

OIL AND GAS DOCKET NO. 06-0263967

THE APPLICATION OF FOREST OIL CORPORATION TO AMEND THE FIELD RULES FOR THE HARDWOOD (COTTON VALLEY) FIELD, HARRISON COUNTY, TEXAS

Heard by: Andres J. Trevino, P.E. on January 27, 2010

Appearances:

Rick Johnston

Representing:

Forest Oil Corporation

EXAMINER'S REPORT AND RECOMMENDATION

STATEMENT OF THE CASE

Existing field rules for the Hardwood (Cotton Valley) Field are summarized as follows:

1. Designation of the field as the correlative interval from 8,350 feet to 10,134 feet as shown on the log of the L. Justice, Well No. 1, API No. 203-31121, Samuel Monday Survey, A-14, Harrison County, Texas;
2. 467'-600' well spacing, with no minimum between well spacing between vertical and horizontal wells;
3. 40 acre gas units with optional 20 acre units, No plats required while allocation formula is suspended;
4. Allocation based on 95% deliverability and 5% per well, with AOF status.

Forest Oil requests that field Rule No. 2 be amended to include additional language allowing "take points" and off-lease penetration points in the field.

After the hearing, proposed alternative take point language was presented to Forest Oil which they considered as an adverse recommendation. The "take point" language was modified so that **all points** on a horizontal lateral between the first take point and terminus must comply with minimum lease line and between well spacing distances. The Forest Oil proposed language is the typical language used in other recently approved fields and states that **all take points** should be within the minimum lease line and between well spacing distances. The examiner recommends that the field rules for the Hardwood (Cotton Valley) Field be amended to require that all points on a horizontal lateral between the first take point and terminus be located at least the prescribed minimum lease line and between well

spacing distances.

DISCUSSION OF EVIDENCE

The Hardwood (Cotton Valley) Field was discovered in 1985. The field is a non-associated gas field with approximately 74 gas wells. The allocation formula is currently suspended.

Forest Oil is beginning to develop the field with horizontal wellbores. Completion methods involve setting and cementing casing through the horizontal portion of the well. The well is then fracture stimulated in stages using retrievable packers beginning at the terminus of the horizontal lateral up to the first take point. This method optimizes the success of fracture stimulation throughout the cased horizontal interval.

Forest Oil requests that a field rule be adopted which includes “take point” language. Forest Oil’s proposed rule specifies that, for purposes of lease line spacing, the nearest “take point” in a horizontal well be used. The flexibility of placing the take points allows the operator to drill a lateral closer to a odd shape lease line or tract but then elect not to place a take point until sufficient distance that the take point is at a legal location. Similar rules have been adopted in other tight reservoirs, including the Barnett Shale, Granite Wash and other Cotton Valley fields. These rules were first developed in the Newark, East (Barnett Shale) Field where drilling in an urban setting poses numerous challenges such as drilling long laterals around unleased residential tracts. Forest stated that portions of the Hardwood (Cotton Valley) field are located over residential property and some of their lease holdings are irregularly shaped.

The proposed rule would allow operators to drill horizontal wells with penetration points, as defined by Rule 86, at distances closer than 467 feet to a lease line, as long as no take-point is closer than 467 feet to any lease line. Forest claims that horizontal drainhole length on a lease is thereby maximized, resulting in additional recovery of gas.

Forest Oil is also requesting that the field rules be amended to provide for offsite penetration points. Forest Oil has drilled the Gracie Bell CV Gas Unit No. 2H, a horizontal well in the field. Forest Oil is proposing to drill the Gracie Bell CV Gas Unit No. 4H, a horizontal well with a off-lease penetration point. It is beneficial to penetrate the reservoir off lease, while still having “take points” no closer than allowed under the field rules. In this field, it generally requires about 600 feet of horizontal displacement to make the 90 degree turn from the penetration point until the well is horizontal. If the penetration point is required to be 467 feet from lease lines, then the first point of production is over 1,000 feet from the lease line. The proposed rules will allow a larger length of producing drainhole, resulting in the recovery of additional reserves. Field rules for the Newark, East (Barnett Shale) Field and the Woodlawn (Cotton Valley) Field provide for offsite penetration points, after notice to the mineral owners of the offsite tract on which the penetration point is located.

EXAMINERS' OPINION

The examiner believes the alternative take point language that does not allow internal no perf zones (between first take point and terminus point) should be approved. The language will require all points on the lateral between the first take point and terminus to be at legal locations and any encroachment will require a Rule 37 exception. Forest Oil did not provide sufficient evidence that its proposed language authorizing NPZs was necessary to prevent waste or to protect correlative rights in this field. In fact, it appears that the use of NPZ's may actually cause waste and harm correlative rights. Although measuring from the first perforation rather than the penetration point into the formation is reasonable given the realities of horizontal drilling, the authorization of internal "no-perforation zones" is not reasonable or advisable for several significant reasons.

Ordinarily an exception to Statewide Rule 37 is required anytime a wellbore within the producing field interval is located within the lease line spacing distance of any offset tract. Forest's proposed rule could be interpreted as allowing an operator to declare that it will not perforate the encroaching wellbore within 467 feet of an offset tract and thereby nullify the requirement of obtaining a Rule 37 exception. This would effectively negate the rule requirement that the owner of the offset tract be given notice of the encroaching wellbore and an opportunity to object to protect his or her mineral rights.

A necessary underlying assumption in support of this approach must be that drainage from the perforations in each horizontal well in the field is only in a straight line directly out from the perforations, perpendicular to the wellbore. If this were true, at least hypothetically, the NPZ would mean that the offset tract would not be drained by the well and therefore, at least in theory, the tract would be unaffected by the wellbore in spite of the encroachment. In fact, drainage is usually assumed to occur radially from a given point not in a laser straight line. In the case of a single perforation this translates into drainage in a fan pattern (in plan view) or a cone (in three dimensions). Further, although operators generally attempt to orient horizontal wellbores perpendicular to the general natural fracture trend, this is not always possible and, in any event, fractures actually occur at many different angles and no two are actually perfectly parallel. With the natural fractures at an oblique angle to the wellbore, the declaration of an NPZ can have the extremely anomalous and undesirable result of allowing the supposedly unaffected tract to be drained while creating an adjacent "dead zone" that is under lease but which will not be effectively produced, resulting in waste.

There are a number of policy considerations that weigh against the use of internal NPZs:

A. Due Process/Correlative rights

Under the terms of Statewide Rule 37, an exception to Rule 37 is necessary when a wellbore will be located within the applicable lease line spacing distance of an offset tract. Statewide rules are adopted through the rulemaking process in which proposed rules are

published in the Texas Register and all interested persons have an opportunity to review the proposed rules and comment on them. Field rules, like the one at issue in this case, are adopted through a much more limited hearing process in which only operators in the field are given notice and an opportunity to participate. The proposed field rule at issue regarding take points effectively allows an applicant to cut off the right to notice of an entire class of individuals - unleased mineral owners - who had no notice or real opportunity to participate in the field rules hearing. It is highly likely that unleased owners will be affected, notwithstanding the imposition of an NPZ, because the minerals under their tracts will be drained by the wellbore that is closer than minimum lease line spacing distance, but under the proposed rule they would not be entitled to any notice or an opportunity to object to protect their mineral rights. Both the adoption of this proposed rule without notice and its application to negate the terms of Statewide rule 37 appear to effect the property rights of unleased mineral owners without legally required due process.

B. Waste

To the extent NPZs actually create zones along a horizontal wellbore in which adjacent tracts are unaffected because they are not drained by the well, the use of NPZs clearly causes waste. These undrained tracts are far too small to ever have a well economically drilled on them to produce the hydrocarbons left by the horizontal well as a result of the declaration of the NPZ. As a result these reserves will be forever stranded because of the NPZ. The amount of gas potentially wasted by the practice of using NPZs would be substantial. Operators have frequently asserted that horizontal well recovery in fields where horizontal wells are prevalent is directly related to the number of feet of perforated wellbore. Operators typically apply a recovery factor of 0.9 MMCF per foot in the Newark, East (Barnett Shale) field, for example. Based on this factor, a wellbore with a 600 foot declared no perf zone will potentially strand, and ultimately cause the waste of, more than half a billion cubic feet of recoverable gas.

C. Alternatives

An applicant that desires to locate a horizontal wellbore closer than 467 feet from an offset tract that is unleased or leased to another operator does have alternatives to the declaration of a no perf zone. First, the applicant could negotiate and lease and/or pool the offset tract that is too close to the chosen wellbore path. If the applicant is unable or unwilling to come to terms that will allow it to lease the adjacent tract, it may choose to relocate its wellbore path so that it does not encroach on the unleased offset tract. If the applicant does not find either of those alternatives feasible it can, as operators have done for nearly 100 years, apply for a Rule 37 exception and give notice to the mineral owners of the adjacent tract. If notice is given and a protestant does appear, the applicant would have the reasonable burden of showing that the well location encroaching on the protestants' unleased tract was necessary either to prevent waste or to protect correlative rights. Finally, based on the Commission's decision in the Finley case, an applicant who was unable or unwilling to lease the adjacent tract, chose not to relocate its wellbore, and did not desire to attempt to prove its right to a Rule 37 exception could bring an action under the Mineral Interest Pooling Act to have the adjacent tract pooled into its unit by Railroad Commission order.

The examiner recommends that the Commission not adopt the proposed special field rule amendment regarding perforations/take points but instead adopt alternative take point language requiring all points on the wellbore from the first take point to the terminus comply with leaseline spacing required. The examiner recommends adoption of Forest Oil's proposed language authorizing off-lease penetration points.

FINDINGS OF FACT

1. Notice of this hearing was given to all persons entitled to notice and no protests were received.
2. Field rules for the Hardwood (Cotton Valley) Field provide for a designated interval, 467'-600' well spacing and 40 acre gas units with optional 20 acre units.
3. The Hardwood (Cotton Valley) Field was discovered in 1985. The field is a non associated gas field with approximately 74 wells and is actively being developed with horizontal drainhole wells.
4. Forest Oil has drilled the Gracie Bell CV Gas Unit No. 2H, a horizontal well in the field. Forest Oil is proposing to drill the Gracie Bell CV Gas Unit No. 4H, a horizontal well with an off-lease penetration point.
5. Allowing offsite penetration points, after notice to mineral owners of the offsite tract, will result in maximum producing drainhole length, thereby increasing ultimate recovery from horizontal drainhole wells.
6. Allowing "internal" no take point segments or NPZ's will cause waste as any zone along the horizontal lateral not produced will leave reserves behind that will not be produced by other means.
7. Fractures from fracture stimulation cannot be assured to stay within 467 feet, therefore will drain unleased mineral owner. Drainage can be assumed to occur radially and not in a straight line perpendicular to the wellbore and therefore mineral owners within a Rule 37 distance of the wellbore will likely be affected even if there are not any take points immediately adjacent to their tract.
8. The addition of no take point intervals or NPZ's for the purpose of negating an otherwise required exception to SWR 37 will reduce the recovery of horizontal wells in the field.

9. The addition of no take points intervals or NPZ's, for the purpose of negating an otherwise required exception to SWR 37 will harm correlative rights by denying notice and an opportunity to protest to potentially effected mineral owners.

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 the field rules for the Hardwood (Cotton Valley) Field is necessary to prevent waste, protect correlative rights and promote development of the field.
5. Amending the field rules for the Hardwood (Cotton Valley) Field to authorize no perf zones as a means to avoid the requirement of obtaining exceptions to Rule 37 is not necessary to prevent waste or to protect correlative rights.

RECOMMENDATION

Based on the above findings and conclusions of law, the examiner recommends that the Commission amend the field rules for the Hardwood (Cotton Valley) Field to provide for offsite penetration points, as proposed by Forest Oil Corporation and as set out in the attached proposed final order.

Respectfully submitted,

Andres J. Trevino, P.E.
Technical Examiner