



RAILROAD COMMISSION OF TEXAS

HEARINGS DIVISION

April 7, 2016

Rule 37 Case No. 0291317
Status No. 774935

Application of Chesapeake Operating, Inc. for an Exception to Statewide Rule 37 for its TCCD South Unit, Well No. 4H, Newark, East (Barnett Shale) Field, Tarrant County, Texas.

Rule 37 Case No. 0292253
Status No. 774939

Application of Chesapeake Operating, Inc. for an Exception to Statewide Rule 37 for its TCCD South Unit, Well No. 5H, Newark, East (Barnett Shale) Field, Tarrant County, Texas.

Rule 37 Case No. 0292241
Status No. 774941

Application of Chesapeake Operating, Inc. for an Exception to Statewide Rule 37 for its TCCD South Unit, Well No. 6H, Newark, East (Barnett Shale) Field, Tarrant County, Texas.

APPEARANCES:

FOR APPLICANT:

Glenn Johnson, Attorney
Bill Spencer, Consultant
Jim Clark, Petroleum Engineer

APPLICANT:

Chesapeake Operating, Inc.

PROTESTANTS:

Lorna Dean

Alison Ames
Gretchen Demke

REPRESENTING:

Herself, in Case Nos. 0291317 (4H) and 0292253 (5H).
Herself, in Case No. 0292241 (6H).
Herself, Donna Culley & Jerry and Avis Sorenson, in Case No. 0291317 (4H).
Jesse Peltier, Eric and Amber Devlin, Randall and Laura Chamberlain, Maurice Klein, Jerry

and Avis Sorenson, in Case No. 0292253 (5H).

Jesse Peltier, Eric and Amber Devlin, in Case No. 0292241 (6H).

AMENDED PROPOSAL FOR DECISION

PROCEDURAL HISTORY

APPLICATION FILED:	October 21, 2014
NOTICE OF HEARING:	January 7, 2015
HEARD BY:	Cecile Hanna - Administrative Law Judge Brian Fancher - Technical Examiner
WRITTEN BY:	Marshall Enquist - Administrative Law Judge
HEARING DATE :	April 30, 2015
TRANSCRIPT RECEIVED DATE:	May 11, 2015
PFD CIRCULATION DATE:	April 7, 2016

STATEMENT OF THE CASE

Chesapeake Operating, Inc. ("Chesapeake" or "Applicant"), seeks amended drilling permits pursuant to the provisions of Statewide Rule 37 for its TCCD South Unit, Well Nos. 4H, 5H and 6H, in the Newark, East (Barnett Shale) Field, Tarrant County, Texas. As a matter of judicial efficiency, the dockets were called and heard together.

Rule 37 Case No. 0291317

On December 4, 2013, Chesapeake filed a drilling permit for its TCCD South Unit, Well No. 4H ("Well No. 4H"), which was approved on December 16, 2013. This is considered by Chesapeake to be a surface location permit with a short lateral. On May 15, 2014, Chesapeake filed an amended permit application for Well No. 4H, which was approved administratively on June 19, 2014. This was a long lateral, short perforation permit, with a lateral approximately 4,289 feet long, restricted by No Perforation Zones ("NPZ"s) totaling approximately 2,020 feet.

Chesapeake then filed a drilling permit application on June 30, 2014, for which Notice of Application was issued by the Commission on August 25, 2014. Notices of Intent to Appear in Protest were filed by Stacy Thorn Stuewe, Mike and Lorna Dean, Jerrod Smith, Stan and Gretchen Demke, and Dana Roberts Culley. Chesapeake then amended its filing by placing a "No Perforation Zone" ("NPZ") on the wellbore in proximity to the protestants' tracts, thus preventing perforation of the wellbore within 330 feet of those tracts. This prevented perforation of approximately 1,612 feet of the wellbore out of an overall wellbore length of 6266 feet. The amended permit was approved administratively on October 16, 2014. At that time, Chesapeake had leased 403.058 acres out of a total unit acreage of 427.70 acres.

Chesapeake filed its most recent drilling permit application for Well No. 4H on October 21, 2014, with the intent of removing the NPZ on the well. Notice of Application was issued by the Commission on October 31, 2015, but Chesapeake then requested the case be set for hearing. A Notice of Hearing was issued January 7, 2015, with a hearing date of February 4, 2015. As a consequence of being called to jury duty the week of the hearing, Lorna Dean requested a continuance by letter dated January 20, 2014. The continuance was granted and the hearing date re-set to April 30, 2015.

The surface location of Well No. 4H is located on lease. It is 585 feet from the south line and 1241 feet from the east line of the lease and 1241 feet from the east line and 2254 feet from the south line of the L.C. Walker Survey, A-1652. The proposed penetration point is 1247 feet from the west line and 330 feet from the south line of the lease. The terminus is 1242 feet from the west line and 240 feet from the north line of the lease, and 1186 feet from the west line and 188 feet from the south line of the T.R. Martin Survey, A-1055. The lateral runs on a N-S trend.

Rule 37 Case No. 0292253

On December 4, 2013, Chesapeake filed a drilling permit for its TCCD South Unit, Well No. 5H ("Well No. 5H"), which was approved on December 16, 2013. This considered by Chesapeake to be a surface location permit with a short lateral. On June 23, 2014, Chesapeake filed an amended permit application for Well No. 5H, which was approved administratively on July 26, 2014. This was a long lateral, short perforation permit.

Chesapeake then filed a drilling permit application on August 5, 2014, for which Notice of Application was issued on September 22, 2014. Notices of Intent to Appear in protest were filed by Jerry and Avis Sorenson, James Murray, Mike and Lorna Dean, Daniel Rusnak, Jerrod Smith, Laura Chamberlain, and Tim and Stacy Stuewe. Chesapeake then amended its application by placing an NPZ on the wellbore in proximity to the protestants' tracts and was issued a permit on October 16, 2014. This prevented perforation of approximately 1,555 feet of the wellbore out of an overall wellbore length of 6025 feet. The amended permit was approved administratively on October 16, 2014. At that time, Chesapeake had leased 403.058 acres out of a total unit acreage of 427.70 acres.

Chesapeake filed its most recent drilling permit application for Well No. 5H on October 21, 2014, with the intent of removing the NPZs on the well. Notice of Application was issued by the Commission on January 7, 2015, but Chesapeake then requested that the case be set for hearing. The hearing date was set for February 4, 2015. As stated above, Lorna Dean requested a continuance as she had been called to jury duty on that date, and the hearing date was ultimately re-set for April 30, 2015.

The surface location of Well No. 5H is located on lease. It is 541 feet from the south line and 1230 feet from the east line of the lease and 1230 feet from the east line and 2210 feet from the south line of the L.C. Walker Survey, A-1652. The proposed penetration point is 792 feet from the west line and 330 feet from the south line of the lease. The terminus is 790 feet from the west line and 521 feet from the north line of the lease, and 732 feet from the west line and 60 feet from the north line of the L. C. Walker Survey, A-1653. The lateral runs on a N-S trend.

Rule 37 Case No. 0292241

On December 4, 2013, Chesapeake filed a drilling permit for its TCCD South Unit, Well No. 6H (“Well No. 6H”), which was approved on December 16, 2013. This is considered by Chesapeake to be a surface location permit with a short lateral. On June 23, 2014, Chesapeake filed an amended permit application for Well No. 6H, which was approved administratively on July 26, 2014.

Chesapeake then filed a drilling permit application on August 5, 2014, for which Notice of Application was issued on September 19, 2014. Notices of Intent to Appear in protest were filed by John and Allison Settelmaier, James Murray, Russel J. Caranfa, Clifford Granger, and Sergio Galindo. Chesapeake then amended its application by placing an NPZ on the wellbore in proximity to the protestants’ tracts and was issued a permit administratively on October 16, 2014. This prevented perforation of approximately 1,803 feet of the wellbore out of an overall wellbore length of 6,028 feet. The amended permit was approved administratively on October 16, 2014. At that time, Chesapeake had leased 403.058 acres out of a total unit acreage of 427.70 acres.

Chesapeake filed its most recent drilling permit application for Well No. 6H on October 21, 2014, with the intent of removing the NPZ on the well. Notice of Application was issued by the Commission on October 31, 2014, but Chesapeake then requested that the case be set for hearing. A Notice of Hearing was issued on January 7, 2015, with a hearing date of February 4, 2015. As with the applications for Well No. 4H and 5H, a Motion for Continuance was filed and granted, resulting in a hearing date of April 30, 2015.

The surface location of Well No. 6H is 526 feet from the south line and 1227 feet from the east line of the lease and 1227 feet from the east line and 2196 feet from the south line of the L.C. Walker Survey, A-1652. The proposed penetration point is 377 feet from the west line and 330 feet from the south line of the lease. The terminus is 375 feet from the west line and 444 feet from the north line of the lease and 317 feet from the west line and 3 feet from the north of the L.C. Walker Survey, A-1653. The lateral runs on a N-S trend.

Issues Common to Rule 37 Case Nos. 0291317, 0292253, and 0292241

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.

Rule 37 exceptions are needed for the TCCD South Unit, Well Nos. 4H, 5H and 6H because a section of each well proposed to be perforated is closer than 330 feet to the boundary of tracts which are internal to the unit and unleased. Each well presently has an NPZ in place.

DISCUSSION OF THE EVIDENCE

CHESAPEAKE OPERATING, INC.'S EVIDENCE

Rule 37 Case No. 0291317

Chesapeake seeks removal of the NPZ on its Well No. 4H imposed on the well by Chesapeake's October 16, 2014 administratively approved well permit. The NPZ is shown on attached **Exhibit I**, with the NPZ zone lined in red for clarity. At the time of the April 30, 2015 hearing, Chesapeake had leased 404.381 acres of the 425.740 unit acres, for a sign-up percentage of 94.98%.

An isopach map derived from the logs of nearby wells indicates the Barnett Shale is roughly 360 feet thick under the TCCD South Unit. Devon Energy Production Co., LLP conducted a study of the Tarrant/Denton/Wise County area which calculated total gas in place at 139 BCF per square mile in those counties, based on an average formation thickness of 433 feet, porosity of 4% and TOC (Total Organic Carbon) of 4%. Using that study, and correcting for the thickness (360 feet) of the Newark, East (Barnett Shale) Field under the TCCD South Unit and the leased acreage, Chesapeake calculated the original gas in place in the 404.381 leased acres of the TCCD South Unit to be 73.020 BCF. Assuming a recovery factor of 61%, Chesapeake calculates there was originally 44.542 BCF of recoverable gas in place beneath the leased acreage of the TCCD South Unit. Chesapeake has already produced 8.802 BCF from the TCCD South Unit Well Nos. 1H, 2H and 3H, leaving remaining recoverable gas in place of 35.740 BCF.

Chesapeake reviewed the Newark, East (Barnett Shale) Field wells within 4.5 miles of the TCCD South Unit, Well No. 4H, finding 130 wells within that area. 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 $y = 1.0614x$. This formula indicates each incremental foot of wellbore will recover 1,061.4 MCF of gas. Thus, Chesapeake calculates its proposed full-length lateral of 6,266.21 feet for Well No. 4H will recover 6.651 BCF of gas.

If an NPZ were imposed on the Well No. 4H due to the continuing protests, that NPZ would be 1,612 feet in length. Absent the removal of that NPZ from its full-length wellbore of 6266.21 feet, Chesapeake argues it would be left with a wellbore lateral available to perforate that is only 4654.45 feet in length. The wellbore lateral available for perforation would recover only 4.940 BCF of gas, leaving 1.711 BCF unrecovered. Chesapeake argues that 1.711 BCF of gas is a significant quantity of hydrocarbons.

Chesapeake argues that 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 404.381 leased acres of the TCCD South Unit, which would be confiscation.

Rule 37 Case No. 0292253

Chesapeake seeks removal of the NPZ on its TCCD South Unit, Well No. 5H imposed on the well by Chesapeake's October 16, 2014 administratively approved well permit. The NPZ is shown on attached **Exhibit II**, with the NPZ zone lined in red for clarity. At the time of the April 30, 2015 hearing, Chesapeake had leased 404.381 acres of the 425.740 unit acres, for a sign-up percentage of 94.98%.

An isopach map derived from the logs of nearby wells indicates the Barnett Shale is roughly 360 feet thick under the TCCD South Unit. Devon Energy Production Co., LLP conducted a study of the Tarrant/Denton/Wise County area which calculated total gas in place at 139 BCF per square mile in those counties, based on an average formation thickness of 433 feet, porosity of 4% and TOC (Total Organic Carbon) of 4%. Using that study, and correcting for the thickness (360 feet) of the Newark, East (Barnett Shale) Field under the TCCD South Unit and the leased acreage, Chesapeake calculated the original gas in place in the 404.381 leased acres of the TCCD South Unit to be 73.020 BCF. Assuming a recovery factor of 61%, Chesapeake calculates there was originally 44.542 BCF of recoverable gas in place beneath the leased acreage of the TCCD South Unit. Chesapeake has already produced 8.802 BCF from the TCCD South Unit Well Nos. 1H, 2H and 3H, leaving remaining recoverable gas in place of 35.740 BCF.

Chesapeake reviewed the Newark, East (Barnett Shale) Field wells within 4.5 miles of the TCCD South Unit, Well No. 5H, finding 130 wells within that area. 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 " $y = 1.0614x$ ". This formula indicates each incremental foot of wellbore will recover 1,061.4 MCF of gas. Thus, Chesapeake calculates its proposed full-length lateral of 6,024.52 feet will recover 6.395 BCF of gas.

If an NPZ were imposed on the Well No. 5H due to the continuing protests, that NPZ would be 1,555 feet in length. Absent the removal of that NPZ from its full-length wellbore of 6,024.52 feet, Chesapeake argues it would be left with a wellbore lateral available to perforate that is only 4,470 feet in length. The wellbore lateral available for perforation would recover only 4.745 BCF of gas, leaving 1.65 BCF unrecovered. Chesapeake argues that 1.65 BCF of gas is a significant quantity of hydrocarbons.

Chesapeake argues that 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 404.381 leased acres of the TCCD South Unit, which would be confiscation.

Rule 37 Case No. 0292241

Chesapeake seeks removal of the NPZ on its Well No. 6H imposed on the well by Chesapeake's October 16, 2014 administratively approved well permit. The NPZ is shown on attached **Exhibit III**, with the NPZ zone lined in red for clarity. At the time of the April 30, 2015 hearing, Chesapeake had leased 404.381 acres of the 425.740 unit acres, for a sign-up percentage of 94.98%.

An isopach map derived from the logs of nearby wells indicates the Barnett Shale is roughly 360 feet thick under the TCCD South Unit. Devon Energy Production Co., LLP conducted a study of the Tarrant/Denton/Wise County area which calculated total gas in place at 139 BCF per square mile in those counties, based on an average formation thickness of 433 feet, porosity of 4% and TOC (Total Organic Carbon) of 4%. Using that study, and correcting for the thickness (360 feet) of the Newark, East (Barnett Shale) Field under the TCCD South Unit and the leased acreage, Chesapeake calculated the original gas in place in the 404.381 leased acres of the TCCD South Unit to be 73.020 BCF. Assuming a recovery factor of 61%, Chesapeake calculates there was originally 44.542 BCF of recoverable gas in place beneath the leased acreage of the TCCD South Unit. Chesapeake has already produced 8.802 BCF from the TCCD South Unit Well Nos. 1H, 2H and 3H, leaving remaining recoverable gas in place of 35.740 BCF.

Chesapeake reviewed the Newark, East (Barnett Shale) Field wells within 4.5 miles of the TCCD South Unit, Well No. 6H, finding 130 wells within that area. 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 " $y = 1.0614x$ ". This formula indicates each incremental foot of wellbore will recover 1,0614 MCF of gas. Thus, Chesapeake calculates its proposed full-length lateral of 6,027.76 feet will recover 6.398 BCF of gas.

If an NPZ were imposed on the Well No. 6H due to the continuing protest s, that NPZ would be 1,803 feet in length. Absent the removal of that NPZ from its full-length wellbore of 6,027.76 feet, Chesapeake argues it would be left with a wellbore lateral available to perforate that is only 4,224.81 feet in length. The wellbore lateral available for perforation would recover only 4.484 BCF of gas, leaving 1.914 BCF unrecovered. Chesapeake argues that 1.914 BCF of gas is a significant quantity of hydrocarbons.

Chesapeake argues that 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 404.381 leased acres of the TCCD South Unit, which would be confiscation.

PROTESTANT'S POSITION AND EVIDENCE

At hearing, an effort was made to limit testimony by the Protestants, Alison Ames, Lorna Dean and Gretchen Demke to the specific wells each was protesting. Allison Ames protested in the docket

involving Well No. 6H; Lorna Dean protested in the dockets involving Well Nos. 4H and 5H; and Gretchen Demke, representing herself and others, protested in the dockets involving Well Nos. 4H, 5H and 6H. In cross examination of Chesapeake's witnesses, the protestants collectively established that Chesapeake would be draining gas from under the unleased tracts, as well as the leased tracts. They asked if there was a definition of a "significant quantity of hydrocarbons", and were answered that the gas that would not be recovered absent removal of the NPZs would be worth about \$5,000,000, which Chesapeake's witnesses considered a significant amount.

In their direct case, the Protestants stated that they did not want Chesapeake drilling beneath their homes. By conducting direct examination of each other, they established that the numerous Notice of Application and Notice of Hearing letters they received, often for each of the three wells, were confusing. The letters were often almost identical. They and their neighbors did not have time to take out of their very busy lives to compare the letters closely to gain an understanding of what Chesapeake was attempting to accomplish. Chesapeake, and even the ALJ and Technical Examiner conducting the hearing probably deal with these matters on a daily basis, and are familiar with minor distinctions between dockets, but it is very confusing to the average lot owner.

Protestant's Public Comment

Protestant Lorna Dean asked that the Commission no longer approve fracking and disposal. The Fort Worth area has been subject to several earthquakes recently, which creates reasonable doubt that fracking and waste disposal are harmless. In her view, just because we can do a thing, does not mean we should do that thing. She is concerned that there might be a catastrophe looming in the future.¹

Protestant Gretchen Demke stated that she and her unleased neighbors were concerned that they would be left out in the cold, with no compensation for their minerals being produced by Chesapeake. They understand that the Rule of Capture will allow Chesapeake to produce their minerals, even though those minerals are not leased. In other cases, companies have used compulsory pooling, ensuring that everyone participates, with the downside that everyone may be charged for expenses. That option was not offered to her or her neighbors.

Mrs. Demke and her husband moved once, and made sure to buy a home that had mineral rights. They do not like being forced to deal with Chesapeake, because they believe Chesapeake cannot be trusted. They read the papers and know that in 2007, Chesapeake was sued for \$400 million in West Virginia for shorting royalty owners. In 2008, DFW Airport sued Chesapeake for improper payment of royalties and settled the case for \$5.3 million. In 2013, the Bass family sued Chesapeake for improper deduction of postproduction costs from royalty, and was awarded over \$8 million. Yet today they are being forced to deal with a company they do not trust.

¹ The Protestants participated in the hearing on the merits to a very limited extent due to their lack of familiarity with the hearings process. Their public comment is not in the transcript of the hearing, but was recorded in digital format after the hearing.

Protestant Alison Ames is a mother with three kids. She stated that gas drilling should not be allowed in densely populated urban areas. She asks that the Commission protect the interests of the people, and protect them from invasion and theft by Chesapeake. The numerous suits against Chesapeake indicate their lack of respect for the law. Why should anyone believe Chesapeake would show any respect for safety measures and other rules and regulations? Ms. Ames does not trust Chesapeake. This is a society built upon capitalism, but Chesapeake and the government are trying to tell her what price she must accept. Ms. Ames would just like to be left alone.

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.

Rule 37 Case No. 0291317

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 TCCD South Unit. "Fair share" is measured by the currently recoverable reserves beneath the lease, which in this case is 35.740 BCF of gas. The evidence shows that it is not feasible for Chesapeake to recover its fair share of gas from regular locations in the unit due to the presence of unleased tracts. Well No. 4H, at its full length of 6,266.21 feet, is projected to recover 6.651 BCF of gas.

The Protestants argued that the permitting process was confusing, particularly when three wells were applied for simultaneously. The protestants also objected to Chesapeake drilling beneath their tracts. Chesapeake pointed out that the actual wellbore was not drilled beneath their tracts.

Well No. 4H has a full-length lateral of 6,266.21 feet. This lateral is currently restricted by 1,612 feet of NPZ. Chesapeake's evidence shows that each foot of perforated wellbore will recover 1,061.4 MCF of gas. The full-length lateral will recover 6.651 BCF of gas. The 1,612 foot NPZ will prevent the recovery of 1.711 BCF of gas, which is a significant quantity of hydrocarbons.

The Examiners find that Well No. 4H is reasonably located as part of a development pattern designed to maximize hydrocarbon recovery on the TCCD South Unit.

The Examiners recommend that Chesapeake be granted an exception to Statewide Rule 37 for its Well No. 4H on the 404.381 leased acres of the TCCD South Unit in Tarrant County based on prevention of confiscation.

Rule 37 Case No. 0292253

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 TCCD South Unit. "Fair share" is measured by the currently recoverable reserves beneath the lease, which in this case is 35.740 BCF. The evidence shows that it is not feasible for Chesapeake to recover its fair share of gas from regular locations in the unit due to the presence of unleased tracts. The TCCD South Unit Well No. 5H, at its full length of 6,024.52 feet, is projected to recover 6.395 BCF of gas.

The Protestants argued that the process was confusing, particularly when three wells were applied for simultaneously. The protestants also objected to Chesapeake drilling beneath their tracts. Chesapeake pointed out that the actual wellbore was not drilled beneath their tracts.

Well No. 5H has a full-length lateral of 6,024.52 feet. This lateral is currently restricted by 1,555 feet of NPZ. Chesapeake's evidence shows that each foot of perforated wellbore will recover 1,061.4 MCF of gas. The full-length lateral will recover 6.395 BCF of gas. The 1,555 foot NPZ will prevent the recovery of 1.65 BCF of gas, which is a significant quantity of hydrocarbons.

The Examiners find that Well No. 5H is reasonably located as part of a development pattern designed to maximize hydrocarbon recovery on the TCCD South Unit.

The Examiners recommend that Chesapeake be granted an exception to Statewide Rule 37 for its Well No. 5H on the 404.381 leased acres of the TCCD South Unit in Tarrant County based on prevention of confiscation.

Rule 37 Case No. 0292241

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 TCCD South Unit. "Fair share" is measured by the currently recoverable reserves beneath the lease, which in this case is 35.740 BCF. The evidence shows that it is not feasible for Chesapeake to recover its fair share of gas from regular locations in the unit due to the presence of unleased tracts. Well No. 6H, at its full length of 6,027.76 feet, is projected to recover 6.398 BCF of gas.

The Protestants argued that the process was confusing, particularly when three wells were applied for simultaneously. The protestants also objected to Chesapeake drilling beneath their tracts. Chesapeake pointed out that the actual wellbore was not drilled beneath their tracts.

The TCCD South Unit, Well No. 4H, has a full-length lateral of 6,266.21 feet. This lateral is currently restricted by 1,612 feet of No Perforation Zone. Chesapeake's evidence shows that each foot of perforated wellbore will recover 1,061.4 MCF of gas. The full-length lateral will recover 6.398 BCF of gas. The 1,803 foot NPZ will prevent the recovery of 1.914 BCF of gas, which is a significant quantity

of hydrocarbons.

The Examiners find that Well No. 6H is reasonably located as part of a development pattern designed to maximize hydrocarbon recovery on the TCCD South Unit.

The Examiners recommend that Chesapeake be granted an exception to Statewide Rule 37 for its Well No. 6H on the 404.381 leased acres of the TCCD South Unit in Tarrant County based on prevention of confiscation.

Recommendation

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. In Rule 37 Case No. 0291317, Chesapeake Operating, Inc. ("Chesapeake" or "Applicant"), seeks an exception to Statewide Rule 37 for the TCCD South Unit, Well No. 4H, in the Newark, East (Barnett Shale) Field in Tarrant County.
3. On October 16, 2014, Chesapeake received an administratively-approved permit to drill its TCCD South Unit, Well No. 4H, with an NPZ (Non Perforation Zone) of approximately 1,612 feet.
4. On October 21, 2014, Chesapeake filed its most recent drilling permit application for the TCCD South Unit, Well No. 4H, with the intent of removing the 1,612-foot NPZ on the wellbore.
5. Lorna Dean, representing herself, and Gretchen Demke, representing herself and three other lot owners, protested Chesapeake's application for Well No. 4H.
6. A Rule 37 exception is needed for the proposed TCCD South Unit, Well No. 4H, because a section of the well proposed to be perforated is closer than 330 feet to the boundary of a tract internal to the unit that is unleased.
7. 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.

8. The surface location of Well No. 4H is located on lease. It is 585 feet from the south line and 1241 feet from the east line of the lease and 1241 feet from the east line and 2254 feet from the south line of the L.C. Walker Survey, A-1652. The proposed penetration point is 1247 feet from the west line and 330 feet from the south line of the lease. The terminus is 1242 feet from the west line and 240 feet from the north line of the lease and 1186 feet from the west line and 188 feet from the south line of the T.R. Martin Survey, A-1055. The lateral runs on a N-S trend.
9. The Barnett Shale formation is present and productive under the entirety of the TCCD South Unit.
10. At the time of the hearing, the leased acreage in the TCCD South Unit was 404.381 acres in a 425.740-acre gross unit area. Approximately 94.98% of the unit acreage is leased.
11. The remaining recoverable gas in place beneath the TCCD South Unit is 35.740 BCF.
 - a. To establish the currently recoverable reserves under the 404.381 leased acres of the 427.70-acre TCCD South Unit, Chesapeake used a volumetric calculation.
 - b. Available well logs in the vicinity of the TCCD South Unit indicate the thickness of the Barnett Shale locally to be 360 feet.
 - c. A study conducted by Devon Energy Production Co., LLP for the Tarrant/Denton/Wise County calculated original gas in place at 139 BCF per square mile in those counties, based on an average formation thickness of 433 feet, porosity of 4% and %TOC (Total Organic Carbon) of 4%. Using that study, and correcting for the thickness of the Newark, East (Barnett Shale) Field under the TCCD South Unit and the leased acreage, Chesapeake calculated the original gas in place in the 403.058 leased acres of the TCCD South Unit to be 73.020 BCF. Assuming a recovery factor of 61%, Chesapeake calculates there was originally 44.542 BCF of recoverable gas beneath the leased acreage of the TCCD South Unit. Chesapeake has already produced 8.802 BCF from Well Nos. 1H, 2H and 3H on the TCCD South Unit, leaving remaining recoverable gas in place of 35.740 BCF.
12. Each incremental foot of the TCCD South Unit, Well No. 4H horizontal wellbore will recover an additional 1,061.4 MCF of gas. Chesapeake plotted drainhole length versus estimated ultimate recovery for 130 wells within a 4.5 mile radius of the applied-for well on a scatter diagram. Using the least squares regression method, Chesapeake derived a well recovery formula of “ $y = 1.0614x$ ”, with drainhole length represented by “ x ” and estimated ultimate recovery (“EUR”) in MMCF represented by “ y ”.

13. The total usable length of the Well No. 4H drainhole, after removal of the 1,612 feet of NPZ placed on the subject well under the permit granted on October 16, 2014, is 6,266.21 feet. Applying Chesapeake's calculated well recovery formula, the available lateral (with NPZ in place) of 4,654.45 feet for the TCCD South Unit Well No. 4H, will have a recovery of 4.940 BCF of gas.
14. As permitted on October 16, 2014, The TCCD South Unit Well No. 4H had 1,612 feet of NPZ. Removal of the NPZ would result in the recovery of 1.711 BCF that would otherwise not be recoverable by the well.
15. The amount of gas that would go unrecovered by the well absent removal of the 1,612 feet of NPZ in Well No. 4H, 1.711 BCF, is a significant quantity of hydrocarbons.
16. The proposed location of Well No. 4H in a N-S orientation is reasonable as part of a multi-well recovery program designed to maximize recovery from the TCCD South Unit.
17. In Rule 37 Case No. 0292253, Chesapeake Operating, Inc. ("Chesapeake" or "Applicant"), seeks an exception to Statewide Rule 37 for the TCCD South Unit, Well No. 5H, in the Newark, East (Barnett Shale) Field in Tarrant County.
18. On October 16, 2014, Chesapeake received an administratively-approved permit to drill its TCCD South Unit, Well No. 5H, with an NPZ of approximately 1,555 feet.
19. On October 21, 2014, Chesapeake filed its most recent drilling permit application for the TCCD South Unit, Well No. 5H, with the intent of removing the 1,555-foot NPZ on the wellbore.
20. Lorna Dean, representing herself, and Gretchen Demke, representing herself and three other lot owners, protested Chesapeake's application for its TCCD South Unit Well No. 5H.
21. A Rule 37 exception is needed for the proposed TCCD South Unit, Well No. 5H, because a section of the well proposed to be perforated is closer than 330 feet to the boundary of a tract internal to the unit that is unleased.
22. The surface location of TCCD South Unit Well No. 5H is located on lease. It is 541 feet from the south line and 1230 feet from the east line of the lease and 1230 feet from the east line and 2210 feet from the south line of the L.C. Walker Survey, A-1652. The proposed penetration point is 792 feet from the west line and 330 feet from the south line of the lease. The terminus is 790 feet from the west line and 521 feet from the north line of the lease, and 732 feet from the west line and 60 feet from the north line of the L. C. Walker Survey, A-1653. The lateral runs on a N-S trend.
23. The total usable length of the TCCD South Unit Well No. 5H drainhole, after removal of the 1,555 feet of NPZ placed on the subject well under the permit granted on October 16, 2014, is 6,024.52 feet. Applying Chesapeake's calculated well recovery formula, the available lateral

(with NPZ in place) of 4,470 feet for Well No. 5H will have a recovery of 4.745 BCF of gas.

24. As permitted on October 16, 2014, the TCCD South Unit Well No. 5H had 1,555 feet of NPZ. Removal of the NPZ would result in the recovery of 1.65 BCF that would otherwise not be recoverable by the well.
25. The amount of gas that would go unrecovered absent removal of the 1,555 feet of NPZ in the TCCD South Unit Well No. 5H, 1.65 BCF, is a significant quantity of hydrocarbons.
26. The proposed location of the TCCD South Unit Well No. 5H in a N-S orientation is reasonable as part of a multi-well recovery program designed to maximize recovery from the TCCD South Unit.
27. In Rule 37 Case No. 0292241, Chesapeake Operating, Inc. ("Chesapeake" or "Applicant"), seeks an exception to Statewide Rule 37 for the TCCD South Unit, Well No. 6H, in the Newark, East (Barnett Shale) Field in Tarrant County.
28. On October 16, 2014, Chesapeake received an administratively-approved permit to drill its TCCD South Unit, Well No. 6H, with an NPZ (Non Perforation Zone) of approximately 1,803 feet.
29. On October 21, 2014, Chesapeake filed its most recent drilling permit application for the TCCD South Unit, Well No. 6H, with the intent of removing the 1,803-foot NPZ on the wellbore.
30. Allison Ames, representing herself, and Gretchen Demke, representing herself and three other lot owners, protested Chesapeake's application for the TCCD South Unit Well No. 6H.
31. A Rule 37 exception is needed for the proposed TCCD South Unit, Well No. 6H, because a section of the well proposed to be perforated is closer than 330 feet to the boundary of a tract internal to the unit that is unleased.
32. The surface location of the TCCD South Unit Well No. 6H is 526 feet from the south line and 1227 feet from the east line of the lease and 1227 feet from the east line and 2196 feet from the south line of the L.C. Walker Survey, A-1652. The proposed penetration point is 377 feet from the west line and 330 feet from the south line of the lease. The terminus is 375 feet from the west line and 444 feet from the north line of the lease and 317 feet from the west line and 3 feet from the north of the L.C. Walker Survey, A-1653. The lateral runs on a N-S trend.
33. The total usable length of the TCCD South Unit Well No. 6H drainhole, after removal of the 1,803 feet of NPZ placed on the subject well under the permit granted on October 16, 2014, is 6,027.76 feet. Applying Chesapeake's calculated well recovery formula, the available lateral (with NPZ in place) of 4,224.81 feet for Well No. 6H will have a recovery of 4.484 BCF of gas.
34. As permitted on October 16, 2014, the TCCD South Unit Well No. 6H had 1,803 feet of NPZ.

Removal of the NPZ would result in the recovery of 1.914 BCF that would otherwise not be recoverable by the well.

35. The amount of gas that would go unrecovered absent removal of the 1,803 feet of NPZ in the TCCD South Unit Well No. 6H, 1.914 BCF, is a significant quantity of hydrocarbons.
36. The proposed location of Well No. 6H in a N-S orientation is reasonable as part of a multi-well recovery program designed to maximize recovery from the TCCD South Unit.

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 proposed location of the TCCD South Unit, Well No. 4H, as proposed by Chesapeake Operating, Inc., is necessary to prevent confiscation and protect the correlative rights of the leased mineral owners.
4. Approval of a Rule 37 exception for the proposed location of the TCCD South Unit, Well No. 5H, as proposed by Chesapeake Operating, Inc., is necessary to prevent confiscation and protect the correlative rights of the leased mineral owners.
5. Approval of a Rule 37 exception for the proposed location of the TCCD South Unit, Well No. 6H, as proposed by Chesapeake Operating, Inc., is necessary to prevent confiscation and protect the correlative rights of the leased mineral owners.
6. Chesapeake has met its burden of proof and satisfied the requirements of Railroad Commission Statewide Rule 37 in Rule 37 Case Nos. 0291317; 0292253 and 0292241.

RECOMMENDATION

The ALJ and Technical Examiner recommend that the application of Chesapeake Operating, Inc., for a Statewide Rule 37 exception for the proposed locations of the TCCD South Unit, Well Nos. 4H, 5H and 6H in the Newark, East (Barnett Shale) Field, Tarrant County, be granted as necessary to prevent confiscation and protect correlative rights.

Respectfully submitted,



Marshall Enquist
ALJ



Brian Fancher
Technical Examiner

Chesapeake Operating, Inc., TCCD South, Well 4H, is located 2,254' FSL and 1,241' FEL of the L.C. Walker Survey, Abstract No. 1652, North Richland Hills, Tarrant County, Texas.

HERBERT S. BEASLEY

REGISTERED PROFESSIONAL SURVEYORS

LAND SURVEYORS L.P.

• LAND • TOPOGRAPHIC
• CONSTRUCTION SURVEYING

P. O. BOX 8873
FORT WORTH, TEXAS 76124

METRO 817-429-0194
FAX 817-446-5488

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Y: 428418.287
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LON: -97.196597°

NAD83 TxNC-SHL
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E: 2368068.729
LAT: 32.844053°
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NAD27 TxNC-PP/PLPP
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Y: 428163.739
LAT: 32.843228°
LON: -97.199189°

NAD27 TxNC-PLPP
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NAD27 TxNC-BHL
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Y: 434515.380
LAT: 32.860688°
LON: -97.199139°

T Martin Survey
A-1055



Prepared 16 September 2014
Revised 30 September 2014

Total Acres - 425.740 ac.
Total Unleased Acres - 22.682 ac.
Total Leased Acres - 403.058 ac.

Wm. Wallace Survey
A-1506

J Barlaugh Survey
A-130

LC Walker Survey
A-1653

COI North

DC Manning Survey
A-1046

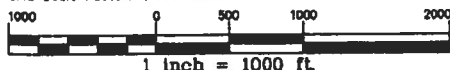
LC Walker Survey
A-1652

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B:
LAT: 32.864247°
LON: -97.199319°
C:
LAT: 32.854897°
LON: -97.199411°

PZ - Perf Zons.

Chesapeake Operating, Inc., TCCD South, Well 4H, is located in the City of North Richland Hills, Tarrant County, Texas.

Basis of Bearings: NAD27 Texas North Central Zone.
Grid Scale Factor: 0.99985585944



Sheet 1 of 3

Well Plat
TCCD South, Well 4H
Chesapeake Operating, Inc.
403.058 Leased Acre TCCD South
North Richland Hills, Tarrant County, Texas
CHK-TCCD South 4H R7-NPZ.dwg

Exhibit I
Rule 37 Case No.
0291317
Well No. 4H

Chesapeake Operating, L.L.C., TCCD South, Well 5H, is located 2,210' FSL and 1,230' FEL of the L.C. Walker Survey, Abstract No. 1652, North Richland Hills, Tarrant County, Texas.

REGISTERED PROFESSIONAL SURVEYORS

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Prepared 15 October 2014

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Y: 428374.485
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LON: -97.198564°

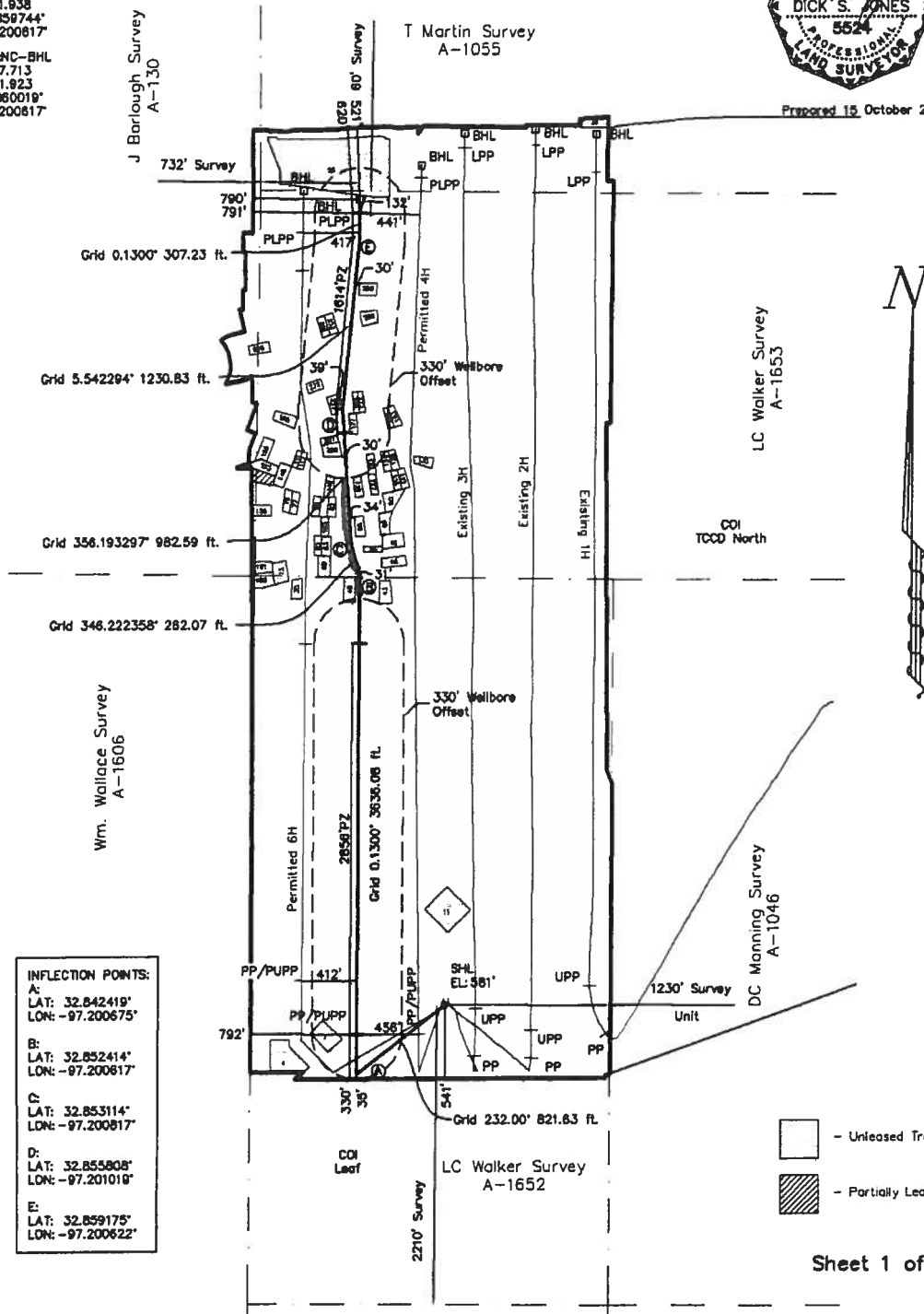
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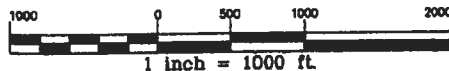
Total Acres - 425.740 ac.
Total Unleased Acres - 22.682 ac.
Total Leased Acres - 403.058 ac.



INFLECTION POINTS:
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LON: -97.200675°
B:
LAT: 32.852414°
LON: -97.200817°
C:
LAT: 32.853114°
LON: -97.200817°
D:
LAT: 32.855808°
LON: -97.201019°
E:
LAT: 32.859175°
LON: -97.200622°

Chesapeake Operating, L.L.C., TCCD South, Well 5H, is located in the City of North Richland Hills, Tarrant County, Texas.

Basis of Bearings: NAD27 Texas North Central Zone.
Grid Scale Factor: 0.99985585944



Well Plat
TCCD South, Well 5H
Chesapeake Operating, L.L.C.
403.058 Leased Acre TCCD South
North Richland Hills, Tarrant County, Texas
CHK-TCCD South 5H R37-NPZ.dwg

Exhibit II
Rule 37 Case No.
0292253
Well No. 5H

CHK-TCCD South BH R37-NPZ.dwg