BARRY T. SMITHERMAN, CHAIRMAN
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RAILROAD COMMISSION OF TEXAS

HEARINGS DIVISION

PROPOSAL FOR DECISION

RULE 37 CASE NO. 0271629
STATUS NO. 720078
District 05

APPLICATION OF XTO ENERGY, INC., FOR A RULE 37 EXCEPTION FOR THE BARKSDALE A UNIT, WELL NO. 1H, NEWARK, EAST (BARNETT SHALE) FIELD, TARRANT COUNTY, TEXAS

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and

RULE 37 CASE NO. 0274986
STATUS NO. 734072
District 05

APPLICATION OF XTO ENERGY, INC., FOR A RULE 37 EXCEPTION FOR THE BARKSDALE A UNIT, WELL NO. 4H, NEWARK, EAST (BARNETT SHALE) FIELD, TARRANT COUNTY, TEXAS

APPEARANCES:

FOR APPLICANT:	**APPLICANT:**
David Gross, Attorney at Law Rick Johnston, Consulting Engineer Keith Sawyer, XTO Landman	XTO Energy, Inc.
FOR PROTESTANT:	**PROTESTANT:**
Christopher Thomas, *pro se*	Christopher Thomas

PROCEDURAL HISTORY

DATE APPLICATION FILED:	July 12, 2011 (Well No. 1H) February 16, 2012 (Well No. 4H)
DATE AMENDED APPLICATION FILED	February 29, 2012 (Well No. 1H)
DATE OF NOTICE OF HEARING:	May 2, 2012
DATE OF HEARING:	May 24, 2012
HEARD BY:	Terry J. Johnson, Hearings Examiner Brian Fancher, Technical Examiner

DATE TRANSCRIPT RECEIVED:	June 8, 2012
RECORD RE-OPENED	September 14, 2012
RECORD CLOSED	November 13, 2012

CASE SUMMARY

XTO Energy, Inc. (XTO) seeks Rule 37 permits to drill two wells on its 311-acre Barksdale A Unit. Protestant Christopher Thomas owns an unleased 0.19-acre tract within the residential subdivision that is included in the Unit.

One of the proposed wells, the No. 1H, has a perforated interval that would terminate approximately 81 feet from Mr. Thomas' tract. The other well, No. 4H, has a perforated interval that would terminate 326 feet from his tract. Field rules for the Newark, East (Barnett Shale) require 330-foot lease-line spacing.

Mr. Thomas has rebuffed numerous lease offers made by XTO and remained unleased through the hearing.

A preponderance of the record evidence demonstrates that approval of the applications is necessary to prevent confiscation and protect correlative rights.

APPLICANT'S CASE

The Barksdale Unit

XTO's Barksdale A Unit (Barksdale Unit or Unit) is, roughly speaking, a rectangle, with the longer sides oriented northwest to southeast.[1] The Unit's perimeter encloses 311.2227 acres, of which 307.5037 (98.8 percent) are under lease to XTO. The southeast portion of the Unit includes a 213-tract residential subdivision.

XTO's expert witness, petroleum engineer Rick Johnston, testified that XTO plans to develop the Barksdale Unit with a total of five evenly-spaced horizontal wells, all targeted for the upper-middle of the Barnett Shale and avoiding the water-intensive Ellenburger formation at 8700 feet. Two regular-location wells, the No. 2H and the No. 3H, are already producing on the Unit.

XTO's Well No. 5H, has been permitted for a regular location on the Unit. The No. 5H runs northwest to southeast, lying between and parallel to the No. 2H in the center of the Unit and the No. 3H to the east.

Well Nos. 1H and 4H, which are the subject of these Rule 37 applications, would lie approximately 400 feet apart and evenly occupy the area between the No. 2H in the center and the Unit's western boundary. Well No. 1H requires a Rule 37 exception because the perforated portions of the wellbore will be closer than 330 feet to eight unleased tracts. Well No. 4H requires an exception because six tracts are within 330 feet of the perforated portion of the wellbore.

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[1] Attached as Appendix A is the Barksdale A Unit well location plat.

Underlying Reserves

Mr. Johnston analyzed stratigraphic cross-section logs for two pilot wells in the region to determine the thickness of the Barnett Shale under the Barksdale Unit.

Located 10,000 feet north-northwest of Well Nos. 1H and 4H, the Hollis-Sullivan Sandy's Dream No. 1H penetrated the top of the Barnett Shale at 8385 feet and the top of the Ellenburger at 8725. Mr. Johnston testified that this well showed a Barnett Shale thickness of 340 feet. The XTO Energy Mira Lagos Unit No. 3, located 4500 feet to the north-northeast of the No. 1H and No. 4H, showed the Barnett Shale from 8335 to 8670, some 335 feet of pay.

Based on his analysis of these logs, Mr. Johnston estimated an average Barnett Shale thickness beneath the Barksdale Unit of 335 feet.

Mr. Johnston also testified that the Barnett Shale under Tarrant County has an average formation thickness of 433 feet which holds some 139 billion cubic feet (BCF) of gas per square mile. Adjusting this benchmark for the Barksdale Unit's acreage and underlying formation thickness, Mr. Johnston estimated the original gas in place beneath the Unit to be 51.6 BCF. Applying what he characterized as a mid-range Barnett Shale recovery factor of 40 percent, Mr. Johnston calculated that there are 20.6 BCF of recoverable gas reserves underlying the Barksdale Unit.[2]

Estimated Ultimate Recovery and Drainhole Length

To illustrate the relationship between drainhole length and estimated ultimate recovery (EUR) for wells in this region of the Barnett Shale, Mr. Johnston conducted a study of all wells completed in the formation within a five-mile radius of the proposed location for Well Nos. 1H and 4H.[3] Identifying 176 productive wells within that radius, the study analyzed the cumulative gas production, drainhole-length and decline curve data for each identified well.[4]

Mr. Johnston's study amalgamates this information and, using a least-squares regression analysis, averages the data into a linear graph that expresses the EUR of the study wells in terms of perforated drainhole length, projecting the amount of additional gas that would be produced per added foot of drainhole. Mr. Johnston testified that each foot of drainhole will recover 0.3501 million cubic feet (MMCF) of gas over the life of the well.

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[2] This recovery factor is based on evidence presented in Docket No. 09-0242843 (Final Order Amending the Field Rules for the Newark, East (Barnett Shale) Field, July 11, 2005). At hearing, Mr. Johnston testified that since conventional volumetric-depletion dry gas reservoirs have been found to recover in the 70, 80, 90 percent range, a 40 percent recovery factor may prove to be conservative.

[3] Wells with no reported production were excluded from the study.

[4] A decline curve projects the rate at which well pressure, and thus gas production, will decrease over time, and provides an estimate of the amount of gas that the well will ultimately produce over its economic life.

Leasing

XTO Division Landman Keith Sawyer testified that leasing for the Barksdale Unit got underway in September 2006. He stated that, in the current market, bonuses range from $2300 to $2500 per net mineral acre, with a flat fee of $400 per tract in Mr. Thomas' subdivision. The leases grant a three-year primary term and 20 percent royalty.

Mr. Sawyer testified that over the years, several attempts had been made to lease the mineral interest of Mr. Thomas, who still rejects XTO's offered bonus of $1500, or $7985 per net mineral acre.

PROTESTANT'S CASE

The basis for Mr. Thomas' opposition to the applications at first appeared to be pecuniary.

> I guess what I'm getting at is you guys--it seems to me that you're underbidding or under valuing my property and what it is actually sitting on and what the potential is as far as the resource that is going to be obtained in comparison to some of the other lots [. . .].

It later seemed environmentally grounded.

> [. . .] This is more about my biggest concern is that I have--because even though we know drilling has been a long-term concept, it's not something that has been practiced to the extent that it is now, especially in North Texas. And my issue is that we are already seeing signs in communities even nearby, say as close as Cleburne and Granbury that are bringing up doubt about what it actually does as far as eroding land in residential areas. I mean, it's on the news every month, every other month they are talking about the issues like what is right now we are dealing with. But one in particular is dealing with that in Granbury right now. And my issue is our neighborhood was sold to us as a residential neighborhood. But now it seems that has become a straight drilling zone. And I am all for drilling. It is not like I am totally against drilling. I'm not. I'm just to the point where when it seems that drilling has taken up 100 percent of the entire community. And you know, like I said, this is a massive community, the two that are combined in Granbury–it seems to me that when I was sold this, this was a big concern for me at the time. And the owners have--the homeowners have decided, some of them have, apparently some of them have not decided, like I haven't to sell and lease out their land because of some of these same issues. And I just feel that at some point in time I feel that this should be something that is protecting the homeowners who are buying these homes when their communities are being treated as a drilling zone. And they will be the ones that have the liability and the consequences 10, 15 years from now. That is pretty much how I feel about it personally.

Mr. Thomas offered no evidence to challenge or contradict the testimony and exhibits introduced by XTO.

OPINION AND RECOMMENDATION

Under Texas law, the mineral estate owner has a right to a fair chance to recover the oil and gas under his property.[5] This right is not unconditional, however, but subordinate to the conservation authority of the Railroad Commission.[6] Under that authority, the Commission has adopted rules governing the spacing of gas wells in the Newark, East (Barnett Shale) Field in Tarrant County.[7]

These field rules require the perforations in a horizontal wellbore to be at least 330 feet away from any unleased tract. The Commission holds authority to grant an exception to this requirement where it is necessary to prevent waste or confiscation of hydrocarbons. A Rule 37 exception based on confiscation requires a showing that the proposed location is reasonable and proof that a regular location will not provide a reasonable chance to recover a fair share of the hydrocarbons to be found in the mineral estate.

In the opinion of the Examiners, XTO has demonstrated that Rule 37 lease-line spacing exceptions for the involved wells are necessary to prevent confiscation and protect correlative rights.

XTO's development of the Barksdale Unit employs five parallel wellbores, each running the length of the Unit. These laterals are evenly spaced approximately 400 feet apart and are positioned to maximize access to the full subsurface interval while minimizing the possibility of inter-well drainage interference. In the Examiners' opinion, the proposed locations for the No. 1H and No. 4H are reasonable.

There are an estimated 20.6 BCF of recoverable gas reserves beneath the Barksdale Unit, representing the mineral estate's fair share of the Unit's 51.6 BCF original gas in place. The record evidence shows that the three regular-location wells on the Unit--No. 2, No. 3 and No. 5--will be likely to produce a lifetime total of 8.17 BCF from these reserves.

Without a lease-line spacing exception, the eight unleased tracts within 330 feet of Well No. 1H constitute a potential 1570-foot no-perforation zone (NPZ) on a 4,411-foot drainhole. If realized, this restriction would diminish the well's estimated lifetime recovery from 2.26 BCF of gas to approximately 1.7 BCF. Stated another way, a Rule 37 exception for Well No. 1H will increase expected lifetime production by approximately 550 MMCF, or 32 percent over what the well would produce without an exception.

There are six unleased tracts within 330 feet of the No. 4H wellbore, representing a potential NPZ of 1,134 feet on the well's 4,593-foot drainhole. A Rule 37 exception would allow the well to recover an estimated 2.33 BCF of gas over its lifetime, 397 MMCF more than would be recovered with the restricted drainhole.

In sum, even with Rule 37 exceptions for Well Nos. 1H and 4H, the mineral estate is still likely to realize only 12.76 BCF of the estimated 20.6 BCF of recoverable gas reserves underlying the Barksdale Unit. Denial of the pending applications would harm the correlative rights of 98.8 percent of the Unit's mineral owners and amount to confiscation of 947 MMCF of otherwise recoverable gas in place beneath the Unit.

Mr. Thomas, who owns 0.19 acres, or six one-hundredths of a percent (0.06%), of the 311.2227 acres that compose the Barksdale Unit, has declined to enter into a lease with XTO. It is his complete right to choose

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[5] *Gulf Land Co. v. Atlantic Refining Co.*, 131 S.W.2d 73, 80 (Tex. 1939); *Imperial American Resources Fund, Inc. v. Railroad Commission of Texas*, 557 S.W.2d 280, 286 (Tex. 1977)

[6] Natural Resources Code § 81.051

[7] Docket No. 09-0242843 [Final Order Amending the Field Rules for the Newark, East (Barnett Shale) Field, July 11, 2005]

that course. As Protestant in the cases at hand, however, Mr. Thomas has offered no proof to rebut or challenge XTO's evidence showing that the subject wells are necessary in order to prevent confiscation and to protect correlative rights.

The examiners recommend that the Commission adopt the findings and conclusions set out below and enter a final order granting the relief sought in each docket.

FINDINGS OF FACT

1. At least ten (10) days notice of hearing was provided to all affected persons as defined by Statewide Rule 37(a)(2) and 37(a)(3) and the special field rules for the Newark, East (Barnett Shale) Field (field rules).

2. In Rule 37 Case No. 0271629, XTO Energy, Inc. ("XTO") seeks a drilling permit authorizing an exception to the minimum lease-line spacing requirements of the field rules for the Barksdale A Unit, Well No. 1H, a proposed horizontal well in the Newark, East (Barnett Shale) Field, Tarrant County, Texas.

3. In Rule 37 Case No. 0274986, XTO seeks a drilling permit authorizing an exception to the minimum lease-line spacing requirements of the field rules for the Barksdale A Unit, Well No. 4H, a proposed horizontal well in the Newark, East (Barnett Shale) Field, Tarrant County, Texas.

4. The Barksdale A Unit (Barksdale Unit or Unit) is rectangular, with the longer sides running northwest to southeast.

5. The Barksdale Unit is composed of 311.2227 acres, of which 307.5037, or 98.8 percent, are under lease to XTO.

6. The Unit includes a 213-tract residential subdivision where the perforated interval of Well No. 1H is within 330 feet of eight unleased tracts and the perforated interval of Well No. 4H is within 330 feet of six unleased tracts.

7. XTO plans to develop the Barksdale Unit with five horizontal wells.

8. There are two regular-location wells currently producing on the Unit, the No. 2H in the center and the No. 3H to the east.

9. A third well, the No. 5H, is permitted for a regular location on the Unit and will lie between and parallel to the No. 2H in the center of the Unit and the No. 3H to the east.

10. Well Nos. 1H and 4H are located approximately 400 feet apart, evenly dividing the area between the No. 2H in the center and the Unit's western boundary, and are positioned to maximize recovery from the target interval and to minimize inter-well drainage interference.

11. The locations of Well Nos. 1H and 4H are reasonable and offer the mineral interest owners a reasonable chance to recover their fair share of the gas reserve underlying the Barksdale Unit.

12. Protestant Christopher Thomas owns an unleased tract in the Barksdale Unit, consisting of 0.19 acres.

13. The perforated interval of Well No. 1H would terminate 81 feet from Protestant's tract.

14. The perforated interval of Well No. 4H would terminate 326 feet from Protestant's tract.

15. Field rules for the Newark, East (Barnett Shale) require 330-foot lease-line spacing.

16. A stratigraphic cross-section log for the Hollis-Sullivan Sandy's Dream No. 1H, a pilot well located 10,000 feet north-northwest of the No. 1H and 4H terminus, shows a Barnett Shale thickness of 340 feet.

17. A similar log for the XTO Mira Lagos Unit No. 3, located 4500 feet north-northeast of the No. 1H and No. 4H terminus, shows a Barnett Shale thickness of 335 feet.

18. The thickness of the Barnett Shale underlying the Barksdale Unit is reasonably estimated to be 335 feet.

19. The average thickness of the Barnett Shale present in Tarrant County is estimated to be 433 feet, with gas reserves of 139 billion cubic feet (BCF) per square mile.

20. Based on the Tarrant County benchmark, and adjusting for the Barksdale Unit's acreage and estimated formation thickness, total gas in place beneath the Unit is reasonably estimated to be 51.6 BCF.

21. Applying a mid-range recovery factor of 40 percent, the currently recoverable gas reserves beneath the Barksdale Unit are reasonably estimated to be 20.6 BCF.

22. There are 176 productive wells within a five-mile radius of the No. 1H and 4H terminus.

23. XTO conducted a study of all wells completed in the Newark, East (Barnett Shale) within a five-mile radius of the proposed location of the subject wells analyzing each well's decline curve, production history and drainhole length.

24. The XTO study applied a least-squares regression analysis to this data to project the amount of additional gas that would be produced per added foot of drainhole length for the subject wells.

25. Based on the study, it is reasonably estimated that a well in this region produces .3501 million cubic feet (MMCF) of gas per foot of added drainhole.

26. Approval of the pending Rule 37 application for Well No. 1H will enable it to recover a reasonably estimated 550 MMCF of additional gas from the reserves beneath the Barksdale Unit.

27. Approval of the pending Rule 37 application for Well No. 4H will enable it to recover a reasonably estimated 397 MMCF of additional gas from the reserves beneath the Barksdale Unit.

28. The three regular-location wells permitted for the Barksdale Unit are reasonably estimated to recover a lifetime total of 8.17 BCF of the underlying gas reserves.

29. Approval of the pending Rule 37 applications for Well Nos. 1H and 4H is reasonably estimated to increase total lifetime recovery of the gas reserves underlying the Unit by .947 BCF.

30. Even with approval of the pending Rule 37 applications, the five wells on the Barksdale Unit are reasonably estimated to produce a lifetime total of 12.76 BCF, which is less than the 20.6 BCF of recoverable gas reserves beneath the Barksdale Unit.

CONCLUSIONS OF LAW

1. Proper notice of hearing was timely issued by the Railroad Commission to appropriate persons legally entitled to notice.

2. All things necessary to the Commission attaining jurisdiction over the subject matter and the parties in this hearing have been performed.

3. Approval of a Rule 37 exception for the Barksdale A Unit, Well No. 1H in the Newark, East (Barnett Shale) Field, Tarrant County, Texas, is necessary to prevent confiscation and protect correlative rights.

4. Approval of a Rule 37 exception for the Barksdale A Unit, Well No. 4H in the Newark, East (Barnett Shale) Field, Tarrant County, Texas, is necessary to prevent confiscation and protect correlative rights.

Respectfully submitted on this the 10th day of December, 2012.

Terry J. Johnson
Hearings Examiner

Brian Fancher by direction
Brian Fancher
Technical Examiner