



RAILROAD COMMISSION OF TEXAS

HEARINGS DIVISION

RULE 37 CASE NO. 0275123
STATUS NO. 717594
DISTRICT 09

APPLICATION OF CHESAPEAKE OPERATING, INC. FOR A RULE 37 EXCEPTION FOR THE CASTLEBERRY TRT LEASE, WELL NO. 4H, NEWARK, EAST (BARNETT SHALE) FIELD, TARRANT COUNTY, TEXAS

APPEARANCES:

FOR APPLICANT:

Glenn E. Johnson
Ben Russ
Bill G. Spencer
Melissa Condley
Alan Jackson
Belinda Franko

APPLICANT:

Chesapeake Operating, Inc.

FOR PROTESTANT:

Royce Calk

PROTESTANT:

Royce Calk

PROPOSAL FOR DECISION

PROCEDURAL HISTORY

DATE APPLICATION FILED:	April 11, 2012
DATE OF NOTICE OF HEARING:	June 18, 2012
DATE OF HEARING:	August 13, 2012
HEARD BY:	Michael Crnich, Hearings Examiner Richard Atkins, Technical Examiner
DATE TRANSCRIPT RECEIVED:	August 22, 2012
DATE PFD CIRCULATED:	March 12, 2013

STATEMENT OF THE CASE

By this application, Chesapeake seeks a Rule 37 exception for the as-drilled location of the Castleberry TRT Lease, Well No. 4H, a horizontal well in the Newark, East (Barnett Shale) Field in Tarrant County, Texas. The Castleberry TRT No. 4H has an existing drilling permit,

which was issued on April 11, 2012, and is subject to a no perforation zone (“NPZ”) of 514 feet in length. This well has been drilled, but not fully completed. This well is the only existing one on the 374.453-acre Castleberry TRT Lease. The purpose of Chesapeake’s application is to obtain a third amended drilling permit unencumbered by an NPZ and allow Chesapeake to complete the entire 5,535 feet of the drainhole. Appendix 1 to this Proposal for Decision is a copy of the a plat admitted into evidence as Chesapeake Exhibit No. 25, which shows the Castleberry TRT Lease, tracts within the unit that are leased and unleased, the as-drilled location of the well, and the Protestant’s tract.

Chesapeake’s application is opposed by Protestant Royce Calk, the unleased owner of Tract No. 9, which is a 0.243-acre tract within the external boundary of the Castleberry TRT pooled unit. Protestant’s tract is 266 feet from the wellbore. The applicable lease-line spacing rule for horizontal wells in the Newark, East (Barnett Shale) Field is 330 feet measured from take points in the horizontal drainhole.

DISCUSSION OF THE EVIDENCE

Chesapeake’s Case

A regulatory consultant to Chesapeake described the permitting history of the Castleberry TRT No. 4H. The original drilling permit for this well was issued on June 3, 2011. This permit allowed the drilling of a well on a 31.39-acre tract. The purpose of seeking this original permit from the Railroad Commission was to enable Chesapeake to apply for a permit from the city of White Settlement. Like other cities in the Barnett Shale area, White Settlement will not commence the city permitting process until the operator has obtained a drilling permit from the Railroad Commission.

The Commission issued a first amended permit to Chesapeake on July 13, 2011. Chesapeake filed the application for this permit to change the name of the pooled unit from the Castleberry TAR to the Castleberry TRT.

The Commission issued a second amended permit on April 11, 2012. Chesapeake’s application that led to issuance of this permit was a Rule 37 application because there were several unleased tracts within 330 feet of the well. Chesapeake’s application also increased the size of the pooled unit to 374.453 acres. Notice was served on the unleased owners who were affected, and Royce Calk was the only owner to file a protest. To avoid the need for a Rule 37 hearing at this stage of the permitting process, Chesapeake filed a revised plat that placed an NPZ opposite the sole protesting owner. This NPZ placed all proposed take points in the well at least 330 feet from Protestant Calk’s tract. As amended by the revised plat, the application was approved administratively. The second amended permit is the existing permit for the Castleberry TRT No. 4H. As indicated previously, this permit is subject to a 514-foot NPZ opposite the affected tract owned by Protestant Calk.

Chesapeake filed the present application for a third amended permit on April 11, 2012, the same day that the Commission issued the second amended permit. This current application seeks to permit the well at the as-drilled location and remove the NPZ. The surface location of

the well is 364 feet from the south line and 1143 feet from the west line of the Norton, D. E. Survey, A-1174, and 605 feet from the north line and 478 feet from the east line of the unit. The terminus location is 795 from the south line and 791 feet from the east line of the Rowland, J. Survey, A-1331, and 243 feet from the south line and 421 from the east line of the unit. The upper, or first, perforation point is 705 feet from the north line and 475 feet from the east line of the unit. The lower, or last, perforation point is 330 feet from the south line and 443 feet from the east line of the unit.

Special field rules for the Newark, East (Barnett Shale) Field provide for 330-foot 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.

A Chesapeake geologist presented a two-well stratigraphic cross section hung on top of the Barnett Shale formation. The wells on the cross section are two pilot wells drilled through the Barnett Shale at locations to the northeast and northwest of the Castleberry TRT unit. Chesapeake's geologist also presented a gross isopach map demonstrating thickness of the Barnett Shale of about 275 feet in the area of the Castleberry TRT unit. The results of the isopach mapping were provided to a Chesapeake reservoir engineer for her use in making volumetric calculations of reserves.

Chesapeake's reservoir engineer presented a plot of estimated ultimate recovery versus drainhole length for 156 producing Barnett Shale wells located within five miles of the Castleberry TRT Unit. 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 0.7633 and an intercept of 887.34. The implication of this plot is that a horizontal well in the Barnett Shale ultimately will recover 0.7633 MMCF, or about 763.3 MCF, of gas per foot of drainhole plus the plot's intercept of 887.34 MMCF.

Chesapeake's reservoir engineer also presented an estimate of gas in place and current recoverable gas in the Newark, East (Barnett Shale) Field beneath the Castleberry TRT Unit. She based her estimate 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. 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. The Commission accepted Devon's volumetric calculation and relied upon it in the 2005 Barnett Shale field rules hearing, and the results of the Devon study have been presented and relied upon in several subsequent Rule 37 cases involving the Barnett Shale. Adjusting for an average thickness of 275 feet, the engineer calculated that original gas in place beneath the 348.798 leased acres in the unit is 48.112 BCF. Assuming a recovery factor of 44 percent, the recoverable gas in place beneath the leased acreage of the unit is 21.169 BCF. The reservoir engineer testified that she estimated a 44 percent recovery factor based on studying fully-developed units within the same area as the Castleberry TRT Unit.

Because of the location of the unleased tracts within the perimeter of the Castleberry TRT Unit, there are no regular locations on the unit where a horizontal well of feasible and substantial length could be drilled. Without further leasing, any horizontal well of feasible and substantial length drilled on this unit will require a Rule 37 exception, because the well will be closer than allowed by the lease-line spacing rule to either an unleased tract internal to the unit or an external unit boundary. The No. 4H is the only existing well on this unit. Based on the methodology for determining estimated ultimate recovery developed from Chesapeake's plot of estimated ultimate recovery versus drainhole length for 156 producing Barnett Shale wells within five miles of the Castleberry TRT Unit, the projected ultimate recovery for the No. 4H is 5.112 BCF. If the 514-foot NPZ around Protestant Calk's tract is retained, the ultimate recovery of the No. 4H would be reduced to 4.720 BCF. This analysis means that 0.392 BCF of gas that otherwise could be recovered by the well would go unrecovered if the Calk NPZ were retained. Chesapeake made an attempt to lease Calk's tract, but it was not successful.

Royce Calk's Case

Protestant Calk argued that Chesapeake had the ability to drill the No. 4H in such a manner that the wellbore would be greater than 330 feet from his tract. Calk believed that the addition of one tract, currently contained within the adjoining Bluth TRT Unit, to the Castleberry TRT Unit would have given Chesapeake enough acreage to deviate the path of the wellbore away from his tract. Apparently, a number of tracts that were, at one point in the permit application process, within the Bluth TRT Unit were removed from that unit and placed into Castleberry TRT Unit.

The surface drilling pad for the No. 4H is located on the tract adjoining to the north of the Protestant's tract. Protestant voiced his concern that Chesapeake refused to recognize that the drilling pad would be a high-impact area that would demand a high-impact payment to lessors. According to testimony, the City of Fort Worth in its permitting process requires waivers from landowners in a high-impact area. These waivers ostensibly enable landowners to demand a higher payment from the operator. However, the City of White Settlement does not require high-impact waivers. Protestant argued that if the well were moved a few hundred feet, it would be within Fort Worth and thus require the waivers.

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. *Atl. Ref. Co. v. Railroad Commn. of Tex.*, 346 S.W.2d 801 (Tex. 1961); *Imperial Am. Resources Fund, Inc. v. Railroad Commn. of Tex.*, 557 S.W.2d 280 (Tex. 1977). To obtain an exception to Rule 37 for the purpose of preventing confiscation and protecting correlative rights, an applicant must show that (1) it is not feasible to recover its fair share of hydrocarbons from regular locations and (2) the proposed irregular location is reasonable.

The examiners believe that the Chesapeake application should be granted as necessary to prevent confiscation. Chesapeake and its lessors within the Castleberry TRT Unit are entitled to an opportunity to recover their fair share of gas from the reservoir. Their "fair share" of gas,

within the context of the legal confiscation theory, is measured by the current recoverable gas beneath the drillable portion of the Castleberry TRT Unit that is under lease to Chesapeake. Denial of a reasonable opportunity to Chesapeake to produce this “fair share” of gas from the reservoir would amount to confiscation. It is not feasible for Chesapeake to recover its “fair share” from wells at regular locations on the Castleberry TRT Unit. Although Chesapeake has leased about 93% of the acreage within the perimeter of the unit, the location of the remaining unleased tracts within the unit is such that there are no regular locations on the unit where a horizontal well of feasible length could be drilled. Without further leasing, any horizontal well of feasible length drilled on this unit will require a Rule 37 exception because the well will be closer than allowed by the lease-line spacing rule either to an unleased tract internal to the unit or an external unit boundary.

The Castleberry TRT No. 4H is the first well on the unit; no other wells have yet been permitted on the unit. If this well can be completed along its entire 5,535-foot drainhole, the well ultimately will recover about 5.112 BCF. Under optimal circumstances, the No. 4H cannot recover Chesapeake’s entire “fair share” of 21.169 BCF, and retention of the NPZ on the existing permit for the well would cause a further “fair share” deficit. If the 514-foot NPZ around Protestant Calk’s tract were retained, the ultimate recovery of the No. 4H would be reduced to 4.720 BCF. This comparison indicates that 0.392 BCF of gas that otherwise could be recovered by the Castleberry TRT No. 4H would go unrecovered if the Calk NPZ were retained.

The examiners believe that the location of the Castleberry TRT No. 4H is reasonable. The well is located along the eastern side of the unit. It does not appear that there is an alternative location for a comparable horizontal well that would be less irregular to surrounding mineral property lines. As demonstrated by Chesapeake’s Exhibit No. 23, a comparable horizontal well drilled down the approximate middle or the western portion of the unit would encounter numerous unleased tracts within 330 feet of the wellbore¹.

The examiners acknowledge the legitimate interest of Calk in attempting to prevent drainage of gas from beneath his tract without compensation and have considered his correlative rights. These rights must be weighed, however, against the correlative rights of Chesapeake and its lessors. The gas beneath the Calk Tract is only a fraction of the 0.392 BCF of gas that would go unrecovered if the 514-foot NPZ around the tract were retained. Protestant Calk has stated that he does want to lease his property, but presumably he has not received an offer meeting his expectations. However, the Railroad Commission is without authority in this proceeding to require the parties to enter into a lease or to dictate to the parties any particular lease terms or bonus amount.

¹ Chesapeake Exhibit No. 23 depicts a hypothetical full-development plan for the Castleberry TRT Unit. The plan shows the as-drilled Well No. 4H; hypothetical Wells No. 1H, 2H, and 3H; and the portion of these well’s laterals that could be perforated in the absence of receiving Rule 37 exceptions. Chesapeake’s reservoir engineer calculated that according to this hypothetical development plan, which takes into account the current drillable portion of the unit that is under lease, the existing and hypothetical wells would recover 8.393 BCF of gas. As a result of the previous Rule 37 application for Well No. 4H, Chesapeake has the right under its current permit to complete all but 514 feet – about 91 percent – of the No. 4H drainhole. In contrast, hypothetical Well Nos. 1H and 3H would, without the benefit of Rule 37 exceptions, have less than half of their drainholes available for completion.

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

FINDINGS OF FACT

1. The Commission provided at least ten days notice of this hearing 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. Chesapeake Operating, Inc. ("*Chesapeake*") seeks a Rule 37 exception for the as-drilled location of the Castleberry TRT Lease, Well No. 4H, a horizontal well in the Newark, East (Barnett Shale) Field, Tarrant County, Texas.
3. The Castleberry TRT No. 4H has an existing drilling permit issued April 11, 2012, which is subject to a no-perforation-zone ("*NPZ*") that is 514 feet in length.
4. The No. 4H has been drilled but not completed.
5. The No. 4H is the only existing well on the 374.453-acre Castleberry TRT Unit. As of the date of the hearing, Chesapeake had 348.798 of these acres – about 93 percent – under lease.
6. The purpose of this application is to obtain a third amended drilling permit for the Castleberry TRT No. 4H unencumbered by the NPZ, which will allow Chesapeake to complete the entire 5,535-foot drainhole. Appendix 1 to this proposal for decision is a copy of a plat presented as Chesapeake's Exhibit No. 25, which shows the Castleberry TRT Unit, tracts within the unit that are leased and unleased, and the as-drilled location of the Castleberry TRT No. 4H. Appendix 1 is incorporated into this finding by reference.
7. The Chesapeake application is opposed by Royce Calk ("*Calk*"). Calk is the unleased owner of Tract No. 9, which is a 0.243-acre tract within the external boundary of the Castleberry TRT Unit. Calk's Tract is 266 feet from the wellbore.
8. Special field rules for the Newark, East (Barnett Shale) Field provide for 330-foot 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.
9. The stratigraphic cross section and isopach map prepared by Chesapeake's geologist demonstrate that the Barnett Shale is present and productive throughout the area of the Castleberry TRT Unit. Average Barnett Shale thickness beneath the Castleberry TRT Unit is about 275 feet.

10. The estimated ultimate recovery for horizontal wells completed in the Barnett Shale in the area of the Castleberry TRT Unit is 912.54 MMCF of gas plus 0.8691 MMCF per foot of drainhole.
 - a. Chesapeake's reservoir engineer presented a plot of estimated ultimate recovery versus drainhole length for 156 producing Barnett Shale wells within five miles of the Castleberry TRT Unit.
 - b. 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 0.7633 and an intercept of 887.34.
 - c. The implication of this plot is that a horizontal well in the Barnett Shale ultimately will recover 0.7633 MMCF of gas per foot of drainhole plus 887.34 MMCF.
11. Volumetrically calculated gas in place beneath the 348.798 leased acres in the Castleberry TRT Unit is 55.4355 BCF.
12. Assuming a recovery factor of 44%, the original recoverable gas in place beneath the leased acreage within the Castleberry TRT Unit is 21.169 BCF. The 44% recovery factor used to estimate current recoverable reserves is based on recoveries seen by Chesapeake on other fully developed units in the area of the Castleberry TRT Unit.
13. Chesapeake's "fair share" of gas, within the meaning of the legal confiscation theory, is measured by the amount of current recoverable gas beneath the drillable portion of the Castleberry TRT Unit that is under lease to Chesapeake.
14. The Castleberry TRT No. 4H is a first well on the Castleberry TRT Unit. If this well can be completed along its entire 5,535-foot drainhole, the well ultimately will recover about 5.112 BCF.
15. If the 514-foot NPZ around Protestant Calk's tract were retained, the ultimate recovery of the Castleberry TRT No. 4H would be reduced to 4.720 BCF. This means that 0.392 BCF of gas that otherwise could be recovered by the Castleberry TRT No. 4H would go unrecovered if the Calk NPZ were retained.
16. Retention of the 514-foot NPZ would deny Chesapeake and its lessors a reasonable opportunity to recover as much as possible of their fair share of gas from beneath the Castleberry TRT Unit.
17. The NPZ on the existing permit for the Castleberry TRT No. 4H prevents the well from producing gas beneath tracts of land under lease to Chesapeake.
18. Although Chesapeake has leased about 93% of the acreage within the perimeter of the Castleberry TRT Unit, the location of the remaining unleased tracts within the unit is

such that there are no regular locations on the unit where a horizontal well of feasible length could be drilled. Without further leasing, any horizontal well of feasible length drilled on this unit will require a Rule 37 exception because the well will be closer than allowed by the lease-line spacing rule either to an unleased tract internal to the unit or to an external unit boundary.

19. The location of the Castleberry TRT No. 4H, as proposed to be completed by Chesapeake, is reasonable.
 - a. Completion of the entire as-drilled drainhole is necessary to provide Chesapeake and its lessors with a reasonable opportunity to recover as much of their fair share of gas as is possible.
 - b. The well is located roughly along the eastern portion of the Castleberry TRT Unit.
 - c. It does not appear that there is an alternative location for a comparable horizontal well that would be less irregular to surrounding mineral property lines.

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 Castleberry TRT Lease, Well No. 4H, Newark, East (Barnett Shale) Field, Tarrant County, Texas, is necessary to prevent confiscation and protect the correlative rights of mineral owners.

RECOMMENDATION

The examiners recommend that the application of Chesapeake Operating, Inc. for a Rule 37 exception for the Castleberry TRT Lease, Well No. 4H in the Newark, East (Barnett Shale) Field, Tarrant County, Texas, be granted as necessary to prevent confiscation and protect correlative rights.

Respectfully Submitted,



Michael Crnich
Hearings Examiner



Richard Atkins
Technical Examiner

SURVEY NOTES:

- COORDINATES AND BEARINGS SHOWN ARE BASED ON TEXAS STATE PLANE COORDINATE SYSTEM OF 1927, TEXAS NORTH CENTRAL ZONE.
- ALL LEASE & TRACT INFORMATION SHOWN HEREON IS DONE SO BY DEED RECORD INFORMATION ONLY. SURVEY DOES NOT WARRANT TO THE ACCURACY THEREOF. THIS EXHIBIT IS PREPARED FOR CHESAPEAKE OPERATING, INC. FOR THE SOLE PURPOSE OF FILING RAILROAD COMMISSION FORM W-1. THIS IS NOT IN ANY WAY A BOUNDARY SURVEY.
- LOCATION OF SURVEY LINES AND DIMENSIONS REFERENCED TO SURVEY LINES ON THIS SHEET ARE APPROXIMATE.
- LEASE LOCATION IS IN THE CITY LIMITS OF WHITE SETTLEMENT, TEXAS.

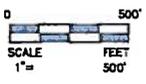
Lease Data:
Surface Hole Location:
 364' FSL Survey, 1143' FWL Survey
 606' FWL Unit, 478' FEL Unit
 X: 2,008,659, Y: 404,045
 Lat: 32.777289 Long: 97.468571
 NAD 27 Geographic
 Lat: 32.777418 Long: 97.468870
 NAD83 Geographic
 Elevation: 665 ft

Upper Perforation Point Location:
 265' FSL Survey, 1145' FWL Survey
 705' FWL Unit, 478' FEL Unit
 X: 2,008,659, Y: 403,945
 Lat: 32.777014 Long: 97.468566
 NAD 27 Geographic
 Lat: 32.777143 Long: 97.468864
 NAD83 Geographic

Inflection Point 1:
 X: 2,009,692, Y: 402,035
 Lat: 32.771783 Long: 97.468488
 NAD 27 Geographic

Lower Perforation Point Location:
 882' FSL Survey, 813' FEL Survey
 330' FSL Unit, 443' FEL Unit
 X: 2,010,363, Y: 398,518
 Lat: 32.782094 Long: 97.465636
 NAD 27 Geographic
 Lat: 32.782223 Long: 97.465935
 NAD83 Geographic

Bottom Hole Location:
 795' FSL Survey, 791' FEL Survey
 243' FSL Unit, 421' FEL Unit
 X: 2,010,585, Y: 398,430
 Lat: 32.761854 Long: 97.465566
 NAD 27 Geographic
 Lat: 32.761983 Long: 97.465884
 NAD83 Geographic



H T BOYDSTON SURVEY ABSTRACT NO. 170

J ROWLAND SURVEY ABSTRACT NO. 1355

J ROWLAND SURVEY ABSTRACT NO. 1331

D E NORTON SURVEY ABSTRACT NO. 1174

W H ROBINSON SURVEY ABSTRACT NO. 1291

J A GRANT SURVEY ABSTRACT NO. 636

SYMBOL LEGEND

- WELL (SL)
- ⊙ PENETRATION POINT (PP)
- ▲ UPPER PERF. POINT (UPP)
- LOWER PERF. POINT (LPP)
- BOTTOM LOCATION (BL)
- KICKOFF POINT (KO)
- INFLECTION POINT (IP)

LINETYPE LEGEND

- SURVEY LINE
- DIMENSION LINE
- BORE PATH LINE
- - - BORE PATH BUFFER LINE
- TRACTS NOT LEASED

CASTLEBERRY 4H LATERAL TABLE

Station	Azimuth	Distance
4H SL	179.0819°	100'
4H UPP	179.0819°	1911'
4H IP	166.0820°	3624'
4H LPP	166.0820°	90'
4H BL		

DUNAWAY
 550 Bailey Avenue • Suite 400 • Fort Worth, Texas 76107
 Tel: 817.335.1121 • Fax: 817.335.7437

DATE: JUNE 26, 2012 JOB NO. 8000082.001

[Signature]
 I CERTIFY THAT THE INFORMATION SHOWN HEREON IS ACCURATE TO THE BEST OF MY KNOWLEDGE

CASTLEBERRY UNIT
 LEASED ACRES 348.798
 UNLEASED ACRES 25.655
 TOTAL ACRES 374.453

A WELL LOCATION FOR CHESAPEAKE OPERATING, INC. CASTLEBERRY TRT 4H

SITUATED IN THE D.E. NORTON SURVEY, ABSTRACT NO. 1174, THE A.B. CONNER SURVEY, ABSTRACT NO. 308 THE W.H. ROBINSON SURVEY, ABSTRACT NO. 1291 THE H.T. BOYDSTON SURVEY, ABSTRACT NO. 170 THE J.A. GRANT SURVEY, ABSTRACT NO. 636, THE J. ROWLAND SURVEY, ABSTRACT NO. 1331, & THE J. ROWLAND SURVEY, ABSTRACT NO. 1331, FORT WORTH, TARRANT COUNTY, TEXAS

Exhibit No. 25
 CHESAPEAKE OPERATING, INC.
 Rule 37 Case No. 0275123
 August 13, 2012
 APPENDIX 1
 Proposal for Decision