

August 1, 2012

Rule 37 Case No. 0271861

Status No. 712996

District 09

APPLICATION OF CHESAPEAKE OPERATING, INC. FOR A RULE 37 EXCEPTION FOR THE LITTLE BEAR A LEASE, WELL NO. 1H, NEWARK EAST (BARNETT SHALE) FIELD, TARRANT COUNTY, TEXAS.

APPEARANCES:

FOR APPLICANT:

Glenn Johnson, Attorney
David Triana, Petroleum Engineer
Bill Spencer, Regulatory Consultant
Steve Mills, Reservoir Engineer

APPLICANT:

Chesapeake Operating, Inc.

FOR PROTESTANT:

Douglas Foss

REPRESENTING:

Self

PROPOSAL FOR DECISION

PROCEDURAL HISTORY

APPLICATION FILED:

February 13, 2012

NOTICE OF HEARING:

March 2, 2012

HEARD BY:

Marshall Enquist - Hearings Examiner
Andres Trevino - Technical Examiner

HEARING DATE :

April 18, 2012

TRANSCRIPT RECEIVED:

April 24, 2012

PFD CIRCULATION DATE:

August 1, 2012

STATEMENT OF THE CASE

Chesapeake Operating, Inc. ("Chesapeake" or "Applicant"), seeks an amended drilling permit pursuant to the provisions of Statewide Rule 37 for the Little Bear A Lease, Well No. 1H, a horizontal well in the Newark, East (Barnett Shale) Field, Tarrant County, Texas. Chesapeake received a drilling permit on December 13, 2011 to drill its Well No. 1H at a Rule 37 location on its pooled unit, which consisted of 357.17 acres at that time. The permit, approved administratively, was for a 8198 foot lateral, including an NPZ of 661 feet, leaving approximately 7537 feet of wellbore available for perforation. (See Attachment I).

On February 13, 2012, Chesapeake applied to remove the NPZ on its Well No. 1H. The surface

location of Well No. 1H is off-unit and is approximately 1559 feet east of the kick-off point of the well. It is 596 feet east of the west line and 524 feet south of the north line of the Stephen Richardson Survey, Abstract No. 1266. The proposed penetration point is 498 feet south of the north lease line and 464 feet east of the west lease line. The terminus is 279 feet north of the south line and 475 feet east of the west line of the William Cox Survey, Abstract No. 321. The lateral runs on a north-south trend.

Special field rules for the Newark, East (Barnett Shale) Field provide for 330 foot leaseline 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, leaseline, or subdivision line is calculated based on the distance to the nearest perforation point 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, leaseline, 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.

A Rule 37 exception is needed for the proposed Little Bear A Lease, Well No. 1H, because the section of the well proposed to be perforated is closer than 330 feet to the boundary of a tract internal to the unit, Tract No. 132, that is unleased. Notice of Intent to Appear in Protest of the application was filed by the mineral owner of Tract No. 132, Douglas Foss.

MATTERS OFFICIALLY NOTICED

The examiners have taken Official Notice of the Mainframe entry for “Permit Numbers and Wells Within Wellbore” for the subject well. The Little Bear A Lease Well No. 1H was completed on October 6, 2011. The “Gas Ledger Inquiry” for the well showed it reported production of 103,762 MCF of gas for May, 2012.

DISCUSSION OF THE EVIDENCE

CHESAPEAKE OPERATING, INC.

Chesapeake seeks removal of the “no perforation zone” (“NPZ”) on its Little Bear A Lease, Well No. 1H imposed on the well by Chesapeake’s December 13, 2011 Commission-approved well permit. At the time of the December 13, 2011 permit approval, the Little Bear A Lease contained 357.17 acres, as it did at the time of the most recent application for the subject well, filed February 13, 2012. By the time of the hearing, on April 18, 2012, the total leased acreage had increased to 357.782 acres, out of 368.46 acres within the unit boundaries. Chesapeake has 97.1% of the unit acreage leased and is engaged in ongoing leasing activities. At the time of the hearing, Chesapeake stated the well had been drilled and completed from the toe of the well back about 5700 feet, just short of the present NPZ, and had not been produced.

An isopach map derived from the logs of nearby wells indicates the Barnett Shale is roughly 340 feet thick under the Little Bear A Lease. Devon Energy Production Co., LLP conducted a study of the Tarrant/Denton/Wise County area which calculated original gas in place at 105 BCF per square mile in those counties, based on an average formation thickness of 433 feet, porosity of 0.04 and %TOC (Total Organic Carbon) of 4%. Using that study, and correcting for the thickness of the Newark, East (Barnett Shale) Field under the Little Bear A Lease and the leased acreage, Chesapeake calculated the original gas in place in the 357.782 leased acres of the Little Bear A lease to be 62.45 BCF. Assuming a recovery factor of 30%, Chesapeake calculates there is 18.736 BCF of recoverable gas beneath the Little Bear A Lease.

Chesapeake reviewed the Newark, East (Barnett Shale) Field wells within a 5-mile radius of the proposed well, finding 31 wells within that radius. Plotting the estimated ultimate recovery (EUR) of each of the wells, Chesapeake developed a scatter diagram and used a least squares regression method to produce a trend line to predict the ultimate recovery of a well in the area based on its length. Based on the scatter diagram, with the drainhole length as the “x” axis and the estimated EUR in MMCF as the “y” axis, Chesapeake derived a well recovery formula of “ $y = 0.919x + 222.443$ ”. This formula indicates each incremental foot of wellbore will recover 919 MMCF of gas. The 222.443 is the amount of gas, in MMCF, that Chesapeake would expect to recover with a vertical wellbore and no incremental horizontal drainhole length. Thus, Chesapeake calculates its proposed full-length lateral of 8198 feet will recover 7756 MMCF of gas or 7.756 BCF.

The NPZ in place affects 661 feet of the Little Bear A Lease, Well No. 1H. Absent the removal of the NPZ, Chesapeake argues it would be left with a wellbore lateral available to perforate that is only 7537 feet in length, which would recover 7149 MMCF of gas, leaving 607 MMCF or 0.607 BCF unrecovered. Chesapeake argues that 0.607 BCF of gas is a significant quantity of hydrocarbons.

Failure to remove the NPZ would deprive Chesapeake and its lessors of the opportunity to produce their fair share of the recoverable hydrocarbons in place beneath the 357.782 leased acres of the Little Bear A Lease, which would be confiscation. Absent Rule 37 exceptions and the removal of the existing NPZ, Chesapeake and its lessors will not be able to recover their fair share of the recoverable hydrocarbons beneath the Little Bear A Lease.

Even if removal of the NPZ from Chesapeake’s Well No. 1H is approved, the well’s projected recovery of an estimated 7.756 BCF of gas is much less than the 18.736 BCF of recoverable gas in place that Chesapeake calculates is beneath the 357.782-acre Little Bear A Lease. Chesapeake will return to the Commission and seek permits to drill two additional wells on the Little Bear A Lease, which will be necessary to allow Chesapeake to recover its fair share of the recoverable gas in place beneath the Little Bear A Lease.

PROTESTANTS’ POSITION AND EVIDENCE

Mr. Foss has received letters from Dawson Geophysical indicating they are conducting seismic surveys in the area, for the purpose of creating a 3-D seismic model that will aid in oil and gas exploration. Mr. Foss has seen cables lying over the roads in his area and is concerned about the way

the results of the testing may influence the way wells are drilled at depth. Mr. Foss expressed his uncertainty about the connection between seismic surveys and the present Statewide Rule 37 hearing. Chesapeake replied to Mr. Foss that geophysical testing was, indeed, taking place, but that it was not confined to Mr. Foss' neighborhood. Chesapeake stated it conducts seismic modeling wherever it drills wells. The seismic work is used in conjunction with information from the drilling of wells to determine the location of faults, karst structure or other geohazards that may adversely affect future drilling. Chesapeake further informed Mr. Foss that the seismic work was not part of Chesapeake's case in the present hearing.

Mr. Foss states that he represents not only himself, but his wife as well, and that he must represent her objections. The combined concerns of the Foss family have caused them to reconsider leasing to Chesapeake. Mr. Foss' wife has seen news programs on television that give her pause as to possible negative effects of horizontal drilling. Mr. Foss has concerns about the effect of drilling near his property insofar as it may effect the mortgage on his property, the resale value of his property and the insurance he carries on his property.

For example, Mr. Foss' insurance carrier is currently insuring his property based on a lack of drilling activity within 330 feet. Mr. Foss is not sure how his insurance carrier will react if the Commission allows Chesapeake to perforate the horizontal wellbore closer than 330 feet to his property. It seems to him that if there is natural gas collection in his neighborhood, the insurance risks are higher and rates might become higher.

Mr. Foss also finds language in his mortgage documents that appear to him to give the mortgage company the right to foreclose on his home if he signs a lease without the mortgage company having a chance to review the lease. Mr. Foss does not think the mortgage company would foreclose, but notes that the possibility exists because the legal language allowing them to do that is in his mortgage documents. Mr. Foss has not yet engaged an attorney to answer his concerns, and admits that the problems he faces are hypothetical at this time. However, it appears to Mr. Foss that the expense of retaining an attorney to address the possible effects of drilling on his mortgage and his insurance carrier would offset the few hundred dollars he might receive as a result of signing a lease. Mr. Foss asks that the Commission not grant the requested Rule 37 exception and not allow Chesapeake to perforate its well within 330 feet of his property.

EXAMINERS' OPINION

It is the basic right of every landowner or lessee to a fair and reasonable chance to recover the oil and gas under their property as recognized by the Texas Supreme Court in *Gulf Land Co. v. Atlantic Refining Co.*, 131 S.W.2d 73, 80 (Tex. 1939). Denial of that fair chance is confiscation within the meaning of Rule 37. *Id.* To obtain an exception to Statewide Rule 37 to protect correlative rights and prevent confiscation, the applicant must show that 1.) it is not possible for the applicant to recover its fair share of minerals under its tract from regular locations; and 2.) that the proposed irregular location is reasonable.

The examiners are of the opinion that approval of the Statewide Rule 37 exception requested by Chesapeake is necessary to prevent confiscation and protect correlative rights. Chesapeake and its lessors are entitled to recover their fair share of gas from beneath the Little Bear A Lease. "Fair share" is measured by the currently recoverable reserves beneath the lease, which in this case is 18.736 BCF. The evidence shows that it is not feasible for Chesapeake to recover its fair share of gas from regular locations in the unit. The Little Bear A Lease Well No. 1H, at its full length of 8198 feet, is projected to recover 7.756 BCF, an amount far less than the currently recoverable reserves. Chesapeake has indicated that it will apply for further wells on the Little Bear A Lease to recover remaining reserves.

The issues raised by Mr. Foss, regarding the effects of drilling activity and leasing on his mortgage, as well as on the cost of home insurance, are not substantiated. Even if Mr. Foss could show that drilling activity would negatively impact his home mortgage and home insurance, these are not criteria the Commission considers in determining whether or not to grant a Statewide Rule 37 exception.

The well, as currently permitted, is subject to an NPZ restriction due to Mr. Foss' unleased tract. That NPZ is 661 feet long and reduces the effective length of the wellbore to 7537 feet, which is projected to recover 7.149 BCF. The NPZ restriction results in the loss of 0.607 BCF of gas that would otherwise be recoverable.

The examiners find that 0.607 BCF is a substantial quantity of hydrocarbons that would go unrecovered if the "no perf zone" restriction is not removed. Failure to remove the wellbore restriction would result in the confiscation of the fair share of recoverable reserves attributable to Chesapeake and its lessors.

The plats offered by Chesapeake all indicate that there is no usable well-pad location on the Little Bear A Lease. The subject well must be drilled from an off-lease location. Chesapeake has no other surface location it can drill from to enter the Little Bear A Lease and is confined to use of an off-site well-pad, which forces it to drill into the unit from the north. There is room on the Little Bear A lease for two additional wellbores, also aligned in a north-south orientation. However, the unleased tracts within 330 feet of future wellbores 2H and 3H would lead to the imposition of numerous NPZs on those wells. Movement of the location of Well No. 1H to the east would crowd future Well Nos. 2H and 3H, and would result in numerous Rule 37 conflicts with currently unleased tracts. At this time, the present location of Well No. 1H is the most feasible well location and the best fit for the orderly development of the Little Bear A Lease. The location of Well No. 1H is reasonable.

The examiners recommend that Chesapeake be granted an exception to Statewide Rule 37 for its Well No. 1H on the 357.782-acre Little Bear A Lease in Tarrant County based on prevention of confiscation. Based on the record in this docket, the examiners recommend adoption of the following Findings of Fact and Conclusions of Law:

FINDINGS OF FACT

1. At least 10 days notice of this hearing was given to the designated operator, all offset operators,

all lessees of record for tracts that have no designated operator, and all owners of record of unleased mineral interests for each affected adjacent tract.

2. Chesapeake Operating, Inc. (“Chesapeake” or “Applicant”), seeks an exception to Statewide Rule 37 for the Little Bear A Lease, Well No. 1H, in the Newark, East (Barnett Shale) Field in Tarrant County.
3. On December 13, 2011, Chesapeake obtained a permit to drill Well No. 1H, at a Rule 37 location on the 357.17- acre Little Bear A Lease, approved administratively with a 8198 foot horizontal lateral and one NPZ totaling 661 feet. The plat associated with that application is attached to this Proposal For Decision as Attachment I, which is incorporated into this finding by reference.
4. Chesapeake has drilled the Little Bear A Lease, Well No. 1H, and has completed the well with perforations to a point just south of the NPZ.
5. On February 13, 2012, Chesapeake submitted an application to remove the 661 foot NPZ from the lateral of its Well No. 1H on its Little Bear A Lease.
6. By the time of the hearing on April 18, 2012, additional leasing by Chesapeake had increased the leased acreage of the Little Bear A Lease from 357.17 acres to 357.782 acres.
7. A Rule 37 exception is needed for the proposed Little Bear A Lease, Well No. 1H, because sections of the well proposed to be perforated are closer than 330 feet to the boundaries of certain tracts internal to the unit that are unleased.
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 point 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.
9. The surface location of Well No. 1H is off-unit and is approximately 1559 feet east of the kick-off point of the well. It is 596 feet east of the west line and 524 feet south of the north line of the Stephen Richardson Survey, Abstract No. 1266. The proposed penetration point is 498 feet south of the north lease line and 464 feet east of the west lease line. The terminus is 279 feet north of the south line and 475 feet east of the west line of the William Cox Survey, Abstract No. 321. The lateral runs on a north-south trend.

10. The proposed surface location for Well No. 1H is the only surface location available to Chesapeake for the drilling of wells on the Little Bear A Lease.
11. The Chesapeake application is opposed by the owners of unleased Tract 132 internal to the Little Bear A Lease. Their tract is within 330 feet of the permitted lateral.
12. The Barnett Shale formation is present and productive under the entirety of the Little Bear A Lease.
13. To establish the currently recoverable reserves under the 357.782-acre Little Bear A Lease, Chesapeake used a volumetric calculation:
 - a. Available well logs in the vicinity of the Little Bear A Lease indicate the thickness of the Barnett Shale locally to be 340 feet.
 - b. A study conducted by Devon Energy Production Co., LLP for the Tarrant/Denton/Wise County area calculated original gas in place at 105 BCF per square mile for those counties, based on an average formation thickness of 433 feet, porosity of 0.04 and %TOC of 4%. Correcting for thickness of the Newark, East (Barnett Shale) Field under the Little Bear A Lease, Chesapeake calculated the original gas in place for the 357.782 leased acres to be 62.45 BCF. Assuming a recovery factor of 30%, Chesapeake calculates there is 18.736 BCF of recoverable gas beneath the Little Bear A Lease.
 - c. The Little Bear A Lease Well No. 1H has already been drilled and completed to a point just south of the current NPZ.
14. Chesapeake plotted drainhole length versus estimated ultimate recovery for 31 wells within a 5 mile radius of the applied-for well on a scatter diagram. Using the least squares regression method, Chesapeake derived a well recovery formula of " $y = 0.919x + 222.443$ ", with drainhole length represented by "x" and estimated EUR in MMCF represented by "y". This indicates that each incremental foot of horizontal wellbore will recover an additional 0.919 MMCF of gas, while a purely vertical well would recover 222.443 MMCF.
15. The total length of the Well No. 1H drainhole, after removal of the NPZ totaling 661 feet placed on the subject well under the permit granted on December 13, 2011, is 8198 feet. Applying Chesapeake's calculated well recovery formula, Well No. 1H will have an estimated ultimate recovery of 7.756 BCF of gas.
16. As permitted on December 13, 2011, Well No. 1H had one "no perforation zone" ("NPZ") that totaled 661 feet. Removal of the NPZ would result in the recovery of 607 MMCF of gas, or 0.607 BCF, that would otherwise not be recoverable.

17. The amount of gas that would go unrecovered absent removal of the NPZ, 0.607 BCF, is a significant quantity of hydrocarbons.
18. The as-drilled location of the Little Bear A Lease, Well No. 1H is reasonable.
 - a. The location of the well is consistent with the location of a well drilled as the first well in development plan requiring multiple parallel wells in a unit oriented north-south.
 - b. Movement of Well No. 1H to the east would result in crowding Future Well Nos. 2H and 3H. It would also result in numerous Rule 37 conflicts with currently unleased tracts.
19. Chesapeake continues its attempt to sign unleased mineral interest owners in the Little Bear A Lease.

CONCLUSIONS OF LAW

1. Proper notice of hearing was timely given to all persons legally entitled to notice.
2. All things have occurred to give the Commission jurisdiction to decide this matter.
3. Approval of a Rule 37 exception for the as-drilled location of the Little Bear A Lease, Well No. 1H, as proposed by Chesapeake Operating, Inc., is necessary to prevent confiscation and protect the correlative rights of the mineral owners.

RECOMMENDATION

The examiners recommend that the application of Chesapeake Operating, Inc., for a Statewide Rule 37 exception for the as-drilled location of the Little Bear A Lease, Well No. 1H in the Newark, East (Barnett Shale) Field, Tarrant County, be granted as necessary to prevent confiscation and protect correlative rights.

Respectfully submitted,

Marshall Enquist
Hearings Examiner

Andres Trevino
Technical Examiner