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HEARINGS SECTION

RAILROAD COMMISSION OF TEXAS

OFFICE OF GENERAL COUNSEL

RULE 37 CASE NO. 0264838
District 09

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

APPEARANCES:

FOR APPLICANT:

David Gross
Rick Johnston
Robert Paul Horton
Keith Burke

APPLICANT:

XTO Energy, Inc.

FOR PROTESTANTS:

James Bostic
Caroline McClimon

PROTESTANTS:

Thuy Thu Ma
Khanh Le Tran Ma
Sara Sutton
Daniel Thai
Rebecca Thai
Andrea Young Lewis

PROPOSAL FOR DECISION

PROCEDURAL HISTORY

DATE APPLICATION FILED:	February 26, 2010
DATE OF NOTICE OF HEARING:	April 5, 2010
DATE OF HEARING:	June 25, 2010
HEARD BY:	James M. Doherty, Hearings Examiner Andres J. Trevino, Technical Examiner
DATE TRANSCRIPT RECEIVED:	July 5, 2010
DATE PFD CIRCULATED:	August 16, 2010

STATEMENT OF THE CASE

XTO Energy, Inc. ("XTO") seeks an amended drilling permit pursuant to the provisions of Statewide Rule 37 for the as-drilled location of the Eden Southeast Unit, Well No. 1H, a horizontal well in the Newark, East (Barnett Shale) Field, Tarrant County, Texas. XTO received an original drilling permit on August 18, 2009, to drill Well No. 1H at a regular location on a 92.31 acre unit. On December 14, 2009, XTO received a first amended permit, approved administratively pursuant to Statewide Rule 37(h)(2)(A), to drill the well on a 111.54 acre unit. This first amended permit authorized the drilling of the well with two no perforation zones. A plat associated with the Form W-1 (Application for Permit to Drill, Recomplete, or Re-Enter) that resulted in issuance of the first amended permit, which shows the Eden Southeast Unit and Well No. 1H with the two no perforation zones, is attached to this proposal for decision as Appendix 1. The well was spudded on December 14, 2009, and drilling of the well has been completed. The well has not been completed with perforations except for a limited test hole shot that was performed to perpetuate certain of XTO's leases. The well has not yet produced.

The present application seeks a second amended permit pursuant to Statewide Rule 37 for the as-drilled location of Well No. 1H. The primary effect of approval of this application would be to remove the no perforation zones contained in the first amended permit for the well. A plat showing the 111.54 acre Eden Southeast Unit and the as-drilled location of Well No. 1H is attached to this proposal for decision as Appendix 2. The surface location of the well is off-lease, 191' from the south line and 646' from the west line of the Grimmit, W Survey, A-600, Tarrant County, Texas. The penetration point of the well is 365' from the northeast corner and 292' from the east line of the unit. The terminus of the well is 420' from the south line and 451' from the east line of the unit and 1,031' from the east line and 725' from the south line of the Wheatley, D B Survey, A-1739, Tarrant County, Texas. Special field rules for the Newark, East (Barnett Shale) Field provide for 330' lease line spacing. A Rule 37 exception is needed for Well No. 1H because the well's drainhole from the proposed upper perforation to the proposed lower perforation is closer than allowed by the lease line spacing rule to certain tracts internal to the Eden Southeast Unit having unleased interests.¹ At certain places, the well is also closer than 330' to the eastern boundary of the 111.54 acre Eden Southeast Unit, but in this respect, XTO is its own offset.

The XTO application is opposed by Thuy Thu Ma, Khanh Le Tran Ma, Sara Sutton, Daniel Thai, Rebecca Thai, and Andrea Young Lewis who are owners of partial undivided mineral interests in four residential lots internal to the Eden Southeast Unit. Three of these lots are in the central section of the unit 252' to 288' from the as-drilled location of Well No. 1H. The fourth lot is in the

¹ The horizontal drainhole of Well No. 1H actually traverses one tract within the unit where XTO has leased a partial undivided interest and there is a partial undivided interest that is unleased. Where the horizontal drainhole enters and leaves this tract, the well is one foot or less from a mineral property line within the meaning of Statewide Rule 37. The unleased owner of this tract did not protest the application.

extreme southern part of the unit, slightly southwest of the terminus of the well. This fourth lot is about 25' from the terminus of the well and about 110' from the proposed lower perforation.

A hearing was held on June 25, 2010. XTO appeared and presented evidence. Protestants did not attend the hearing in person, but an appearance was made for them by their attorneys. Protestants did not present evidence, but participated through cross-examination of XTO's witnesses and by presentation of two cross-examination exhibits.

DISCUSSION OF THE EVIDENCE

XTO Energy, Inc.

The Eden Southeast Unit, Well No. 1H is drilled in an urban area of the City of Arlington. The surface area of the Unit is almost entirely developed with residential structures. Hundreds of oil and gas leases have been taken on lots within the Unit. Hollis Sullivan initially took about 900 of these leases during February 2007 through October 2008. The Hollis Sullivan leases were acquired by XTO in October 2008, and thereafter, XTO acquired an additional 144 leases in the Unit area.

The present application is XTO's third application for a drilling permit for the Eden Southeast Unit, Well No. 1H. An original permit to drill the well at a regular location on a 92.31 acre unit was obtained on August 18, 2009. The original permit was for a short lateral of about 100'. The City of Arlington's drilling ordinance requires that an operator have a drilling permit from the Railroad Commission before the City's permitting process can begin. This was the reason XTO acquired the original drilling permit from the Commission in August 2009. On December 14, 2009, XTO obtained a first amended drilling permit for Well No. 1H, which was approved administratively pursuant to Statewide Rule 37(h)(2)(A). To avoid the opposition of certain protestants, XTO agreed to no perforation zones along the horizontal drainhole. Certain of XTO's oil and gas leases were about to expire in January 2010, and the no perforation zones expedited the issuance of the first amended permit and enabled XTO to drill the well.

Well No. 1H was spudded on December 14, 2009, and the well has been drilled. To ensure that its oil and gas leases were perpetuated, XTO performed a test hole shot in the well, but the well has not been otherwise completed with perforations and the well has not yet produced. XTO would like to be able to perforate the entire drainhole, and the primary purpose of the present application for an amended permit for the as-drilled location of Well No. 1H is to remove the no perforation zones that are included in the first amended permit for the well issued on December 14, 2009.

"Area B" of the 111.54 acre Eden Southeast Unit shown on the plat associated with the present Form W-1 application (See Appendix 2 to this proposal for decision), which covers all but roughly the northern one-third of the unit ("Area A"), is covered by XTO's Green Heirs lease. XTO acquired from the Green Heirs a 34.70% leasehold interest in all tracts in "Area B". In this area, the

Green Heirs retained a 14.30 % interest, and the remaining 51% interest is held by the individual residential lot owners in the area. Accordingly, in "Area B" of the Unit, even as to those relatively few lots where the residential owner was unwilling to lease to XTO his or her 51% interest, XTO owns a partial undivided interest equal to 34.70%. All four of protestants' tracts are located in "Area B," and XTO has a partial undivided mineral interest equal to 34.70% in each of these four tracts. All protestants combined have an interest in 0.46308 net mineral acres. XTO made an attempt to lease protestants' interests, but no agreement to lease could be reached.

The 111.54 acre Eden Southeast Unit on which Well No. 1H has been drilled is only a portion of the 297.644 acre pooled unit formed by XTO by filing of declaration of unit in property records of Tarrant County. Appendix 3 to this proposal for decision is a plat showing the entire 297.644 acre courthouse unit (red dashed outer boundary) with the 111.54 acre Eden Southeast Unit roughly in the center of the courthouse unit (internal unit in black outline). Also shown on this plat in red are the four tracts in which the protestants have an unleased mineral interest.

The off-lease surface location for the Eden Southeast Unit, Well No. 1H lies to the northwest of the Unit. Due to intensive surface development in the area, this is the only surface location available for a well drilled beneath the Unit and the only surface location that meets set back requirements of the City of Arlington.

A geologist employed by XTO presented a structure map on the base of the Barnett Shale and top of the Viola Limestone in the area of the Eden Southeast Unit, showing all wells drilled in the area. Structural dip in the Barnett Shale is to the east. XTO's geologist also presented a west to east cross section of logs from five wells in the area, three of which were pilot wells drilled through the entire Barnett Shale. The cross section confirmed east dip. From the structure map and cross section, XTO's geologist concluded that the Barnett Shale is present and productive under the entirety of the Eden Southeast Unit.

A consulting petroleum engineer retained by XTO presented an area map showing about 60 horizontal gas wells drilled in the Barnett Shale within five miles of the Eden Southeast Unit, Well No. 1H terminus for which adequate production data was available to calculate an estimated ultimate recovery by decline curve. Effective drainhole length for these wells was determined from completion reports on file with the Commission. From this information, a plot of estimated ultimate recovery versus drainhole length was generated and a computer generated least squares regression of the data points on the plot developed a line through the data points with a positive slope of 0.381 and an intercept of 915. XTO's engineer testified that the implication of this study is that a vertical well would have an estimated ultimate recovery of 0.9 BCF of gas and that as the drainhole length of a horizontal well increases, the well's estimated ultimate recovery also increases. According to this study, every foot of horizontal drainhole ultimately will recover 381 MCF of gas.

XTO's engineer also presented a plat showing the Eden Southeast Unit, Well No. 1H with the no perforation zones that would be required to ensure that no perforation be placed closer than

330' to any protestant's tract. The two no perforation zones that would be required would have collective length of 1,459 feet. If the need for these no perforation zones were eliminated, the total length of drainhole proposed to be perforated by XTO, from upper perforation to lower perforation, would be 3,815 feet. On the assumption that every foot of horizontal drainhole ultimately will recover 381 MCF of gas, the two no perforation zones opposite protestants' tracts would cause 0.556 BCF of gas to go unrecovered. Stated differently, if XTO were permitted to perforate the entire drainhole of Well No. 1H as presently proposed, incremental recovery of 0.556 BCF of gas could be achieved as compared to the ultimate recovery with a no perforation zone restricted drainhole. Assuming that every foot of horizontal drainhole ultimately will recover 381 MCF of gas, the as-drilled drainhole of Well No. 1H, if perforated as now proposed by XTO, would have an estimated ultimate recovery of about 2.4 BCF of gas.²

XTO's engineer also presented an estimate of current recoverable gas in the Newark, East (Barnett Shale) Field beneath the Eden Southeast Unit based on a traditional volumetric calculation performed by Devon Energy & Production Company, L.P. in a 2005 Barnett Shale field rules hearing before the Commission in Oil & Gas Docket No. 09-0243843. For the Wise, Denton and Tarrant Counties "core area" of the Barnett Shale, Devon's study developed a gas in place calculation of 139 BCF per square mile (640 acres) for Tarrant County based on reservoir thickness of 433 feet. Reservoir thickness in the area of the Eden Southeast Unit is about 400 feet, which under Devon's methodology would calculate to 128 BCF per square mile. For the 111.54 acre Eden Southeast Unit, based on a 20% recovery factor, XTO's engineer estimated recoverable gas in place of 4.4 BCF.

XTO's engineer also presented a plat of the entire 297.644 acre courthouse pooled unit, including the Eden Southeast Unit, with 330' "halos" drawn around tracts having unleased interests and a 330' buffer drawn along the external boundary of the courthouse unit to demonstrate the highly limited number of areas within the unit that could be considered "regular locations" under the field rules for the Newark, East (Barnett Shale) Field. A copy of this plat is attached to this proposal for decision as Appendix 4. Depicted in yellow on this plat are three highly limited areas of "regular locations" outside the 330' halos. The surface use of these three areas is heavily residential.

There is not enough "regular location" acreage to drill a feasible horizontal well, and a true vertical well could not be drilled in these areas due to existing surface uses. While a well might be bottomed at a regular location on the northernmost area, the well would have to be a directional "S Curve" well drilled from the same off-lease pad site used for the Eden Southeast Unit, Well No. 1H. The cost of drilling such a well would be in excess of \$2,000,000, and in the opinion of XTO's engineer the well would not be economic. While such a well theoretically could be expected to have an ultimate recovery of about 0.9 BCF of gas and yield a gross dollar return sufficient to recover the cost of drilling and completion, the royalty burden, operating costs over the life of the well, and discount for the time value of money would make a directional well marginal economically and not

² This EUR is calculated by multiplying the drainhole length of 3,815 feet times 381 MCF per foot to equal 1.45 BCF and adding the intercept of .915 BCF from XTO Exhibit No. 12.

provide a sufficient return on investment to justify drilling the well. In addition, this area of the Barnett Shale is developed by the drilling of horizontal wells, not vertical or directional wells. All Barnett Shale wells shown on XTO's Exhibit No. 10 map within five miles of the terminus of the Eden Southeast Unit, Well No. 1H have been horizontal wells. XTO's engineer had the opinion that taking into account tracts that have unleased interests, there are no feasible regular locations for wells on either the 111.54 acre Eden Southeast Unit or the 297.644 acre courthouse unit.

XTO takes the position that the requested Rule 37 exception for the as-drilled location of the Eden Southeast Unit, Well No. 1H is necessary to prevent confiscation, that is, to enable XTO and its lessors to recover their fair share of gas beneath the Unit. XTO believes that the location of Well No. 1H is reasonable because it is roughly in the center of both the 111.54 acre Eden Southeast Unit and the 297.644 acre courthouse unit and as evenly spaced as practical between protestants' tracts lying to the east and west of the drainhole.

Protestants

Protestants did not present any evidence, other than two cross-examination exhibits about which questions were asked of XTO's engineer. By cross-examination, protestants developed that the directional "S Curve" well that theoretically could be drilled from the off-lease pad location to a bottom hole in the northernmost "regular location" area shown on XTO Exhibit No. 15 would have an estimated ultimate recovery exceeding the amount of gas that would go unrecovered by the Eden Southeast Unit, Well No. 1H on account of no perforation zones bracketing protestants' tracts. The protestants thus contend that XTO did not meet its burden of proof to justify a Rule 37 exception for removal of the no perforation zones.

EXAMINERS' OPINION

An owner of oil and gas is entitled to an opportunity to recover the reserves underlying his tract, and any denial of that opportunity amounts to confiscation. *Atlantic Refining Co. v. Railroad Commission*, 346 S.W.2d 801 (Tex. 1961); *Imperial American Resources Fund, Inc. v. Railroad Commission*, 557 S.W.2d 280 (Tex. 1977). When the subject tract is capable of supporting a regular location, the applicant for a Rule 37 exception based on confiscation must prove that the proposed irregular location is necessary because of surface or subsurface conditions and that the proposed location is reasonable. To do this, the applicant must show that it is not feasible to recover its fair share of hydrocarbons from regular locations.

The examiners are of the opinion that XTO proved that the requested Rule 37 exception is necessary to prevent confiscation. Well No. 1H is the first well on the 111.54 acre Eden Southeast Unit and the 297.644 acre courthouse unit. Volumetrically calculated gas in place in this area of the Barnett Shale is about 128 BCF per square mile (640 acres). None of the gas in place beneath the 111.54 acre Eden Southeast Unit has been recovered. Assuming a recovery factor of 20%, the current recoverable gas beneath the 111.54 acre Eden Southeast Unit is about 4.4 BCF. The

estimated ultimate recovery of the Eden Southeast Unit, Well No. 1H, if perforated all along the drainhole as proposed by XTO, is 2.4 BCF. XTO and the hundreds of its lessors in the pooled unit are entitled to a reasonable opportunity to recover their fair share of gas beneath the unit, and any denial of that opportunity would amount to confiscation.

The amended drilling permit issued for the Eden Southeast Unit, Well No. 1H on December 14, 2009, required that the well not be perforated at any point within two no perforation zones having collective length of 1,459 feet. The primary purpose of the present application is to eliminate these no perforation zones in order that the well can recover gas along the entire length of the horizontal drainhole from the upper perforation to the lower perforation. The examiners are not persuaded by protestants' argument that the application should be denied because of XTO's theoretical ability to drill a second well, that is, a directional "S Curve" well, from the same off-lease pad site to a bottom hole under one or more of the limited "regular locations" shown on XTO Exhibit No. 15.

There are no *regular* locations on the Eden Southeast Unit, or on the entire courthouse pooled unit, where a feasible horizontal well might be drilled. Surface constraints prevent the drilling of a vertical or directional well at a surface location on the Eden Southeast Unit. The limited "regular locations" on the unit shown on XTO Exhibit No. 15, where protestants suggest a directional "S Curve" well drilled from the off-lease pad site might be bottomed, are located right along the as-drilled horizontal drainhole of Well No. 1H, so that any such directional well likely would compete for reserves with Well No. 1H, even if Well No. 1H were restricted by no perforation zones.

It is estimated that the Eden Southeast Unit, Well No. 1H, as proposed to be perforated by XTO, will recover almost three times the amount of gas that a directional well that theoretically could be bottomed at a regular location might recover. The directional "S Curve" well most likely would not be drilled, not only because it would be a marginal well economically, considering the royalty burden, operating costs over the life of the well, and a discount for the time value of money, but also because the directional well would compete for mostly the same reserves as will be recovered by Well No. 1H. There is the additional factor that in the particular area of the Eden Southeast Unit, the Barnett Shale has been developed for gas production by the drilling of horizontal wells rather than vertical or directional wells. All Barnett Shale wells within five miles of the Eden Southeast Unit, Well No. 1H are horizontal wells.

The Eden Southeast Unit, Well No. 1H, as presently permitted with no perforation zone restrictions, will not afford XTO and its lessors with a reasonable opportunity to recover their fair share of gas from beneath the Eden Southeast Unit. The evidence shows that encumbering Well No. 1H with no perforation zones having collective length of 1,459 feet would cause about 0.556 BCF to go unrecovered. Requiring XTO to drill both Well No. 1H encumbered by 1,459 feet of no perforation zones *and* the suggested directional "S Curve" well in order to recover its "fair share" would necessitate the expenditure of the more than \$2,000,000 to drill the directional well to recover only about 0.354 BCF more gas than Well No. 1H alone would recover if completed as proposed by XTO. This would promote the drilling of a well that is largely unnecessary.

The examiners believe also that the as-drilled location of the Eden Southeast Unit, Well No. 1H is reasonable. The location is roughly in the center of the Unit, and fairly evenly spaced between the three of protestants' tracts in the central portion of the Unit. The fourth tract in which protestants are interested is located southwest of the well's terminus in the extreme southern part of the unit. There is no location on the Unit for a horizontal well of comparable length that would be less irregular to the protestants' tracts. Moving the location further away from protestants' tracts lying to the west of the well would be moving closer to protestants' tracts lying to the east of the well and vice versa. The location of the well is also a reasonable accommodation of the configuration of the Unit, the location of tracts having unleased interests, and the need to drill from a surface location on the off-lease drilling pad to the northwest of the Unit.

Based on the record in this case, the examiners recommend adoption of the following Findings of Fact and Conclusions of Law.

FINDINGS OF FACT

1. At least ten (10) days notice of this 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.
2. XTO Energy, Inc. ("XTO") seeks an exception to Statewide Rule 37 for the as-drilled location of the Eden Southeast Unit, Well No. 1H, Newark, East (Barnett Shale) Field, Tarrant County, Texas.
3. On December 14, 2009, XTO obtained a first amended permit to drill the Eden Southeast Unit, Well No. 1H. This permit authorized XTO to drill the well with two no perforation zones. XTO agreed to the no perforation zones as a means to avoid protests, and the XTO application for the first amended permit was approved administratively pursuant to Statewide Rule 37(h)(2)(A). A plat associated with the Form W-1 (Application for Permit to Drill, Recomplete, or Re-Enter) that resulted in issuance of the first amended permit, which shows the Eden Southeast Unit and Well No. 1H with the two no perforation zones, is attached to this proposal for decision as Appendix 1, which is incorporated into this finding by reference.
4. The Eden Southeast Unit, Well No. 1H was spudded on December 14, 2009, and the well has been drilled. To ensure that its oil and gas leases were perpetuated, XTO performed a test hole shot in the well, but the well has not been otherwise completed with perforations and the well has not yet produced.
5. XTO would like to be able to perforate the entire drainhole of Well No. 1H, and the primary purpose of the present application for an amended permit for the as-drilled location of the well is to remove the no perforation zones that are included in the first amended permit for the well issued on December 14, 2009.
6. Special field rules for the Newark, East (Barnett Shale) Field provide for 330' lease line spacing. As to horizontal wells, where the horizontal portion of the well is cased and cemented back above the top of the Barnett Shale formation, the distance to any property line,

lease line, or subdivision line is calculated based on the distance to the nearest perforation in the well, and not based on the penetration point or terminus. Where an external casing packer is placed in a horizontal well and cement is pumped above the external casing packer to a depth above the top of the Barnett Shale formation, the distance to any property line, lease line, or subdivision line is calculated based on the top of the external casing packer or the closest open hole section in the Barnett Shale. The standard drilling and proration unit for the Newark, East (Barnett Shale) Field is 320 acres. An operator is permitted to form optional drilling units of 20 acres.

7. A plat showing the 111.54 acre Eden Southeast Unit and the as-drilled location of Well No. 1H is attached to this proposal for decision as Appendix 2, which is incorporated into this finding by reference. The surface location of the well is off-lease, 191' from the south line and 646' from the west line of the Grimmit, W Survey, A-600, Tarrant County, Texas. The penetration point of the well is 365' from the northeast corner line and 292' from the east line of the unit. The terminus of the well is 420' from the south line and 451' from the east line of the unit and 1,031' from the east line and 725' from the south line of the Wheatley, D B Survey, A-1739, Tarrant County, Texas.
8. The 111.54 acre Eden Southeast Unit on which Well No. 1H has been drilled is a part of a larger 297.644 acre pooled unit formed by XTO by filing of a declaration of unit in property records of Tarrant County. Well No. 1H is the first well on the Eden Southeast Unit and the larger courthouse pooled unit.
9. Well No. 1H is drilled from an off-lease surface location that lies to the northwest of the Eden Southeast Unit. Due to intensive surface development in the area, this is the only surface location available for a horizontal well beneath the Unit and the only surface location in the area that meets set back requirements of the City of Arlington.
10. A Rule 37 exception is needed for Well No. 1H because the well's drainhole from the proposed upper perforation to the proposed lower perforation is closer than allowed by the lease line spacing rule to certain tracts internal to the Eden Southeast Unit having unleased interests. At certain places, the well is also closer than 330' to the eastern boundary of the 111.54 acre Eden Southeast Unit, but in this respect, XTO is its own offset.
11. The XTO application is opposed by Thuy Thu Ma, Khanh Le Tran Ma, Sara Sutton, Daniel Thai, Rebecca Thai, and Andrea Young Lewis who are owners of partial undivided mineral interests in four residential lots internal to the Eden Southeast Unit. Three of these lots are in the central section of the unit 252' to 288' from the as-drilled location of Well No. 1H. The fourth lot is in the extreme southern part of the unit, slightly southwest of the terminus of the well. This fourth lot is about 25' from the terminus of the well and about 110' from the proposed lower perforation. The protestants collectively have an interest in 0.46308 net mineral acres.

12. Protestants did not attend the hearing in person, but an appearance was made for them by their attorneys. Protestants did not present direct evidence, but participated through cross-examination of XTO's witnesses and by presentation of two cross-examination exhibits.
13. XTO has a partial undivided mineral interest equal to 34.70% in each of the four tracts in which protestants also have a partial undivided mineral interest.
14. The Barnett Shale formation is present and productive under the entirety of the Eden Southeast Unit. The formation is about 400' thick in the area of the Unit.
15. Barnett Shale gas wells within five miles of the terminus of the Eden Southeast Unit, Well No. 1H ultimately will recover an estimated 381 MCF of gas per foot of horizontal drainhole.
 - a. XTO studied production data, effective drainhole length obtained from completion reports, and decline curves to develop estimated ultimate recoveries for about 60 Barnett Shale gas wells within five miles of the terminus of Well No. 1H.
 - b. XTO generated a plot of estimated ultimate recovery versus drainhole length for the 60 study wells. A computer generated least squares regression of the data points on the plot developed a line through the data points with a positive slope of 0.381 and an intercept of 915.
 - c. The implication of XTO's study is that a vertical well in the area would have an estimated ultimate recovery of 0.9 BCF of gas, and every foot of horizontal drainhole ultimately will recover 381 MCF of gas.
16. The total length of the Well No. 1H drainhole proposed to be perforated by XTO, from upper perforation to lower perforation, is 3,815 feet. Based on the engineering calculation that Barnett Shale gas wells in the area ultimately will recover 381 MCF of gas per foot of drainhole, Well No. 1H, if perforated along its entire length, will have estimated ultimate recovery of about 2.4 BCF of gas (multiplying the drainhole length of 3,815 feet times 381 MCF per foot equals 1.45 BCF and adding the intercept of .915 BCF equals about 2.4 BCF).
17. Encumbering the drilling permit for Well No. 1H with no perforation zones sufficient to prevent perforation of the well any closer than 330' to the tracts in which protestants have a partial undivided mineral interest would not provide XTO and its lessors a reasonable opportunity to recover their fair share of gas.
 - a. To preclude perforation of Well No. 1H any closer than 330' to protestants' tracts, two no perforation zones having collective length of 1,459' would be necessary.

- b. Based on the engineering calculation that Barnett Shale gas wells in the area ultimately will recover 381 MCF of gas per foot of drainhole, inability of XTO to perforate 1,459' of drainhole would result in about 0.556 BCF of gas going unrecovered.
18. Current recoverable reserves in the Newark, East (Barnett Shale) Field beneath the Eden Southeast Unit, assuming a 20% recovery factor, are about 4.4 BCF. Assuming a recovery factor of only 10%, current recoverable reserves beneath the Unit are about 2.2 BCF.
 - a. A traditional volumetric calculation of gas in place presented in a 2005 Barnett Shale field rules hearing in Oil & Gas Docket No. 09-0243843 calculated gas in place in the Barnett Shale for Tarrant County of 139 BCF per square mile (640 acres), based on a reservoir thickness of 433 feet.
 - b. Adjustment of the 2005 volumetric calculation to account for a reservoir thickness of 400', yields an estimated gas in place in the Barnett Shale in the area of the Eden Southeast Unit of about 128 BCF per square mile (640 acres).
 - c. None of the gas in place in the Barnett Shale beneath the Eden Southeast Unit has been recovered.
19. There are no regular locations on the 111.54 acre Eden Southeast Unit or the 297.644 acre courthouse pooled unit where a feasible horizontal well could be drilled.
20. A vertical well could not be drilled on the limited area of regular locations on the Eden Southeast Unit because the surface area of these locations is intensively developed with residential structures.
21. There is a highly limited area of regular locations on the Eden Southeast Unit where a directional "S Curve" well drilled from the off-lease surface location might be bottomed, but this well, standing alone, ultimately would recover only about 0.9 BCF of gas and would compete for reserves with the Eden Southeast Unit, Well No. 1H, even if Well No. 1H is no perforation zone restricted as provided in the amended permit issued December 14, 2009.
22. All Barnett Shale gas wells drilled within five miles of the Eden Southeast Unit, Well No. 1H are horizontal wells rather than vertical or directional wells.
23. Requiring XTO to drill both Well No. 1H encumbered by 1,459 feet of no perforation zones and a directional "S Curve" well to recover its fair share of gas from beneath the Eden Southeast Unit, as suggested by protestants, would promote drilling of an unnecessary well and cause recoverable gas to go unrecovered by Well No. 1H.
 - a. Precluding XTO from perforating 1,459' of Well No. 1H's drainhole would cause about 0.556 BCF of recoverable gas to go unrecovered by Well No. 1H.

- b.. Drilling of the directional "S Curve" well would require an expenditure of more than \$2,000,000.
 - c. The directional "S Curve" well would compete for reserves with Well No. 1H. A combination of Well No. 1H encumbered by 1,459 feet of no perforation zones and a directional "S Curve" well would recover only about 0.354 BCF of gas more than Well No. 1H alone will recover if perforated as proposed by XTO.
24. Permitting of the Eden Southeast Unit, Well No. 1H as proposed by XTO is necessary to enable XTO and its lessors within the Unit to recover their fair share of gas from the Newark, East (Barnett Shale) Field.
25. The as-drilled location of the Eden Southeast Unit, Well No. 1H is reasonable.
- a. The location is roughly in the center of the Unit, and as evenly spaced as practical between the protestants' tracts to the east and west of the well.
 - b. There is no location on the Unit for a horizontal well of comparable length that would be less irregular to the protestants' tracts. Moving the location further away from protestants' tracts lying to the west of the well would result in moving closer to protestants' tracts lying to the east of the well and vice versa.
 - c. The location of the well is a reasonable accommodation of the configuration of the Eden Southeast Unit, the location of tracts having unleased interests, and the need to drill from the off-lease drilling pad to the northwest of the 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 as-drilled location of the Eden Southeast Unit, Well No. 1H as proposed by XTO Energy, Inc., is necessary to prevent confiscation and protect the correlative rights of mineral owners.

RECOMMENDATION

The examiners recommend that the application of XTO Energy, Inc., for a Rule 37 exception for the as-drilled location of the Eden Southeast Unit, Well No. 1H in the Newark, East (Barnett Shale) Field, Tarrant County, Texas, be granted as necessary to prevent confiscation and protect correlative rights.

Respectfully submitted,

James M. Doherty

James M. Doherty
Hearings Examiner

Andres J. Trevino

Andres J. Trevino
Technical Examiner