
* KEY ISSUES: Confiscation *
* Horizontal lateral from *
* existing vertical *
* wellbore *
* FINAL ORDER: GRANTED *

**RULE 37 CASE NO. 0210930
DISTRICT 8A**

**APPLICATION OF BROWNING OIL COMPANY FOR A RULE 37 EXCEPTION FOR ITS
MOLTHAN UNIT LEASE, WELL NO. 1, POKER DRAW (DEVONIAN) FIELD, YOAKUM
COUNTY, TEXAS**

APPEARANCES:

REPRESENTING:

FOR APPLICANT:

Michael McElroy (Attorney)
Eduardo Gonzales
Oladipo Aluko
Robert Konecny

Browning Oil Company, Inc.

FOR PROTESTANT:

Kevin Beiter (Attorney)
Shahid Ghauri (Attorney)

Mason Bristol

PROPOSAL FOR DECISION

PROCEDURAL HISTORY

APPLICATION FILED:

January 10, 1997

NOTICE OF HEARING:

February 12, 1997

HEARING DATES:

April 9 and 14, 1997

TRANSCRIPT RECEIVED:

May 2, 1997

PFD CIRCULATION DATE:

August 28, 1997

HEARD BY:

Mickey R. Olmstead, Hearings Examiner
Margaret Allen, Technical Examiner

STATEMENT OF THE CASE

Browning Oil Company ("Browning" or "applicant") has already completed the Molthan Unit Well No. 1 ("subject well") as a vertical well in the Poker Draw (Devonian) Field ("subject field" or "subject reservoir") under Rule 37 Permit No. 0210930. This oil well is not economically viable, and Browning is seeking to drill a 750 foot lateral wellbore from the same surface location. (See copy of Browning Exhibit No. 3, structure map of the Poker Draw (Devonian) Field, attached hereto as Exhibit "A".) The application is opposed by Mason Bristol ("protestant"), who is a royalty interest owner in the offsetting tract of land to the east of the 80-acre Molthan Unit ("subject unit"), which is also operated by the applicant.

The Molthan Unit Well No. 1 was administratively granted a Rule 37 permit on February 29, 1996. The existing vertical wellbore is only 124 feet from the protestant's lease line, while field rules for the Poker Draw (Devonian) Field require 660 feet lease-line spacing on 80-acre density. The Molthan Unit is only 1,320 feet wide; thus, the only regular locations are in a line down the center of the unit.

DISCUSSION OF THE EVIDENCE

Applicant's Evidence and Argument

Browning argues that the protestant is collaterally estopped from opposing the instant application because Bristol did not protest Browning's original application for the existing vertical well. Such argument is without merit. Browning's proposed application would expose almost 750 feet of additional lateral open-hole wellbore within 660 feet of protestant's lease line, beginning at the existing vertical well location only 124 feet from Bristol's lease line. Clearly, the protestant has not waived his right to oppose Browning's new, and potentially more competitive, application.

The Poker Draw (Devonian) Field was discovered in April 1994 at a depth of 12,259 feet. The field is typical of Devonian fields in Yoakum County in that it is located in a structural closure on the southern, or upthrown, side of an east-west trending fault. Reservoir quality deteriorates in the direction of the fault due to secondary precipitation in the pore spaces. Mineralized fluid has percolated up the fault plane and precipitated into fractures and vugs near the fault plane. One of the highest wells on this structure, the Adobe Bristol No. 1, cut the fault and recovered only slight amounts of drilling mud. Very low pressures were recorded during three separate drill-stem tests, indicating almost no permeability.

The discovery well for the field, Browning's Bouré No. 1, is about 850 feet south of the fault and was drilled on the protestant's lease. The Bouré No. 1 was completed in April 1994, flowing 194 BOPD from the open wellbore between 12,223 and 12,259 feet; however, by February 1997, the well was producing approximately 70 BOPD and 100 BWPD. Cumulative production through March of 1997 is 122,000 BO and 98,000 BW. Assuming an economic limit of 5% oil cut, Browning estimated that the Bouré No. 1 will recover approximately 251,000 BO.

The other two wells in the field were also drilled by Browning Oil and are closer to the fault than is the discovery well. The Blackjack No. 1 Well was completed in October 1994 approximately 350 feet south of the fault, with an initial potential of 106 BOPD. However, by February of 1997, the well was producing only about 20 BOPD and 13 BWPD. The subject reservoir is clearly present in the Blackjack No. 1, but according to Browning, poor permeability hampers fluid production. Cores from the subject reservoir in the Blackjack No. 1 Well evidence the mineralization which has partially filled the pore space.

The Molthan Unit Well No. 1 was the third well in the field. It had an initial potential of 176 BOPD in September 1996. By February 1997, average daily production had decreased to 18 BOPD and less than 1 BWPD. The rapid decrease in production indicates to Browning that there is some reservoir porosity, but that the permeability must be very low. Cumulative production from the Molthan Unit Well No. 1 through March 1997 is 6,400 BO and 6,300 BW.

Reservoir quality improves away from the fault, but the reservoir is limited by an oil/water contact line to the south. The Star Taylor Heirs Well No. 1-A was drilled off-structure to the east of the field and encountered good quality reservoir rock. However the well is structurally low and produced only salt water. From the log of the Blackjack No. 1 Well, Browning determined that the oil/water contact was at approximately -8745 feet, and this contact has been confirmed by the production characteristics of the Molthan Unit No. 1. The small amount of pressure decrease in this field (only 200 psi during the first two years of production) indicates a strong water drive.

Browning's structure map (Exhibit "A"), based on seismic and well log information, indicates that there are 45 productive acres on the Molthan Unit above the original oil/water contact line. Using reservoir-average parameters of 50 feet of net pay, water saturation of 33% and a recovery factor of 35%, Browning calculated there to be almost 146,000 barrels of initially recoverable oil underneath the Molthan Unit. Browning estimated that the existing Molthan Unit No. 1 will ultimately recover only 12,442 BO, which indicates that 133,500 barrels of originally recoverable oil underlying the Molthan Unit will not be recovered by the vertical Well No. 1 as it is presently completed.

There is currently 5 1/2 inch casing set in the vertical Molthan Unit No. 1. The applicant proposes to mill out a window and directionally drill a lateral wellbore to the southwest and generally away from the protestant's property. The lateral will also be drilled away from the fault into an area that is structurally lower than the current vertical wellbore. The risk of encountering water increases away from the fault, but such risk is outweighed by the need to encounter reservoir rock of better permeability.

Substantially all of the proposed horizontal wellbore will be within 660 feet of the protestant's tract, while the penetration point will be only 124 feet from said tract. The penetration point is the same as the existing vertical well location, while the terminus of the lateral will be, at most, 700 feet from the protestant's tract.

The direction of the horizontal wellbore will be nearly perpendicular to strike. If Browning were to drill a vertical wellbore at the location of the proposed terminus, it would be more than 100 feet downdip from the current location. The reservoir quality is expected to be good there, but because of the waterdrive, a vertical wellbore located there would be unable to recover the oil on the Molthan Unit that is located up-structure.

Protestant's Evidence and Argument

Mason Bristol put on no direct case in protest of the instant application. The protestant did show through cross-examination that regular locations exist for vertical wells down the center of the Molthan Unit that are farther from the fault than the existing Molthan Unit No. 1 Well. However, Browning responded that such locations are structurally downdip from the proposed penetration point, and thus risk hitting water. The horizontal wellbore will allow the applicant to stay high on structure and yet search for better reservoir rock away from the fault.

The protestant argued that the applicant has not made a study of the reserves currently in place under the Molthan Unit. The oil/water contact has likely moved up-structure due to production, yet the applicant does not know its current location. This would have an impact on the volumetric calculations used by the applicant to determine the amount of oil currently recoverable under the Molthan Unit. The applicant also did not quantify the amount of oil that would not be recovered, and thus wasted, by drilling a vertical well at a more regular location downdip and farther away from the protestant's tract.

Bristol also demonstrated that the applicant did not determine the amount of oil, if any, that the Bouré Well No. 1 has drained from the Molthan Unit. The applicant's witness replied that if the reservoir was homogeneous, the Bouré Well could eventually drain much of the oil from under the Molthan Unit. However, the applicant's evidence that permeability and porosity deteriorate toward the fault indicates that the subject reservoir is not homogeneous.

EXAMINERS' OPINION

Exceptions to Statewide Rule 37 may be granted to prevent waste or to protect correlative rights. To obtain an exception to Statewide Rule 37 to protect correlative rights, the applicant must show: 1) that it is not possible for the applicant to recover his fair share by placing the well at any regular location; and 2) that the proposed irregular location is reasonable.

An applicant seeking an exception to Rule 37 based on waste must establish three elements: 1) that unusual conditions, different from conditions in adjacent parts of the field, exist under the tract for which the exception is sought; 2) that, as a result of these conditions, hydrocarbons will be recovered by the well for which a permit is sought that would not be recovered by any existing wells or by additional wells drilled at regular locations; and 3) that the volume of otherwise unrecoverable

hydrocarbons is substantial.

Browning's expert witness testified that there were initially 146,000 barrels of recoverable oil underlying the Molthan Unit. He further testified that only 12,442 barrels can be ultimately recovered from the existing Molthan Unit No. 1 Well. Therefore, almost 133,500 barrels of oil will remain unrecovered or be recovered by the Bouré No. 1 Well if the exception application is not approved.

There is little difference in structural elevation between the Bouré No. 1 Well and the existing Molthan Unit No. 1 Well. If the waterdrive were completely efficient, the Bouré No. 1 could produce most of the oil on the Molthan Unit. However, because of the heterogeneity of the subject reservoir, not all of the oil from the Molthan Unit can be recovered by the Bouré No. 1. Browning's expert witness conceded that he had not made a study of the amount of oil from the Molthan Unit that cannot be recovered by the Bouré well. Because Browning has not ascertained the volume of otherwise unrecoverable hydrocarbons, said volume cannot be determined to be "substantial". Likewise, the applicant did not demonstrate that unusual conditions, different from conditions in adjacent parts of the subject field, exist under the Molthan Unit. Therefore, Browning's application based on waste must fail.

If Browning were to drill another vertical well at the proposed terminus point, it would recover some of the oil that would otherwise be drained by the Bouré No. 1 because either well could, due to the waterdrive, drain the structurally lower, more permeable part of the reservoir on the Molthan Unit. Such a well, however, could not recover the oil up-structure on the subject unit. The presence of the waterdrive indicates that any wellbore that does not extend as far up-dip as the existing vertical well location will not recover all of the reserves underlying the Molthan Unit. An unquantified proportion of these reserves are in the less permeable part of the reservoir and could not be drained by the Bouré well, which is more than 1,100 feet away. The heterogeneity of the subject reservoir makes it impossible to determine the exact amount of recoverable reserves at any particular location. However, it is clear that most of the 133,500 barrels of originally recoverable oil in place that cannot be recovered by the Molthan Unit No. 1 Well are, in fact, currently recoverable from the Molthan Unit.

A lateral could be drilled out from the existing subject well in a more westerly direction than the proposed south 45° west direction. This would ensure that the wellbore would drain as little as possible from the Bristol tract. However, a more westerly lateral would place the wellbore closer to the fault and would thus run the risk of missing the better reservoir permeability expected to exist approximately 850 feet from the fault. Most of such a westerly lateral wellbore would be within 400 feet of the fault, and therefore, within the very low permeability part of the reservoir.

Without an exception to Rule 37, the applicant will not recover its fair share of the hydrocarbons under the Molthan Unit, or its equivalent in kind. The proposed lateral wellbore will be directionally drilled generally away from the protestant's tract. The proposed terminus location is near the geometric center of the tract and approximately 750 feet from the fault. The proposed

lateral wellbore is reasonable because no less irregular locations exist on the tract that will permit Browning to recover its fair share of the underlying reserves. Additionally, because of the substantial fluid withdrawal from the Bouré No. 1 Well and the related pressure gradient in that area of the field, Browning's proposed lateral wellbore is not likely to drain any reserves from under the protestant's tract.

The examiners believe that the existing Molthan Unit No. 1 Well is in an area of the subject reservoir with such low permeability that the well cannot produce the recoverable reserves from under the Molthan Unit. The subject well is the first and only well on the Molthan Unit, but as a vertical well it cannot recover applicant's fair share of the underlying reserves. The examiners recommend that the applicant be granted a Rule 37 exception to modify the existing Molthan Unit No. 1 Well by drilling a horizontal wellbore which will extend diagonally away from the protestant's tract.

FINDINGS OF FACT

1. Notice of the hearing on the application was mailed to all designated operators, lessees of record for tracts that have no designated operator, and owners of record of unleased mineral interests for each adjacent tract and each tract nearer to the well than 660'.
2. On February 29, 1996, Browning Oil Company, Inc. ("Browning") was administratively issued a Rule 37 exception permit for its Molthan Unit Well No. 1 in the Poker Draw (Devonian) Field ("subject well"/"subject field").
3. The Poker Draw (Devonian) Field has field rules specifying 80-acre proration units and 660 feet lease-line spacing.
4. Browning completed the subject well 124 feet from Mason Bristol's ("Bristol" or "Protestant") lease line, but the vertical wellbore encountered poor permeability and has produced only 6,400 BO.
5. On January 9, 1997, Browning filed an amended drilling permit for the subject well to drill a directional lateral from the existing surface location toward the center of the Molthan Unit ("subject unit") in the subject field.
6. The subject well's terminus will be 700 feet from the east line of the subject unit, which is the common boundary with Bristol's property.
7. Bristol did not protest Browning's original application for the existing vertical well, but does oppose Browning's instant application.
8. Browning's proposed lateral will expose up to 750 feet of additional lateral open-hole

wellbore within 660 feet of protestant's lease line

9. The subject well is the first and only well on the Molthan Unit in the subject field.
10. The proposed terminus location is near the geometric center of the tract and approximately 750 feet from the fault.
11. The subject field is bounded to the north by a fault and on the south, east, and west by an oil/water contact line located at an approximate subsea depth of -8745 feet. The reservoir is characterized by an impermeable barrier near the fault and a strong waterdrive.
12. The existing vertical Molthan Unit No. 1 Well is in an area of the reservoir with such low permeability that the well cannot produce the recoverable reserves from under the unit.
13. There were originally 146,000 barrels of recoverable oil under the Molthan Unit between the fault and the oil/water content; the subject well in its present vertical configuration will recover a total of 12,400 barrels of oil before it is abandoned.
14. Little or no off-lease drainage of oil reserves from under the Molthan Unit has occurred; therefore, substantial but unquantified reserves currently exist under the unit.
15. A regularly located well will not recover the reserves under the Molthan Unit.
16. The heterogeneity of the reservoir makes the calculation of currently recoverable reserves under the Molthan Unit almost impossible; however, some quantity of oil remains under the unit which constitutes Browning's fair share of the recoverable reserves in the subject field.
17. The applied-for lateral wellbore is not likely to drain oil reserves from under protestant's tract.
18. The reservoir's strong waterdrive ensures that any wellbore that does not extend as far up-dip as the existing vertical well location will not recover Browning's fair share of the reserves in the subject reservoir.
19. Without the applied-for exception, the remaining reserves underlying the Molthan Unit cannot be recovered by the mineral interest owners of the unit.
20. No unusual subsurface conditions distinguish the Molthan Unit from other tracts in the field.
21. If Browning's application is denied, then the protestant's Bouré No. 1 Well will drain the Molthan Unit.

CONCLUSIONS OF LAW

1. Proper notice of hearing was timely given to all persons legally entitled to notice.
2. All things have occurred and/or have been done to give the Commission jurisdiction to decide this matter.
3. The protestant has not waived his right to oppose Browning's new, and potentially more competitive, application by failing to protest Browning's original application for the existing vertical well.
4. The mineral interest owners of the Molthan Unit are entitled to protection from confiscation.
5. An exception to the lease-line spacing requirements is necessary to permit drilling the applied-for well.
6. Approval of a permit to drill a well at the proposed location is necessary to give owners of the Molthan Unit a reasonable opportunity to recover their fair share of hydrocarbons in the applied-for fields underlying the unit, or the equivalent in kind, and to mitigate net drainage, thereby preventing confiscation.
7. The proposed location is reasonable because no less irregular locations exist at which the mineral interest owners can recover their fair share of hydrocarbons from beneath the subject unit.
8. Approval of Browning's application is not necessary to prevent waste.

RECOMMENDATION

The examiners recommend that the above findings of fact and conclusions of law be adopted and that Browning Oil Company, Inc., be granted an exception to Statewide Rule 37 in accordance with the attached Final Order.

Respectfully submitted,

Mickey R. Olmstead
Hearings Examiner

Margaret Allen
Technical Examiner