



RAILROAD COMMISSION OF TEXAS

HEARINGS DIVISION

PROPOSAL FOR DECISION

OIL & GAS DOCKET NO. 08-0296956

**THE APPLICATION OF SHELL WESTERN E&P, INC. TO AMEND FIELD RULES FOR
THE MOORE-HOOPER (WLFCMP/PENN CONS) FIELD, LOVING COUNTY, TEXAS**

HEARD BY: Peggy Laird, P.G. – Technical Examiner
Marshall Enquist – Administrative Law Judge

APPEARANCES:

REPRESENTING:

APPLICANT:

Brian R. Sullivan
Sandra Bolz Buch
George Mullen
Julia Jackson
Zhen Li
Scott Restum

SWEPI LP d/b/a Shell Western E&P

PROTESTANT:

Robert Hatter
Dan Gutierrez

Texas General Land Office

OBSERVER:

Mark Miller

Brad Bennett

PROCEDURAL HISTORY

Application Filed:	May 20, 2015
Request for Hearing:	June 11, 2015
Notice of Hearing:	July 17, 2015
Protest Received:	July 17, 2015

Hearing Held:	July 28, 2015
Late-Filed Exhibits Received:	August 7, 2015
Proposal for Decision Issued:	April 20, 2017

STATEMENT OF THE CASE

Shell Western E&P, Inc. ("Shell") seeks to amend the field rules for the Moore-Hooper (Wlfcmp/Penn Cons) Field in Loving County, Texas.¹ In conjunction with the proposed field rule amendments, Shell also requests that certain of its wells be transferred from the Phantom (Wolfcamp) Field to the Sandbar (Bone Spring) or Moore-Hooper (Wlfcmp/Penn Cons) Fields. Shell's application contains numerous elements. Therefore, for clarity the various elements of the existing field rules and Shell's application to amend the field rules are identified and enumerated below, in a scheme that will be carried through this proposal for decision ("PFD"):

- **Request No. 1, Correlative Interval:** No change.
- **Request No. 2, Well Spacing:** Amend the spacing requirements for oil and gas wells to 330-foot lease line, 0-foot between well, and 100-foot lease line spacing to the first and last take points. Shell also requests provisions for off lease penetration points, no-perf zones, a 50-foot sub-surface box rule, and no maximum diagonal requirement.
- **Request No. 3, Well Density:** Amend the current proration unit size from 40 acres for oil wells and 640 acres for gas wells to 320 acres for both oil and gas wells, and provide for additional acreage for horizontal wells to be provided by a field-specific formula. Shell also requests that requirements to file proration plats be removed and that operators are not required to show individual proration units if plats are filed. At the hearing, Shell stated that, in lieu of the field-specific provision for additional acreage for horizontal wells, it would not be adverse to a recommendation mirroring the parallel provisions of the Phantom (Wolfcamp) Field, which provides for additional acreage for horizontal wells based on the provisions of Statewide Rule 86."²
- **Request No. 4, Gas Well Allocation and Oil Well Allowable:** Amend the current Field Rule No. 4 so that oil well allowables will be based on 13.0 barrels of oil per day per acre assigned to the well. The gas reservoir classification will be changed from non-associated to associated prorated gas reservoir. The allocation formula will be unchanged and remain suspended.
- **Request No. 5, Stacked Lateral Wells:** Add a new provision to the field rules for stacked lateral wells.

¹ Hereinafter and alternatively referred to as "the Moore-Hooper Field," "the Field", or "the Subject Field".

² Recording No. 2, 01:16:20.

- **Request No. 6, Tubing Exception:** Add a new provision to the field rules providing that a flowing oil well will be granted administratively, without necessity of filing fees unless the Commission requires filing fees in the future for Statewide Rule 13(b)(4)(A) exceptions, a six-month exception to Statewide Rule 13(b)(4)(A) regarding the requirement of having to be produced through tubing;
- **Request No. 7, Report Filing:** Add a new provision to the field rules providing that an oil well will be granted administratively, without necessity of filing fees unless the Commission requires filing fees in the future for Statewide Rule 51(a) exceptions, a six-month exception to the provisions of Statewide Rule 51(a) regarding the 30-day rule for filing the potential test after testing of the well; and
- **Request No. 8, Gas Well Classification:** Add a new provision to the field rules stating that wells may be permanently classified as gas wells if the initial gas to liquid hydrocarbon ("GLR") ratio is 3,000 standard cubic feet of gas ("scf") per barrel of oil or greater.
- **Request No. 9, Well Transfer:** Transfer 27 wells from the Phantom (Wolfcamp) Field to the Moore-Hooper (Wlfcmp/Penn Cons) Field, and transfer 39 wells from the Phantom (Wolfcamp) Field to the Sandbar (Bone Spring) Field.

Representatives of the Texas General Land Office ("GLO") were present at the hearing in protest of the application. Mr. Robert Hatter and Mr. Dan Gutierrez appeared on behalf of the GLO, which is a public mineral owner of significant acreage in the Delaware Basin and in the Moore-Hooper Field area. The GLO is opposed to the certain elements of the subject application, specifically Request Nos. 3 and 8, that it asserts are harmful to its interests as a trustee for publicly-owned mineral resources,³

The Technical Examiner and Administrative Law Judge (collectively, "Examiners") recommend the Commission amend some of the field rules requested for the Moore-Hooper Field, but not all. Specifically, the Examiners recommend the Commission deny Request Nos. 3 and 8, regarding well density and gas well classification, respectively. For those elements, the Examiners find Shell's evidence to be unpersuasive and therefore have weighted it accordingly. Notably, Shell has offered no new data from its own wells in the Moore-Hooper Field, not to mention its wells in the Phantom (Wolfcamp) or Sandbar (Bone Spring) Fields. Instead, Shell has relied upon data points from other operators' wells that are located from approximately ten to twenty miles from the Moore-Hooper Field area. Further, the Examiners find that the GLO's protests to Request Nos. 3 and 8 have merit, are reasonable, and if granted will negatively affect its rights as a mineral owner in the field. The Examiners recommend the Commission amend the field rules with the exception of Request Nos. 3 and 8.

³ Recording No. 1, 13:09.

DISCUSSION OF EVIDENCE

APPLICANT'S EVIDENCE

Shell's expert testimony was provided by Julia Jackson, geologist, and Zhen Li, Ph.D., reservoir engineer, both of whom are employed by Shell.

Amending Field Rules

The Subject Field is located in Loving County, Texas, in the Delaware Basin. The Field was established by the consolidation of the Moore-Hooper (Wolfcamp) Field and the Moore-Hooper (Atoka) Field on March 14, 2006, in Final Order No. 08-0246067, at which time the following special field rules were established for gas wells in the field:

1. A designated correlative interval that defines the field from 10,925 feet to 17,520 feet, as shown on the Compensated Neutron Formation Density Log of the Sun Oil Company (now POGO), James J. Wheat Lease, Well No. 1 (API No. 42-301-30048), Section 89, Block 1, W & NW RR Co. Survey, Loving County, Texas;
2. For gas wells, 660 feet minimum property, lease, or subdivision line spacing and 1,320 feet between well spacing requirement; statewide spacing rules of 467 feet/1,200 feet apply to oil wells;
3. 640-acre proration units for gas wells with 10% tolerance and a maximum diagonal of 8,500 feet for each gas well and optional 320-acre proration units and a maximum diagonal of 6,000 feet; statewide density rules of 40 acres and a diagonal of 2,100 feet apply to oil wells;
4. Allocation based on 95% acreage and 5% deliverability for gas wells; and the allocation formula is suspended.

As a result of the consolidation, the Moore-Hooper Field is defined by a 6,595-foot correlative interval that extends from the top of the Wolfcamp Formation to approximately 100 feet below the top of the Ellenberger Formation. Besides the Wolfcamp, there was no other information concerning formations in the correlative interval provided. The Moore-Hooper Field does not include strata of the Bone Spring Formation, which overlies the Wolfcamp Formation in the Delaware Basin. The Moore-Hooper Field contained only gas wells at the time it was established by the 2006 consolidation order; it currently contains both oil and gas wells as a result of recent development in the area. The gas wells in the Field currently operate under the special rules identified above, while oil wells are governed by statewide rules (i.e., 467-foot lease line spacing and 40-acre standard drilling and proration units).

Shell asks that the Commission amend and adopt field rules for the Moore-Hooper (Wlfcmp\Penn Cons) Field such that the rules will be similar to the field rules for the

nearby Phantom (Wolfcamp) Field, and other fields in the Delaware Basin. Shell provided examples of field rules representing similar correlative intervals in the Delaware Basin.⁴ Most of Shell's nearby Delaware Basin wells are carried in the Phantom (Wolfcamp) Field.

The Wolfcamp Formation is geologically similar in the Moore-Hooper (Wlfcmp\Penn Cons) and Phantom (Wolfcamp) Fields. Ms. Jackson presented a paleo tectonic map depicting a depositional model of the Wolfcamp Formation in the Delaware Basin.⁵ The Wolfcamp sediments in the Delaware Basin are defined as basin-fan deposits, are characterized as fine-grained, and are considered a resource play. Ms. Jackson also presented a cross section through the area of the wells Shell proposes to transfer. She testified that the Wolfcamp Formation is similar in thickness, structure, and stratigraphy across the area of the Moore-Hooper (Wlfcmp\Penn Cons) and the Phantom (Wolfcamp) Fields.⁶

The Moore-Hooper (Wlfcmp\Penn Cons) Field was primarily a gas field, and oil production occurred as operators developed the Wolfcamp with horizontal wells. Dr. Li presented evidence that shows oil production from the subject Field has increased since 2010.^{7,8}

The focus of the recent oil production in the Moore-Hooper Field is from the Wolfcamp Formation, and not from the deeper formations that are included within the correlative interval. Shell has identified several targets for development (the Wolfcamp shale A, B, D, and F zones), which are between about 11,000 feet and 13,000 feet within the Field's correlative interval.⁹ The correlative interval for the Field continues to a depth of 17,520 feet into Pennsylvanian-age and older formations.

As has been done in other Wolfcamp Formation fields within the Delaware Basin, Shell plans to develop some wells as stacked laterals to maximize recovery, and proposes a 660-foot box for the stacked lateral wells.¹⁰ Shell anticipates drilling longer laterals in the Field during development. Ms. Jackson testified that Shell has drilled an approximately 7,000-foot lateral in the Phantom (Wolfcamp) Field and has permitted laterals as long as approximately 10,000 feet. The location of the longer laterals was not provided. Ms. Jackson reported that Shell is limited in its ability to develop the targets under the Field's current spacing rules, and considers the proposed rules to be appropriate for the longer laterals.¹¹

⁴ Exhibits D-F and late-filed Exhibit 28.

⁵ Exhibit 3.

⁶ Recording No. 1, 50:35.

⁷ Exhibits 13, 14, and 15.

⁸ Recording No. 2, 22:04.

⁹ Exhibits 4 and 5.

¹⁰ Exhibits 6 and 7.

¹¹ Recording No. 1, 21:07.

The permeability of the Wolfcamp Formation is in the nano-darcy range. Therefore, the formation requires hydraulic fracture stimulation to produce hydrocarbons at commercial rates.¹² To support changing lease-line spacing from 467 feet to 330 feet, Dr. Li relied on information presented by BHP Billiton Pet (TXLA OP) Co ("BHP") as evidence in another hearing, Docket No. 08-0290788.¹³ The BHP data relied upon by Dr. Li was obtained from wells in the Phantom (Wolfcamp) Field that were studied by rate transient analysis ("RTA"), which is a method frequently used to determine fracture half-lengths in tight shales. The BHP data from four wells showed fracture half-lengths ranging from 75 feet to 290 feet, with an average half-length of about 174 feet.

Dr. Li reviewed the BHP exhibit, considers it valid, and agrees that drainage beyond 290 feet from the well bore is not indicated. Dr. Li was privy to proprietary data from Shell's own unspecified Wolfcamp Formation wells, and she applied the same method employed by BHP in a review of Shell's confidential data.¹⁴ According to Dr. Li's testimony, her review indicated similar results, and she considers spacing of 330 feet in the Moore-Hooper Field valid. However, Shell did not offer its proprietary data used by Dr. Li into the record in this case.

Dr. Li stated that an off-lease penetration point rule will allow for and increase maximum recovery within the lease.¹⁵ A fifty-foot box rule and provision for no perforation zones were also considered beneficial for ultimate recovery.

To demonstrate the need for the requested oil well allowable of 13 barrels of oil per day per acre, Dr. Li discussed information from the Commission's Form W-2 for Anadarko's E&P Onshore, LLC Carr 34-125 Unit (API No. 42-475-36611). Dr. Li reported that this well was completed in the Wolfcamp Formation and demonstrated an initial potential test of 1,951 barrels of oil per day. Based on this well, and assuming similar production from an associated stacked lateral, the potential oil production would increase to about 4,000 barrels per day. For a well that is assigned 320 acres, 4,000 barrels per day equates to about 13 barrels of oil per day per acre.¹⁶

Dr. Li presented two exhibits to support Shell's request that wells with an initial gas to liquid hydrocarbon ratio greater than 3,000 standard cubic feet ("scf") of gas per barrel of oil ("bbl") may be permanently classified as gas wells.¹⁷ Exhibit 16 shows results of pressure, volume, and temperature ("PVT") analysis from five fluid samples in wells in the

¹² Exhibit 18, Recording No. 2, 37:13. Oil and Gas Docket No. 08-0290788, The Application of BHP Billiton Pet (TXLA OP) Co. to Amend Field Rules for the Phantom (Wolfcamp) Field, Culberson, Loving, Reeves, Ward and Winkler Counties, Texas.

¹³ Exhibits 19 – 23 and late filed exhibit 29 rate transient analysis – used to estimate half fracture lengths, stimulated distance from well bore to tip of fracture.

¹⁴ Recording No. 2, 38:28.

¹⁵ Exhibit 24, Recording No. 2, 49:12.

¹⁶ Exhibit 25, Recording No. 2, 51:06.

¹⁷ Exhibits 16 and 17.

Wolfcamp Formation.¹⁸ The PVT results showed the wells had an initial producing GLR greater than 3,000:1, dew points at reservoir conditions, and C7+ (heptanes plus) mole percentages were less than 13%. Dr. Li considered the samples shown in Exhibit 16 were reasonably distributed throughout Shell's acreage in the Wolfcamp, and stated the PVT analysis was conducted by a third party for Shell. Dr. Li also submitted an excerpt from Petroleum Reservoir Fluid Property Correlations, that discusses (1) when PVT data exhibits a dew point, the fluid at reservoir conditions is gas, and (2) when the composition of heptanes plus in the reservoir fluid is less than 12.9 mol%, the fluid is a gas.

On cross examination by the GLO's representative, Mr. Gutierrez, Shell's geologist confirmed that the correlative interval is approximately 6,600 feet thick. Mr. Gutierrez objected to the absence of any exhibit showing the entire correlative interval for the field. Shell is not asking to amend the correlative interval for the field. Ms. Jackson testified that the exhibits focused on the Wolfcamp Formation because that formation contains Shell's current targets for horizontal wells. The Examiners asked Shell to submit a late-filed exhibit that shows the entire correlative interval for the Field. Shell submitted as late-filed Exhibit 33 the log for the James J. Wheat Lease Well No. 1, which shows the entire correlative interval for the Field.

On cross examination of Dr. Li, Mr. Gutierrez of the GLO inquired if drainage area for wells in this field had been calculated using an accepted lease-line spacing of 330 feet and various lateral lengths.¹⁹ Dr. Li stated she had conducted simulation studies to determine drainage based on the RTA and permeability. The drainage area could vary, that perhaps 50 to 100 acres may be drained. The GLO then questioned why 320 acres is appropriate when calculations show less area may be drained. Dr. Li indicated that, while smaller drainage areas had been observed in some wells, there is considerable uncertainty about the actual drainage area in the Wolfcamp Formation at this time. She testified that the Wolfcamp is a relatively new development in this field, begun as recently as 2010-2011, and it is currently in the trial stage of completions with horizontal wells. Dr. Li stated, "...we really don't know much right now...drainage acreage has a lot of uncertainty...in a short period of development, there is a lot of uncertainty."²⁰ Dr. Li explained that 320-acre density would give operators flexibility to conduct trials to determine the optimal completion methodology and the proper density for drilling in the Field.

Mr. Gutierrez asked several questions related to the PVT samples and analysis. He inquired if the wells that were sampled for the PVT analysis were located in the area where Shell's wells will be transferred. Dr. Li replied the samples were "...not exactly in acreage where wells are proposed to transfer...".²¹ Dr. Li stated the PVT sample locations are 5 to 20 miles from the proposed well transfer area. Mr. Gutierrez questioned when

¹⁸ Recording No. 2, 24:36.

¹⁹ Recording No. 2, 58:00.

²⁰ Recording No. 2, 1:03:43.

²¹ Recording No. 2, 1:06:20.

the samples were collected from the wells for the PVT analysis. Dr. Li testified that all samples were taken from the Wolfcamp within a couple of weeks to a month of first production. Even though Shell is not the operator, it has a working interest in the wells that were sampled. All samples were collected from the Wolfcamp B target zone.²² Mr. Gutierrez asked if there was any pressure communication between the target zones prior to hydraulic fracking. Dr. Li responded that she considered the zones separate and not likely in communication. No samples were taken from the Pennsylvanian portion of correlative interval.

On redirect by Mr. Sullivan, Dr. Li considered the reservoir fluid samples taken from the Wolfcamp B zone were representative of the entire Wolfcamp Formation in Shell's acreage.

Transfer Wells

Shell requests the Commission transfer 27 wells from the Phantom (Wolfcamp) Field to the Moore-Hooper Field and 39 wells from the Phantom (Wolfcamp) Field to the Sandbar (Bone Spring) Field.²³ Shell did not drill these wells, but purchased them from another operator who originally assigned them to the Phantom (Wolfcamp) Field. These three fields partially overlap one another, and Shell made a general contention (but provided no actual examples) that the overlapping correlative intervals and existing well assignments to the various fields is harming its ability to fully develop its mineral rights because of the prohibition in Statewide Rule 40 against the double assignment of acreage. Presumably, amending the Moore-Hooper Field Rules and transferring the wells will resolve these issues for Shell.

Ms. Jackson presented Shell Exhibit 4,²⁴ which shows that the top of the Phantom (Wolfcamp) Field overlaps with the base of the Sandbar (Bone Springs) Field; the correlative intervals for both fields include a productive strata known as the Third Bone Springs interval. Shell's Exhibit No. 4 also shows that no such overlap exists between the Sandbar (Bone Springs) and the Moore-Hooper Field; the base of the former is coincident with the top of the latter. According to Shell, Commission staff have indicated that assigning wells on the same lease to these two fields would result in a double-assignment of acreage in violation of Statewide Rule 40. Thus the presence of an existing well completed in the Sandbar (Bone Spring) Field would prevent an operator from permitting or completing a well in the Wolfcamp Formation target zones of the Phantom (Wolfcamp) Field on the same lease.

Shell requests that the 27 wells listed on its Exhibit 9 that are currently assigned to the Phantom (Wolfcamp) Field and produce from the Wolfcamp Formation be transferred to the Moore-Hooper (Wlfcmp\Penn Cons) Field. Shell also requests that the 39 wells listed on its Exhibit 10 and produce from the Third Bone Spring Formation be

²² Recording No. 2, 1:09:23.

²³ Attachments A and B.

²⁴ Recording No. 1, 24:10.

transferred to the Sandbar (Bone Spring) Field. Transferring these wells would resolve Shell's present concern with regard to the double assignment of acreage prohibited by in Statewide Rule 40. Ms. Jackson stated that the wells being transferred are in active development. Shell will keep some of its wells in the Phantom (Wolfcamp) Field for the present time. Shell may seek field transfer for those wells at some future time.²⁵

Protestant's Evidence

Mr. Dan Gutierrez, a petroleum engineer, is employed by and testified on behalf of the GLO. Mr. Gutierrez indicated that the GLO objects to Request No. 3. The GLO considers Shell's request that oil and gas well density be based on 320 acres is excessive. Mr. Gutierrez calculated the area drained for one well using a 5,280-foot lateral with the requested 330-foot lease-line spacing, which resulted in 80 acres.²⁶ He noted that 80 acres was in the range discussed by Dr. Li in her presentation. He presented the Form W-2 for two wells completed in the area that Shell is requesting to transfer wells. One well is in the subject Field, and is assigned 200 acres, while the other is in the Phantom (Wolfcamp) Field, and is assigned 640 acres.²⁷ Mr. Gutierrez indicated that he agreed with Shell's witness that the drainage area is not known at this time.

The GLO is also opposed to Shell's Request No. 8.²⁸ Mr. Gutierrez discussed the importance of using the initial producing GLR to determine the type of fluid produced. Information from the Form W-2s reported the GLR to be significantly below 3,000 scf/bbl. Mr. Gutierrez emphasized the timing of sampling wells to establish the GLR is critical to well classification. Over time the phase behavior changes in the well because of pressure changes.²⁹ The GLO also expressed concern that samples Shell used to support Request No. 8 were taken from only the Wolfcamp B Zone, and no samples or information was provided in any other portion of the correlative interval. Information from only one zone may not be representative of the other reservoirs in the correlative interval.³⁰

According to Mr. Gutierrez, the GLO believes operators should be allowed to hold acreage by production, and that such production is applicable to a well that drains a specific finite area. The evidence offered by Shell, affirmed by its expert, and cited by Mr. Gutierrez suggests a 5,280-foot lateral drains about 80 acres. If Request No. 3 is adopted, the GLO is concerned that horizontal wells would be eligible to hold up to 704 acres—an area that exceeds a horizontal well's capacity to drain, based on Shell's own evidence. Further, Mr. Gutierrez is concerned that if the existing gas well unit size is unchanged (640 acres) and Request No. 8 is adopted, there is a potential for more wells to be classified as gas wells, and those wells could hold even more acreage. In either

²⁵ Recording No. 1, 1:02:00, Exhibits 9 and 10.

²⁶ Recording No. 2, 1:22:38.

²⁷ Recording No. 2, 1:27:40.

²⁸ Recording No. 2, 1:23:54.

²⁹ Recording No. 2, 1:39:10.

³⁰ Recording No. 2, 1:40:10.

scenario, the GLO foresees the potential for Shell to hold excessive acreage for wells and is opposing Request Nos. 3 and 8. The GLO considers these requests harmful to its interests as a trustee for publicly-owned mineral resources.³¹

On cross examination of Mr. Gutierrez by Mr. Sullivan, it was noted that the two well examples shown in GLO Exhibits 2 and 3 were drilled in Wolfcamp sands, not the targeted Wolfcamp shales.

EXAMINERS' ANALYSIS

The Examiners recommend the Commission amend some of the field rules as requested by Shell, but not all. Specifically, the Examiners recommend the Commission deny Request Nos. 3 and 8, regarding well density and gas well classification, respectively. For those elements, the Examiners find Shell's evidence to be unpersuasive and therefore have weighted it accordingly. Notably, Shell has offered no new data from its own wells in the Moore-Hooper Field, not to mention its wells in the Phantom (Wolfcamp) or Sandbar (Bone Spring) Fields. Instead, Shell has relied upon data points from other operators' wells in the Phantom (Wolfcamp) Field that are located about 10 to 20 miles from the Moore-Hooper Field area. Further, the Examiners find that the GLO's protests to Request Nos. 3 and 8 have merit, are reasonable, and will negatively affect its rights as a mineral owner in the field. The Examiners recommend the Commission amend the field rules, with the exception of Request Nos. 3 and 8.

First, however, the Examiners will provide a brief analysis for the requested provisions for which approval is recommended. In making these affirmative recommendations, the Examiners are informed by the Commission's recent action to amend Statewide Rule 86, effective on February 1, 2016. Those amendments to Statewide Rule 86 incorporated several field rule provisions that had become commonly adopted for wells undergoing horizontal development. Further, those amendments established a means by which a field may be designated as an "unconventional fracture stimulated" ("UFT") field, and consequently afforded certain privileges. The Examiners note that the Moore-Hooper Field has not been granted UFT status, but that the nearby Phantom (Wolfcamp) and Sandbar (Bone Spring) Fields have since been designated by the Commission as UFT fields.

Field Rule Amendments – Recommend Approval

Request No. 2, Well Spacing: Shell's requested well spacing amendment contained several elements, all of which the Examiners recommend be granted.

Shell provided no data from its own wells in the Moore-Hooper Field to support the spacing request. The information Shell presented to support the spacing request in Request No. 2 was derived from another operator's wells that are located about twenty

³¹ Recording No. 1, 14:10.

miles northwest of the wells located in the subject Field.³² Dr. Li stated that she had applied the same method to determine fracture half-length to Shell's wells and had seen similar results.³³ This information was considered proprietary by Shell and was not provided to the Examiners. She offered her opinion that Wolfcamp drainage beyond half fracture lengths of 290 feet is not indicated.

The Examiners consider the applicable data supporting the requested spacing rules is incomplete. However, the proposed spacing rules are consistent with spacing rules that have been adopted for other fields within the Delaware Basin and other unconventional resource plays to accommodate horizontal well development.³⁴ There were no protests to the proposed spacing of 330 feet. Therefore, for equitable development of resources, the Examiners recommend amending the lease line spacing rule as requested by Shell.

Further, the requested between-well spacing, first and last take point spacing, and removal of the maximum diagonal length are consistent with contemporary practice in similar fields. The requested provisions for off-lease penetration points, no-perf zones, and a 50-foot box rule were incorporated into Statewide Rule 86 on February 1, 2016.

Request No. 4, Oil Well Allowable: The Examiners find that Shell's request for an oil well allowable based on 13 barrels of oil per day per acre assigned to be reasonable based on the evidence presented. Further, the Examiners note that the February 1, 2016 amendments to Statewide Rule 86 provide for a 100 barrel of oil per day per acre allowable for oil wells in UFT fields, of which the Phantom (Wolfcamp) has since been designated.

Request No. 5, Stacked Laterals: The February 1, 2016 amendments to Statewide Rule 86 incorporated provisions for stacked laterals on a statewide basis (16 TAC §3.86[a][10]). The Examiners therefore consider this request to be moot.

Request No. 6, Tubing Exception: The February 1, 2016 amendments to Statewide Rule 86 incorporated delayed tubing installation provisions for wells completed in unconventional fracture-stimulated ("UFT") fields (16 TAC §3.86[I]). However, the Moore-Hooper Field has not been designated by the Commission as a UFT field. Nonetheless, the Examiners recognize that delayed tubing installation has become a common practice in fields undergoing development by horizontal wells.

Request No. 7, Report Filing: The February 1, 2016 amendments to Statewide Rule 86 incorporated delayed tubing installation provisions for wells completed in unconventional fracture-stimulated ("UFT") fields (16 TAC §3.86[I]). However, the Moore-Hooper Field

³² Exhibits 20-23 and late-filed Exhibit 29. Oil and Gas Docket No. 08-0290788, The Application of BHP Billiton Pet (TXLA OP) Co. to Amend Field Rules for the Phantom (Wolfcamp) Field, Culberson, Loving, Reeves, Ward and Winkler Counties, Texas.

³³ Exhibit 18, Recording No. 2, 37:13.

³⁴ Exhibits D-F and late-filed Exhibit 28.

has not been designated by the Commission as a UFT field. Nonetheless, the Examiners recognize that delayed tubing installation has become a common practice in fields undergoing development by horizontal wells.

Field Rule Amendments – Recommend Denial

The Examiners are not persuaded by the evidence Shell offered in support of Request Nos. 3 and 8. The evidence was very thin, and the GLO protest on these two issues illuminated the weaknesses of Shell's data. The Examiners' concerns are focused on three issues: (1) Shell provided no data from their own wells to support amending the rules; (2) data provided was obtained from wells located about 10 to 20 miles from the Moore-Hooper Field area; and (3) data provided for Request No. 8 was limited in that it was from only one of four targeted horizons within the Wolfcamp Formation—and is not representative of the entire 6,595-foot field correlative interval.

The Examiners believe that special field rules should be supported by data from the field in question, and that an operator has an obligation to support its requests with evidence. In this case, the Examiners conclude the evidence offered by Shell to support its request for 320 acre units and permanent gas well classification should be assigned little to no weight, and Request Nos. 3 and 8 should be denied.

Request No. 3, Well Density

The current Field Rule No. 3 provides special rules for gas wells, and oil wells are under statewide rules. In the present case, Shell originally requested an oil and gas well density of 320 acres with additional acreage to be assigned to horizontal wells based on the following formula, $A = (L \times 0.107) + 320$ acres. During the hearing, the applicant stated they would not find it adverse to modify proposed field rule three. Proposed acreage for oil or gas wells would still be based on 320 acres for each well, but would use the Statewide Rule 86 allowance for horizontal wells in lieu of the formula, which would limit acreage held by oil or gas wells to 704 acres.

For Shell's Request No. 3, the evidence in the record does not support either request by Shell. There was no data provided from any of Shell's wells in any of the fields relative to this case. Dr. Li discussed results from BHP's study, which used wells from over 10 miles away from wells in this case. Dr. Li considers the study valid, and stated that drainage beyond 290 feet from the well bore is not indicated.

The Examiners consider BHP's rate transient analysis data as it relates to this case should be weighted lightly. Even though the Examiners regard the BHP study as insufficient for this case, in consideration of the applicant's request for 320-acre well density, half-fracture lengths of 330 feet were used to calculate acreage drained. A fracture length of 660 feet and a lateral length of 10,000 feet would yield a drainage area of about 160 acres, far below the 320 acres requested as the size of a base unit. This result was in line with the testimony provided by the GLO. In their presentation, the GLO

demonstrated the acres drained for one well with a one-mile lateral and 330-foot lease line spacing would be about 80 acres.

Ms. Jackson stated, "...the trials that Shell is currently running are helping us to understand the ideal spacing, at this point in time we don't know what the ideal spacings of the wells are."³⁵ Dr. Li gave testimony that the Wolfcamp is currently in the trial stage of completions with horizontal wells. Dr. Li stated, "...we really don't know much right now...drainage acreage has a lot of uncertainty...in a short period of development, there is a lot of uncertainty."³⁶

The Examiners conclude that the evidence in the record supports a base unit size of 40 acres with additional assignable acreage for horizontal wells pursuant to Statewide Rule 86. Thus, a horizontal well with a 10,000-foot lateral length would drain about 160 acres, as described above, and such would be able to hold as little as 40 or as much as 380 acres (40 acres in the base unit and 340 additional acres, if desired by the operator, pursuant to Statewide Rule 86[d][1]).

Request No. 8, Gas Well Classification

Request No. 8 would allow wells that have an initial GLR of 3,000 scf/bbl or greater to be permanently classified as gas wells. Yet again, Shell did not provide representative data from the Moore-Hooper Field area. Instead, Shell relied on information assembled by another operator from wells in other Wolfcamp Fields located as far as 20 miles from the Moore-Hooper Field area.

The Examiners note that the entirety of Shell's evidence on this issue was a one-page exhibit (No. 16), which consisted of (1) a table identifying the five test wells with values for GLR, reservoir pressure, dew point pressure, and C7+; and (2) a map of the five sample locations across a large area of West Texas of unknown scale. Reservoir fluid classification is a highly technical and scientifically rigorous matter. The Examiners assign this exhibit no weight because sufficient supporting information is not available to allow the exhibit to stand on its own. Notably, there are no completion or production details for the tested wells, and the test dates for GLR, reservoir pressure, and reservoir fluid sampling are unknown. Further, there is no information documenting the type of PVT studies performed—whether they were visual cell tests or simulated (equations of state) analysis.

Shell considered the samples for the PVT study, as shown in Exhibit 16, were reasonably distributed throughout Shell's Wolfcamp Formation acreage in the Delaware Basin. After review of the maps and well information in evidence, the Examiners disagree that the distribution of samples was throughout Shell's acreage, or that such a distribution was even relevant. Shell's acreage, as presented for this case, is distributed extensively

³⁵ Recording No. 1, 49:11.

³⁶ Recording No. 2, 1:03:43.

over a multi-county area in West Texas. However, Shell offered only reservoir fluid samples, none of which were closer than 10 miles to the Moore-Hooper Field area. Shell currently has several completions in the Moore-Hooper Field, and at least 27 wells in the Phantom (Wolfcamp) Field that it intends to transfer into the Moore-Hooper Field; no data from any of those wells was offered into evidence.

The five PVT data point samples provided by Shell were apparently obtained from the Wolfcamp B Zone target, as shown on Shell Exhibit 4. There were no PVT analyses conducted from any of the other shale target zones identified by Shell in the correlative interval, and no data was provided for the intervals underlying the Wolfcamp Formation intervals. As previously noted, Shell has identified several targets for development in the Wolfcamp Formation (Zones A, B, D, and F) within the Field's correlative interval between about 11,000 feet and 13,000 feet. Only data from one target zone was provided, and it is considered incomplete by the Examiners. The correlative interval for the subject Field extends to 17,520 feet into Pennsylvanian age formations. No samples, analyses, or studies from 13,000 feet to 17,250 feet into the Pennsylvanian portion of the correlative interval were offered in evidence. The field rules as proposed are tailored for the Wolfcamp portion of the correlative interval, and the characteristics of the remaining portion of the correlative interval are unknown at this time.

Finally, as a matter of observation with regard to the large distances between the Moore-Hooper Field area and Shell's data points, the Examiners note that Statewide Rule 101, Certification for Severance Tax Exemption or Reduction for Gas Produced From High-Cost Gas Wells, limits the representativeness of a data point for gas reservoir classification to 2.5 miles. The Examiners recognize Statewide Rule 101 is not at issue in this case. However, we do note the Commission's use of a distance limitation for other purposes, and that, in this case, Shell has greatly exceeded 2.5 miles.

The Examiners recommend Request No. 8 be denied.

Well Transfer – Recommend Approval

Shell presented very general evidence that assignment of a well in the Phantom (Wolfcamp) Field might preclude additional development on the same lease in Moore-Hooper Field or the Sandbar (Bone Spring) Field. Shell did not provide evidence of any specific instance where this situation was causing it harm. Nonetheless, the Examiners recognize some of the implicit challenges faced by operators working in reservoirs historically developed with vertical wells that are subsequently subjected to horizontal well development as a resource play.

To remedy the issue, Shell requests that the 27 wells listed on its Exhibit 9 that are currently assigned to the Phantom (Wolfcamp) Field and produce from the Wolfcamp Formation be transferred to the Moore-Hooper (Wolfcamp\Penn Cons) Field. Shell also requests that the 39 wells listed on its Exhibit 10 and produce from the Third Bone Springs

Formation would be transferred to the Sandbar (Bone Spring) Field. Transferring these wells would resolve Shell's present concern with regard to the double assignment of acreage prohibited by in Statewide Rule 40. The Examiners conclude that these well transfers would promote the orderly development of the Moore-Hooper Field, in addition to, possibly, the Sandbar (Bone Spring) and Phantom (Wolfcamp) Fields.

FINDINGS OF FACT

1. Shell seeks to amend the existing special field rules for the Moore-Hooper (Wlfcmp\Penn Cons) Field, Loving County, Texas.
2. Notice of this hearing was given to all parties entitled to notice at least ten days prior to the date of hearing.
3. The application is protested by the General Land Office, as a trustee for publicly-owned mineral resources.
4. The Wolfcamp Formation is similar in thickness, structure, and stratigraphy across the area of the Moore-Hooper (Wlfcmp\Penn Cons) and the Phantom (Wolfcamp) Fields.
5. The Field was established by the consolidation of the Moore-Hooper (Wolfcamp) Field and the Moore-Hooper (Atoka) Field on March 14, 2006, in Final Order No. 08-0246067, at which time the special field rules were established for gas wells.
6. The Field is defined by a 6,595-foot correlative interval that extends from the top of the Wolfcamp Formation to approximately 100 feet below the top of the Ellenberger Formation.
7. The Moore-Hooper (Wlfcmp\Penn Cons) Field was primarily a gas field, and oil production from the subject Field has increased since 2010.
8. Shell anticipates further development in the Wolfcamp, with emphasis on production from horizontal wells.
9. The requested provisions for stacked laterals, off-lease penetration points, no-perf zones, and a 50-foot box rule were incorporated into Statewide Rule 86 on February 1, 2016.
10. The requested between-well spacing, first and last take point spacing, and removal of the maximum diagonal length are consistent with contemporary practice in similar fields.
11. The proposed lease-line spacing of 330 feet should allow for equitable development of resources.

12. The well transfers should promote the orderly development of the Wolfcamp Formation.
13. Shell's Request Number 3 that oil and gas well density be based on 320 acres is excessive.
 - a. The evidence offered by the GLO demonstrated the acres drained for one well with a one-mile lateral and 330-foot lease line spacing would be about 80 acres.
 - b. The evidence offered by Shell indicated a fracture length of 660 feet and a lateral length of 10,000 feet would yield a drainage area of about 160 acres.
14. Shell's Request Number 8 that wells that have an initial GLR of 3,000 scf/bbl or greater to be permanently classified as gas wells lacks sufficient supportive evidence in the record.
 - a. There are no completion or production details for the tested wells, and the test dates for GLR, reservoir pressure, and reservoir fluid sampling are unknown.
 - b. The reservoir fluid samples for the PVT exhibit were all taken from the Wolfcamp B Zone, and were not representative of other portions of the correlative interval.
15. Shell offered no new data from its own wells in the Moore-Hooper Field.

CONCLUSIONS OF LAW

1. Resolution of the subject application is a matter committed to the jurisdiction of the Railroad Commission of Texas. Tex. Nat. Res. Code § 81.051
2. All notice requirements have been satisfied. 16 Tex. Admin. Code § 1.45
3. Amending and adopting Request Numbers 1, 2, 4, 5, 6, 7, and 9 will prevent waste, protect correlative rights, and promote development of the Field.
4. The transfer of wells from the Phantom (Wolfcamp) Field to the Moore-Hooper Wolfcamp/Penn Cons) Field and to the Sandbar (Bone Spring) Field, will allow orderly development of this area.

RECOMMENDATION

Based on the above findings of fact and conclusions of law, the Examiners recommend adopting and amending Request Numbers 1, 2, 4, 5, 6, 7, and 9. The Examiners recommend denial of Request Numbers 3 and 8.

Respectfully submitted,



Peggy Laird, P.G.
Technical Examiner



Marshall Enquist
Administrative Law Judge

ATTACHMENT A

Wells to be transferred without fees from the Phantom (Wolfcamp) Field (Field No. 71052900) to the Moore-Hooper (Wlfcmp\Penn Cons) Field (Field No. 62718690):

Well Name	API	Lease ID	Drilling Permit Number	Operator	County	Field
HILL P C-STATE B 1-12 5H	4247536962		802537	SHELL	WARD	PHANTOM (WOLFCAMP)
MONROE 1-17 WRD 2H	4247536676	40817		SHELL	WARD	PHANTOM (WOLFCAMP)
BLACKTIP 1-21 WRD UNIT 3H	4247536480	41816		SHELL	WARD	PHANTOM (WOLFCAMP)
CROCKETT 1-26 4HS	4247536648	41052		SHELL	WARD	PHANTOM (WOLFCAMP)
BRAMBLETT 1-28 WRD 2H	4247536199	43462		SHELL	WARD	PHANTOM (WOLFCAMP)
BRAMBLETT 1-28 WRD 4H	4247536198	43462		SHELL	WARD	PHANTOM (WOLFCAMP)
CROCKETT 1-29 WRD UNIT 3H	4247536707	41763		SHELL	WARD	PHANTOM (WOLFCAMP)
CROCKETT 1-29 WRD UNIT 2H	4247536444	41763		SHELL	WARD	PHANTOM (WOLFCAMP)
CROCKETT 1-37 WRD 2H	4247535927	42140		SHELL	WARD	PHANTOM (WOLFCAMP)
CROCKETT 1-37 WRD 4H	4247536194	42140		SHELL	WARD	PHANTOM (WOLFCAMP)
MONROE 1-6 WRD 3H	4247536718	42155		SHELL	WARD	PHANTOM (WOLFCAMP)
SPURDOG 1-62 LOV 4H	4230131943	44818		SHELL	LOVING	PHANTOM (WOLFCAMP)
MONROE 1-8 WRD 3H	4247536770	42153		SHELL	WARD	PHANTOM (WOLFCAMP)
JOHNSON 1-87 LOV 1H	4230131613	45637		SHELL	LOVING	PHANTOM (WOLFCAMP)
JOHNSON 1-87 LOV 2H	4230131765	45637		SHELL	LOVING	PHANTOM (WOLFCAMP)
RICKY BOBBY 33-62 WRD UNIT 1H	4247536492	44876		SHELL	WARD	PHANTOM (WOLFCAMP)
RICKY BOBBY 33-62 WRD UNIT 2H	4247536554	44876		SHELL	WARD	PHANTOM (WOLFCAMP)
MAGIC MAN 33-64 WRD 6H	4247536571	42019		SHELL	WARD	PHANTOM (WOLFCAMP)
MAGIC MAN 33-64 WRD 3H	4247536204	42019		SHELL	WARD	PHANTOM (WOLFCAMP)
MAGIC MAN 33-64 WRD 4H	4247536211	42019		SHELL	WARD	PHANTOM (WOLFCAMP)
MAGIC MAN 33-64 WRD 5V	4247536551	42019		SHELL	WARD	PHANTOM (WOLFCAMP)
GREENBLATT 71 WRD 1H	4247536165	43217		SHELL	WARD	PHANTOM (WOLFCAMP)
MACDONALD 71 WRD UNIT 1H	4247536315	44136		SHELL	WARD	PHANTOM (WOLFCAMP)
MASONIC 72 WRD 1H	4247536539	45099		SHELL	WARD	PHANTOM (WOLFCAMP)
MASONIC 72 WRD UNIT 1H	4247536652	45839		SHELL	WARD	PHANTOM (WOLFCAMP)
JOHNSON 1-76 3H	4230131970	43876		SHELL	LOVING	PHANTOM (WOLFCAMP)
JOHNSON 1-86 4H	4230131888	43876		SHELL	LOVING	PHANTOM (WOLFCAMP)

ATTACHMENT B

Wells to be transferred without fees from the Phantom (Wolfcamp) Field (Field No. 71052900) to the Sandbar (Bone Spring) Field (Field No. 80544500):

Well Name	API	Lease ID	Drilling Permit Number	Operator	County	Field
P C HILL STATE B 1-12	4247536423	44515		SHELL	WARD	PHANTOM (WOLFCAMP)
P C HILL STATE B 1-12	4247536438	44515		SHELL	WARD	PHANTOM (WOLFCAMP)
P C HILL STATE B 1-12	4247536435	44515		SHELL	WARD	PHANTOM (WOLFCAMP)
P C HILL STATE B 1-12	4247536424	44515		SHELL	WARD	PHANTOM (WOLFCAMP)
MONROE 1-17 WRD 1H	4247535597	40817		SHELL	WARD	PHANTOM (WOLFCAMP)
MONROE 1-17 WRD 3H	4247536677	40817		SHELL	WARD	PHANTOM (WOLFCAMP)
MONROE WEST 1-17 1H	4247535681	41684		SHELL	WARD	PHANTOM (WOLFCAMP)
BLACKTIP 1-21 WRD UNIT 2H	4247535651	41816		SHELL	WARD	PHANTOM (WOLFCAMP)
BLACKTIP 1-21 UNIT 1 1H	4247535567	40663		SHELL	WARD	PHANTOM (WOLFCAMP)
CROCKETT 1-26 1H	4247535582	41052		SHELL	WARD	PHANTOM (WOLFCAMP)
CROCKETT 1-26 2H	4247535849	41052		SHELL	WARD	PHANTOM (WOLFCAMP)
CROCKETT 1-26 3H	4247536319	41052		SHELL	WARD	PHANTOM (WOLFCAMP)
BRAMBLETT 1-28 WRD 1H	4247536154	43462		SHELL	WARD	PHANTOM (WOLFCAMP)
BRAMBLETT 1-28 WRD 3H	4247536197	43462		SHELL	WARD	PHANTOM (WOLFCAMP)
CROCKETT 1-29 WRD unit 1H	4247535812	41763		SHELL	WARD	PHANTOM (WOLFCAMP)
CROCKETT 1-37 WRD 3H	4247536158	42140		SHELL	WARD	PHANTOM (WOLFCAMP)
CROCKETT 1-37 WRD 1H	4247535926	42140		SHELL	WARD	PHANTOM (WOLFCAMP)
MONROE EAST STATE 1-4 WRD 1H	4247535920	42116		SHELL	WARD	PHANTOM (WOLFCAMP)
MONROE EAST STATE 1-4 WRD 2H	4247536096	42116		SHELL	WARD	PHANTOM (WOLFCAMP)
MONROE STATE 1-4 1H	4247535605	41150		SHELL	WARD	PHANTOM (WOLFCAMP)
GILLHAM 1-5 WRD 2H	4247535925	42383		SHELL	WARD	PHANTOM (WOLFCAMP)
GILLHAM 1-5 WRD 3H	4247535932	42383		SHELL	WARD	PHANTOM (WOLFCAMP)
GILLHAM 1-5 WRD 4H	4247535972	42383		SHELL	WARD	PHANTOM (WOLFCAMP)
GILLHAM 1-5 WRD 5H	4247535971	42383		SHELL	WARD	PHANTOM (WOLFCAMP)
MONROE 1-6 WRD 1H	4247535773	42155		SHELL	WARD	PHANTOM (WOLFCAMP)
MONROE 1-6 WRD 2H	4247536714	42155		SHELL	WARD	PHANTOM (WOLFCAMP)
MONROE WEST 1-6 WRD 1H	4247535964	42427		SHELL	WARD	PHANTOM (WOLFCAMP)
MONROE 1-8 WRD 2H	4247535880	42153		SHELL	WARD	PHANTOM (WOLFCAMP)
JOHNSON 1-87 LOV 3H	4230131908	44657		SHELL	LOVING	PHANTOM (WOLFCAMP)
JOHNSON 1-87 LOV 4H	4230131926	44657		SHELL	LOVING	PHANTOM (WOLFCAMP)
RICKY BOBBY 33-62 WRD UNIT 3H	4247536555	44876		SHELL	WARD	PHANTOM (WOLFCAMP)
MAGIC MAN 33-64 WRD 1H	4247535794	42019		SHELL	WARD	PHANTOM (WOLFCAMP)
MAGIC MAN 33-64 WRD 2H	4247535948	42019		SHELL	WARD	PHANTOM (WOLFCAMP)
GREENBLATT 71 WRD 2H	4247536202	43217		SHELL	WARD	PHANTOM (WOLFCAMP)
MACDONALD 71 WRD UNIT 2H	4247536320	44136		SHELL	WARD	PHANTOM (WOLFCAMP)
MASONIC 72 WRD 2H	4247536653	45099		SHELL	WARD	PHANTOM (WOLFCAMP)
MASONIC 72 WRD 3H	4247536654	45099		SHELL	WARD	PHANTOM (WOLFCAMP)
JOHNSON 1-76 4H	4230132232	44777		SHELL	LOVING	PHANTOM (WOLFCAMP)
JOHNSON 1-86 3H	4230131842	43876		SHELL	LOVING	PHANTOM (WOLFCAMP)

**RAILROAD COMMISSION OF TEXAS
HEARINGS DIVISION**

**OIL AND GAS DOCKET
NO. 08-0296956**

**IN THE MOORE-HOOPER
(WLF CMP/PENN CONS) FIELD,
LOVING COUNTY, TEXAS**

**FINAL ORDER
AMENDING FIELD RULES FOR THE
MOORE-HOOPER (WLF/PENN CONS) FIELD,
LOVING COUNTY, TEXAS**

The Commission finds that after statutory notice of the application made by Shell Western E&P, Inc. in the above-numbered docket heard on July 28, 2015, the Technical Examiner and Administrative Law Judge (collectively, "Examiners") have made and filed a report and recommendation containing findings of fact and conclusions of law, for which service was not required; that the proposed application complies with all statutory requirements; and that this proceeding was duly submitted to the Railroad Commission of Texas at conference held in its offices in Austin, Texas.

The Commission, after review and due consideration of the Examiners' report and recommendation, the findings of fact and conclusions of law contained therein, hereby adopts as its own the findings of fact and conclusions of law contained therein, and incorporates said findings of fact and conclusions of law as if fully set out and separately stated herein.

Therefore, it is **ORDERED** by the Railroad Commission of Texas that the field rules adopted in Final Order No. 08-0246067, effective March 14, 2006 for the Moore-Hooper (Wlfcmp/Penn Cons) Field, Loving County, Texas are hereby amended and set out in their entirety as follows:

RULE 1: The entire combined correlative interval from 10,925 feet to 17,520 feet as shown on the Compensated Neutron Formation Density log of the Sun Oil Company (now POGO), James J. Wheat Lease, Well No.1 (API No. 42-301-30048), Section 89, Block 1, W & NW RR Co. Survey, Loving County, Texas, shall be designated as a single reservoir for proration purposes and be designated as the Moore-Hooper (Wlfcmp/Penn Cons) Field.

RULE 2: No well for oil or gas shall hereafter be drilled nearer than **THREE HUNDRED AND THIRTY (330)** feet to any property line, lease line, or subdivision line. There is no minimum between well spacing requirement. The aforementioned distances in the above rule are minimum distances to allow an operator flexibility in locating a well; and the above spacing rule and the other rules to follow are for the purpose of permitting only one well to each drilling and proration unit. Provided however, that the Commission

will grant exceptions to permit drilling within shorter distances and drilling more wells than herein prescribed, whenever the Commission shall have determined that such exceptions are necessary either to prevent waste or to prevent the confiscation of property. When exception to these rules is desired, application therefor shall be filed and will be acted upon in accordance with the provisions of Commission Statewide Rules 37 and 38, which applicable provisions of said rules are incorporated herein by reference.

In applying this rule, the general order of the Commission with relation to the subdivision of property shall be observed.

Provided, however, that for purposes of spacing for horizontal wells, the following shall apply

a. No horizontal drainhole well for oil or gas shall hereafter be drilled such that the first and last take points are nearer than ONE HUNDRED (100) feet to any property line, lease line or subdivision line.

b. For each horizontal drainhole well, the perpendicular distance from any take point on such horizontal drainhole between the first take point and the last take point to any point on any property line, lease line, or subdivision line shall be a minimum of THREE HUNDRED AND THIRTY (330) feet.

Any point of a horizontal drainhole outside of the described rectangle must conform to the permitted distance of the property line, lease line or subdivision line measured perpendicular from the wellbore.

RULE 3a: The acreage assigned to the individual gas well shall be known as a proration unit. The standard drilling and proration units are established hereby to be SIX HUNDRED AND FORTY (640) acres. No proration unit shall consist of more than SIX HUNDRED AND FORTY (640) acres; provided that, tolerance acreage of ten (10) percent shall be allowed for each standard proration unit so that an amount not to exceed a maximum of SEVEN HUNDRED AND FOUR (704) acres may be assigned. Each proration unit containing less than SIX HUNDRED AND FORTY (640) acres shall be a fractional proration unit. All proration units shall consist of continuous and contiguous acreage which can reasonably be considered to be productive of gas. No double assignment of acreage will be accepted.

An operator, at his option, shall be permitted to form optional drilling units of THREE HUNDRED AND TWENTY (320) acres. A proportional acreage allowable credit will be given for a well on a fractional proration unit.

RULE 3b: The acreage assigned to the individual oil well for the purpose of allocating allowable oil production thereto shall be known as a proration unit. The standard drilling and proration units are established hereby to be FORTY (40) acres. No proration unit shall consist of more than FORTY (40) acres except as hereinafter

provided. All proration units shall consist of continuous and contiguous acreage which can reasonably be considered to be productive of oil.

For the determination of acreage credit in this field, operators shall file for each oil or gas well in this field a Form P-15 Statement of Productivity of Acreage Assigned to Proration Units. On that form or an attachment thereto, the operator shall list the number of acres that are being assigned to each well on the lease or unit for proration purposes. For oil or gas wells, the operator may, at the operator's option, file along with the Form P-15, a plat of the lease, unit or property; provided that such plat shall not be required to show individual proration units. There is no maximum diagonal limitation in this field.

RULE 4a: The gas field shall be classified as associated-prorated. The daily allowable production of gas from individual wells completed in an associated-prorated gas reservoir of the subject field shall be determined by allocating the allowable production, after deductions have been made for wells which are incapable of producing their gas allowables, among the individual wells in the following manner:

NINETY-FIVE percent (95%) of the total field allowable shall be allocated among the individual wells in the proportion that the acreage assigned such well for allowable purposes bears to the summation of the acreage with respect to all prorable wells producing from this field .

FIVE percent (5%) of the total field allowable shall be allocated among the individual wells in the proportion that the deliverability of such well, as evidenced by the most recent G-10 test filed with the Railroad Commission bears to the summation of the deliverability of all prorable wells producing from this field.

RULE 4b: The maximum daily oil allowable for each oil well in the subject field shall be determined by multiplying the number of acres in its proration unit by 13.0 barrels per acre.

RULE 5: A flowing oil well will be granted administratively, without necessity of filing fees unless the Commission requires filing fees in the future for Statewide Rule 13(b)(4)(a) exceptions, a six-month exception to Statewide Rule 13(b)(4)(a) regarding the requirement of having to be produced through tubing. A revised completion report will be filed once the oil well has been equipped with the required tubing string to reflect the actual completion configuration. This exception would be applicable for new drills, reworks, recompletions or for new fracture stimulation treatments for any flowing oil well in the field. For good cause shown, an operator may obtain administratively, without necessity of filing fees unless the Commission requires filing fees in the future for Statewide Rule 13(b)(4)(a) exceptions, an extension for an additional three months. If the request for an extension of time is denied, the operator may request a hearing.

RULE 6: An oil well will be granted administratively, without necessity of filing fees unless the Commission requires filing fees in the future for Statewide Rule 51 (a)

exceptions, a six-month exception to the provisions of Statewide Rule 51 (a) regarding the 30-day rule for filing the potential test after testing of the well. This will allow for the backdating of allowables on the oil wells without requiring a waiver to be secured from all field operators. This rule will grant the Commission the authority to issue an allowable back to the initial completion date for all oil wells in the field to prevent unnecessary shut-ins to alleviate potential overproduction issues related to the completion paperwork filings and producing the oil wells without tubing . If an extension of time is granted under Rule 5, the exception to Statewide Rule 51 (a) under this rule is automatically extended for the additional time.

The exceptions to Statewide Rule 13(b)(4)(a) and 51(a) provided for in the rules adopted in this final order shall be applicable to all wells in the field, regardless of when completion forms are filed and including wells for which completion forms were filed prior to the entry of this order.

It is further **ORDERED** that the allocation formula in the Moore-Hooper (Wlfcmp\Penn Cons) Field will remain suspended. The allocation formula may be reinstated administratively, in accordance with the Commission's rules, if the market demand for gas in the Moore-Hooper (Wlfcmp\Penn Cons) Field drops below 100% of deliverability.

It is further **ORDERED** that the wells listed on Attachment A to this order are transferred to the Moore-Hooper (Wlfcmp\Penn Cons) Field, as indicated on Attachment A, and the wells listed on Attachment B to this order are transferred to the Sandbar (Bone Spring) Field as indicated on Attachment B. The operator is required to file Commission Form P-4, 'Producer's Transportation Authority and Certificate of Compliance', for all affected wells and leases. The Commission also waives any fees associated with such transfer, including drilling permit fees.

It is further **ORDERED** that the requested amendments for the Moore-Hooper (Wlfcmp\Penn Cons) Field regarding 320-acre proration units for oil and gas wells, and a permanent gas well classification provision, are hereby **DENIED**.

It is further **ORDERED** by the Commission that this order shall not be final and effective until 25 days after the Commission's order is signed, unless the time for filing a motion for rehearing has been extended under Tex. Gov't Code §2001.142, by agreement under Tex. Gov't Code §2001.147, or by written Commission Order issued pursuant to Tex. Gov't Code §2001.146(e). If a timely motion for rehearing of an application is filed by any party at interest, this order shall not become final and effective until such motion is overruled, or if such motion is granted, this order shall be subject to further action by the Commission. Pursuant to Tex. Gov't Code §2001.146(e), the time allotted for Commission action on a motion for rehearing in this case prior to its being overruled by operation of law is hereby extended until 90 days from the date Commission Order is signed.

Done this 6th day of June 2017.

RAILROAD COMMISSION OF TEXAS

CHAIRMAN CHRISTI CRADDICK

COMMISSIONER RYAN SITTON

COMMISSIONER WAYNE CHRISTIAN

ATTEST:

SECRETARY

ATTACHMENT A

Wells to be transferred without fees from the Phantom (Wolfcamp) Field (Field No. 71052900) to the Moore-Hooper (Wolfcamp\Penn Cons) Field (Field No. 62718690):

Well Name	API	Lease ID	Drilling Permit Number	Operator	County	Field
HILL P C-STATE B 1-12 5H	4247536962		802537	SHELL	WARD	PHANTOM (WOLFCAMP)
MONROE 1-17 WRD 2H	4247536676	40817		SHELL	WARD	PHANTOM (WOLFCAMP)
BLACKTIP 1-21 WRD UNIT 3H	4247536480	41816		SHELL	WARD	PHANTOM (WOLFCAMP)
CROCKETT 1-26 4HS	4247536648	41052		SHELL	WARD	PHANTOM (WOLFCAMP)
BRAMBLETT 1-28 WRD 2H	4247536199	43462		SHELL	WARD	PHANTOM (WOLFCAMP)
BRAMBLETT 1-28 WRD 4H	4247536198	43462		SHELL	WARD	PHANTOM (WOLFCAMP)
CROCKETT 1-29 WRD UNIT 3H	4247536707	41763		SHELL	WARD	PHANTOM (WOLFCAMP)
CROCKETT 1-29 WRD UNIT 2H	4247536444	41763		SHELL	WARD	PHANTOM (WOLFCAMP)
CROCKETT 1-37 WRD 2H	4247535927	42140		SHELL	WARD	PHANTOM (WOLFCAMP)
CROCKETT 1-37 WRD 4H	4247536194	42140		SHELL	WARD	PHANTOM (WOLFCAMP)
MONROE 1-6 WRD 3H	4247536718	42155		SHELL	WARD	PHANTOM (WOLFCAMP)
SPURDOG 1-62 LOV 4H	4230131943	44818		SHELL	LOVING	PHANTOM (WOLFCAMP)
MONROE 1-8 WRD 3H	4247536770	42153		SHELL	WARD	PHANTOM (WOLFCAMP)
JOHNSON 1-87 LOV 1H	4230131613	45637		SHELL	LOVING	PHANTOM (WOLFCAMP)
JOHNSON 1-87 LOV 2H	4230131765	45637		SHELL	LOVING	PHANTOM (WOLFCAMP)
RICKY BOBBY 33-62 WRD UNIT 1H	4247536492	44876		SHELL	WARD	PHANTOM (WOLFCAMP)
RICKY BOBBY 33-62 WRD UNIT 2H	4247536554	44876		SHELL	WARD	PHANTOM (WOLFCAMP)
MAGIC MAN 33-64 WRD 6H	4247536571	42019		SHELL	WARD	PHANTOM (WOLFCAMP)
MAGIC MAN 33-64 WRD 3H	4247536204	42019		SHELL	WARD	PHANTOM (WOLFCAMP)
MAGIC MAN 33-64 WRD 4H	4247536211	42019		SHELL	WARD	PHANTOM (WOLFCAMP)
MAGIC MAN 33-64 WRD 5V	4247536551	42019		SHELL	WARD	PHANTOM (WOLFCAMP)
GREENBLATT 71 WRD 1H	4247536165	43217		SHELL	WARD	PHANTOM (WOLFCAMP)
MACDONALD 71 WRD UNIT 1H	4247536315	44136		SHELL	WARD	PHANTOM (WOLFCAMP)
MASONIC 72 WRD 1H	4247536539	45099		SHELL	WARD	PHANTOM (WOLFCAMP)
MASONIC 72 WRD UNIT 1H	4247536652	45839		SHELL	WARD	PHANTOM (WOLFCAMP)
JOHNSON 1-76 3H	4230131970	43876		SHELL	LOVING	PHANTOM (WOLFCAMP)
JOHNSON 1-86 4H	4230131888	43876		SHELL	LOVING	PHANTOM (WOLFCAMP)

ATTACHMENT B

Wells to be transferred without fees from the Phantom (Wolfcamp) Field (Field No. 71052900) to the Sandbar (Bone Spring) Field (Field No. 80544500):

Well Name	API	Lease ID	Drilling Permit Number	Operator	County	Field
P C HILL STATE B 1-12	4247536423	44515		SHELL	WARD	PHANTOM (WOLFCAMP)
P C HILL STATE B 1-12	4247536438	44515		SHELL	WARD	PHANTOM (WOLFCAMP)
P C HILL STATE B 1-12	4247536435	44515		SHELL	WARD	PHANTOM (WOLFCAMP)
P C HILL STATE B 1-12	4247536424	44515		SHELL	WARD	PHANTOM (WOLFCAMP)
MONROE 1-17 WRD 1H	4247535597	40817		SHELL	WARD	PHANTOM (WOLFCAMP)
MONROE 1-17 WRD 3H	4247536677	40817		SHELL	WARD	PHANTOM (WOLFCAMP)
MONROE WEST 1-17 1H	4247535681	41684		SHELL	WARD	PHANTOM (WOLFCAMP)
BLACKTIP 1-21 WRD UNIT 2H	4247535651	41816		SHELL	WARD	PHANTOM (WOLFCAMP)
BLACKTIP 1-21 UNIT 1 1H	4247535567	40663		SHELL	WARD	PHANTOM (WOLFCAMP)
CROCKETT 1-26 1H	4247535582	41052		SHELL	WARD	PHANTOM (WOLFCAMP)
CROCKETT 1-26 2H	4247535849	41052		SHELL	WARD	PHANTOM (WOLFCAMP)
CROCKETT 1-26 3H	4247536319	41052		SHELL	WARD	PHANTOM (WOLFCAMP)
BRAMBLETT 1-28 WRD 1H	4247536154	43462		SHELL	WARD	PHANTOM (WOLFCAMP)
BRAMBLETT 1-28 WRD 3H	4247536197	43462		SHELL	WARD	PHANTOM (WOLFCAMP)
CROCKETT 1-29 WRD unit 1H	4247535812	41763		SHELL	WARD	PHANTOM (WOLFCAMP)
CROCKETT 1-37 WRD 3H	4247536158	42140		SHELL	WARD	PHANTOM (WOLFCAMP)
CROCKETT 1-37 WRD 1H	4247535926	42140		SHELL	WARD	PHANTOM (WOLFCAMP)
MONROE EAST STATE 1-4 WRD 1H	4247535920	42116		SHELL	WARD	PHANTOM (WOLFCAMP)
MONROE EAST STATE 1-4 WRD 2H	4247536096	42116		SHELL	WARD	PHANTOM (WOLFCAMP)
MONROE STATE 1-4 1H	4247535605	41150		SHELL	WARD	PHANTOM (WOLFCAMP)
GILLHAM 1-5 WRD 2H	4247535925	42383		SHELL	WARD	PHANTOM (WOLFCAMP)
GILLHAM 1-5 WRD 3H	4247535932	42383		SHELL	WARD	PHANTOM (WOLFCAMP)
GILLHAM 1-5 WRD 4H	4247535972	42383		SHELL	WARD	PHANTOM (WOLFCAMP)
GILLHAM 1-5 WRD 5H	4247535971	42383		SHELL	WARD	PHANTOM (WOLFCAMP)
MONROE 1-6 WRD 1H	4247535773	42155		SHELL	WARD	PHANTOM (WOLFCAMP)
MONROE 1-6 WRD 2H	4247536714	42155		SHELL	WARD	PHANTOM (WOLFCAMP)
MONROE WEST 1-6 WRD 1H	4247535964	42427		SHELL	WARD	PHANTOM (WOLFCAMP)
MONROE 1-8 WRD 2H	4247535880	42153		SHELL	WARD	PHANTOM (WOLFCAMP)
JOHNSON 1-87 LOV 3H	4230131908	44657		SHELL	LOVING	PHANTOM (WOLFCAMP)
JOHNSON 1-87 LOV 4H	4230131926	44657		SHELL	LOVING	PHANTOM (WOLFCAMP)
RICKY BOBBY 33-62 WRD UNIT 3H	4247536555	44876		SHELL	WARD	PHANTOM (WOLFCAMP)
MAGIC MAN 33-64 WRD 1H	4247535794	42019		SHELL	WARD	PHANTOM (WOLFCAMP)
MAGIC MAN 33-64 WRD 2H	4247535948	42019		SHELL	WARD	PHANTOM (WOLFCAMP)
GREENBLATT 71 WRD 2H	4247536202	43217		SHELL	WARD	PHANTOM (WOLFCAMP)
MACDONALD 71 WRD UNIT 2H	4247536320	44136		SHELL	WARD	PHANTOM (WOLFCAMP)
MASONIC 72 WRD 2H	4247536653	45099		SHELL	WARD	PHANTOM (WOLFCAMP)
MASONIC 72 WRD 3H	4247536654	45099		SHELL	WARD	PHANTOM (WOLFCAMP)
JOHNSON 1-76 4H	4230132232	44777		SHELL	LOVING	PHANTOM (WOLFCAMP)
JOHNSON 1-86 3H	4230131842	43876		SHELL	LOVING	PHANTOM (WOLFCAMP)