subject fields.

FINDINGS OF FACT

1. Notice of this hearing was provided to all persons entitled to notice at least ten (10) days prior to the date of the hearing and no protests were received.
2. The Parks (Consolidated) Field was created in March 2009 by the consolidation of four fields at an average depth of 6,200 feet.
 - a. The field is classified as associated-100%AOF and there are 206 producing oil wells, 1 producing gas well and 10 operators carried on the proration schedules.
 - b. The field operates under Field Rules that provide for 330'-0' well spacing and 160 acre units with optional 20 acre density.

3. The Pegasus (Consolidated) Field was created in April 2010 by the consolidation of three fields at an average depth of 6,800 feet.
 - a. The field is classified as associated-Exempt and there are 196 producing oil wells, 1 producing gas well and 2 operators carried on the proration schedules.
 - b. The field operates under Field Rules that provide for 467'-0' well spacing and 80 acre units with optional 40 acre density.
4. The Parks (Consolidated) and Pegasus (Consolidated) Fields are actively being developed with horizontal drainhole wells.
5. A spacing rule which utilizes "take-points" in a horizontal well for determination of distances to lease lines will prevent waste and will not harm correlative rights.
 - a. A take-point in a horizontal well in this field may be a perforation in a horizontal well that is cased and cemented, an external casing packer in a cased well, or any open-hole section in an uncased portion of the wellbore.
 - b. Adoption of the proposed rule will allow the horizontal drainhole length on a lease to be maximized.
 - c. For purposes of assignment of additional acreage pursuant to Statewide Rule 86, the distance between the first and last take point in a horizontal drainhole well should be used.
6. A Field Rule providing for 330'-0' well spacing with a special provision for 100' leaseline spacing for the first and last take points is appropriate for the two subject fields.
 - a. The proposed no minimum between well spacing limitation is necessary to allow the drilling of horizontal wells, which may have to be placed very near vertical wells in some cases.
 - b. By allowing a 100' leaseline spacing for the first and last take points, an additional 230 feet of the reservoir is exposed to the horizontal lateral and drained. These reserves would go unrecovered if the 100' leaseline spacing for the first and last take points is not approved.

7. The proposed 50' "box rule" is necessary to allow operators reasonable minor deviations from the wellbore track that has been permitted.
8. Allowing an "off-lease" penetration point will result in maximum producing drainhole length, thereby increasing ultimate recovery from horizontal drainhole wells. To protect correlative rights, prior notice and opportunity to object should be given to the mineral owners of "off-lease" surface locations.
9. The proposed "stacked lateral" rule will allow stacked horizontal laterals within the field correlative interval that are drilled from different surface locations to be considered a single well for regulatory purposes, which will facilitate the additional recovery of oil and gas reserves.
10. Since the two subject fields are within the boundaries of the Spraberry (Trend Area) Field, the same horizontal drainhole well field rules that are in that field are appropriate.
11. Similar Field Rules have been adopted in other tight reservoirs, including the Eagle Ford, Wolfcamp, Bone Spring, Cotton Valley and Barnett Shale formations.
12. Optional 20 acre density is appropriate for the Pegasus (Consolidated) Field.
 - a. The average estimated ultimate recovery for 39 wells in the Pegasus (Consolidated) Field is 88,000 barrels per well.
 - b. From log data on three wells, COG Operating LLC ("COG") estimated an average porosity of 5%, an average saltwater saturation of 35%, an average net pay thickness of 396 feet and a recovery factor of 7%.
 - c. Based on this data, COG calculated a drainage area of 18 acres per well.
13. A top MER oil allowable of 2,000 barrels of oil per day is appropriate for the two subject fields.
 - a. The two subject fields are in the later stages of primary development and are lenticular and heterogeneous.
 - b. The horizontal drainhole wells are encountering undrained sand lenses and have initial potentials over 1,000 barrels of oil per day.

14. Continued suspension of the allocation formulas is appropriate, as there is a 100% market demand for all of the gas produced from the two subject fields.
15. The filing of Form P-15 to designate the number of acres to be assigned to each well for proration purposes with no proration unit plats will eliminate unnecessary paperwork.

CONCLUSIONS OF LAW

1. Proper notice of this hearing was issued.
2. All things have been accomplished or have occurred to give the Commission jurisdiction in this matter.
3. Amending Field Rules for the Parks (Consolidated) and Pegasus (Consolidated) Fields is necessary to prevent waste, protect correlative rights and promote development of the fields.

RECOMMENDATION

Based on the above findings of fact and conclusions of law, the examiners recommend that the Commission amend Field Rules for the Parks (Consolidated) and Pegasus (Consolidated) Fields, as proposed by COG Operating LLC.

Respectfully submitted,



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Technical Examiner



Marshall F. Enquist
Legal Examiner