



RAILROAD COMMISSION OF TEXAS

HEARINGS DIVISION

OIL AND GAS DOCKET NO. OG-19-00001048

APPLICATION OF DIAMONDBACK E&P LLC (217012) TO AMEND FIELD RULES
FOR THE HOEFS T-K (WOLFCAMP) FIELD, REEVES AND PECOS COUNTIES,
TEXAS, DISTRICT 08

HEARD BY: John Moore -Technical Examiner
Jennifer Cook -Administrative Law Judge

HEARING DATE: November 8, 2019
CONFERENCE DATE: December 17, 2019

APPEARANCES: REPRESENTING:

APPLICANT: Diamondback E & P, LLC

Bill Hayenga, Attorney
Ryan Latham, Attorney
Andrew Waller, Land Manager
Harper Cummings, Sr. Staff Geologist
Clay Arrington, Sr. Reservoir Engineer

OBSERVERS: PRI Operating, LLC

John Bennett, Attorney

EXAMINERS' REPORT AND RECOMMENDATION

STATEMENT OF THE CASE

Diamondback E & P LLC ("Diamondback") requests to amend the field rules for the Hoefs T-K (Wolfcamp) Field, in Reeves and Pecos Counties, Texas (the "Field").

Diamondback requests to amend three elements of the field rules governing development of the Field. The requested amendments are:

Rule 1 – Deepen the designated correlative interval of the Field to include the entire Wolfcamp formation. Presently, the record well is the El Paso Natural Gas Co. – Hoefs Lease, Well No. 1 (API No. 42-389-00310) (the “Record Well”) and the Field correlative interval is 7,692 feet to 11,750 feet; i.e. from the base of the Brushy Canyon formation to a segment within the Wolfcamp formation. The requested Field designated correlative interval in the Record Well is 7,692 feet to 13,210 feet; i.e. from the base of the Brushy Canyon formation to the base of the Wolfcamp formation.

Rule 2 – Reduce the distance to the lease line for the first and last take points in a horizontal well, to increase the recovery of hydrocarbons. Presently, the distance to the lease line for the first and last take points in a horizontal well is two-hundred (200) feet. The requested distance to the lease line for the first and last take points in a horizontal well is one-hundred (100) feet.

Rule 2 – Reduce the notice period for a mineral interest owner of an offset tract to file an objection to the Railroad Commission (the “Commission”) regarding a horizontal well’s penetration point located on that offset tract, making the notice period conform with other similar rules governing field development. Presently, the notice period to file the objection is twenty-one (21) days. The requested notice period to file an objection is fourteen (14) days.

Notice of the application was provided to all operators in Field. The application is unopposed, and the Technical Examiner and Administrative Law Judge (collectively, “Examiners”) recommend approval of the application.

DISCUSSION OF THE EVIDENCE

The Field was discovered in 1988. The future development in the Field is through drilling horizontal wells. Current lease line spacing in the Field is 200-foot non-perpendicular, 330-foot perpendicular along the well path of a horizontal well. The base of the current correlative interval at 11,750 feet includes the upper Wolfcamp producing zones.

The expansion of the correlative interval to 13,210 feet includes the entire Wolfcamp formation in the designated correlative interval for the Field. This expansion of the correlative interval will allow operators to target the deep Wolfcamp producing zones and recover hydrocarbons that would otherwise go unrecovered. Diamondback provided a paleontology study prepared by the Bureau of Economic Geology to define the base of the Wolfcamp formation in the Record Well. The formations in the requested deepened correlative interval are defined from the base of the Brushy Canyon formation to the Base

of the Wolfcamp formation. These geologic formations identified in the Delaware Basin are similar to the correlative interval designated for the Spraberry (Trend Area) Field in the Midland Basin, as depicted in the table below.

Delaware Basin Formations		Midland Basin Formations	
Delaware Mountain Group	Bell Canyon Cherry Canyon Brushy Canyon	Whitehorse	Yates Seven Rivers Queen Grayburg San Andres San Angelo
		Ward	
Hoefs T-K (Wolfcamp) Field	Bone Spring Lime Avaon Sand First Bone Spring Second Bone Spring Third Bone Spring Wolfcamp A Wolfcamp B Wolfcamp C Wolfcamp D	Spraberry (Trend Area) Field	Clearfork Upper Spraberry Lower Spraberry Dean Wolfcamp A Wolfcamp B Wolfcamp C Wolfcamp D
	Strawn		Strawn

Diamondback has drilled and cored wells in multiple zones in the Wolfcamp formation. These core samples show that the reservoir has ultra-low permeability and will not produce without hydraulic fracture stimulation. A statistical analysis of the core-derived permeability from four (4) wells in the Field demonstrates the majority of cores to be in the nano-darcy range or lower. The significance of the core permeability study is that without creating secondary permeability with hydraulic fracture stimulation there isn't flow in this reservoir rock.

Horizontal wells are typically drilled perpendicular to the natural fractures of the reservoir. When the reservoir rock is hydraulically fractured, the fractures tend to propagate parallel to the natural fractures; i.e. perpendicular to the wellbore. There is little induced fracturing parallel to the direction of the wellbore. As a result, hydrocarbons remain trapped in the reservoir rock proximal to the heel and toe of the drain-hole. There is a need to get closer to the lease line in the non-perpendicular direction with respect to the hydraulically-induced fractures created, in order to recover reserves that would otherwise go unrecovered in this tight reservoir rock.

Using micro-seismic data from the Field, the drainage distance beyond the first and last take point in the heel-ward and toe-ward direction is estimated at forty-seven (47) feet. This estimate is based on the average heel-ward growth of monitored hydraulic fracture stimulation stages in a horizontal well targeting the Field.

Diamondback evaluated the production results of several operators with wells in the Wolfcamp formation to calculate the additional reserves that could be recovered by adding an additional one-hundred (100) feet of perforated interval along each end of a horizontal well. The results range from 13,000 barrels of oil ("BOE") to 28,000 BOE per one-hundred (100) feet of drain-hole length. If you double these volumes to account for adding an additional one-hundred (100) feet to each end of the lateral (first and last take points one-hundred (100) feet closer to lease lines), the additional recovery with the proposed rule change is 26,000 BOE to 56,000 BOE per horizontal drain-hole well. These additional reserves would otherwise go unrecovered and wasted without the proposed rule change in the Field. In addition to the Ford, West (Wolfcamp) and Phantom (Wolfcamp) Fields adopting this field rule amendment, other resource plays in these formations have already adopted this field rule, including the Spraberry (Trend Area) Field.

Diamondback requests to reduce the notice period for a mineral interest owner of an offset tract to file an objection to the Commission regarding a horizontal well's penetration point located on that offset tract from twenty-one (21) days to fourteen (14) days. This would make this notice period conform with other similar rules governing field development including Statewide Rule 37. In Oil and Gas Docket No. 08-0315483, the Commission amended the off-lease penetration point language in Rule 2 of the field rules for the subject Field to update off-lease penetration point permitting.

Diamondback agreed on the record that, pursuant to the provisions of Texas Government Code § 2001.144(a)(4)(A), this Final Order shall be final and effective on the date a Master Order relating to this Final Order is signed.

FINDINGS OF FACT

1. Diamondback filed a request on August 26, 2019, to amend the field rules for the Field:
 - a. Rule 1 - Deepen the designated correlative interval of the Field to include the entire Wolfcamp formation.
 - i. Presently, the record well is the El Paso Natural Gas Co. – Hoefs Lease, Well No. 1 (API No. 42-389-00310) (the "Record Well") and the Field correlative interval is 7,692 feet to 11,750 feet; i.e. from the base of the Brushy Canyon formation to a segment within the Wolfcamp formation.
 - ii. The requested Field designated correlative interval in the Record Well is 7,692 feet to 13,210 feet; i.e. from the base of the Brushy Canyon formation to the base of the Wolfcamp formation.

- b. Rule 2 – Reduce the distance to the lease line for the first and last take points in a horizontal well, to increase the recovery of hydrocarbons.
 - i. Presently, the distance to the lease line for the first and last take points in a horizontal well is two-hundred (200) feet.
 - ii. The requested distance to the lease line for the first and last take points in a horizontal well is one-hundred (100) feet.
 - c. Rule 2 – Reduce the notice period for a mineral interest owner of an offset tract to file an objection to the Commission regarding a horizontal well's penetration point located on that offset tract, making the notice period conform with other similar rules governing field development.
 - i. Presently, the notice period to file the objection is twenty-one (21) days.
 - ii. The requested notice period to file an objection is fourteen (14) days.
- 2. On October 11, 2019 the Hearings Division of the Commission sent a Notice of Hearing ("Notice") to Applicant and all operators in the Field setting a hearing date of November 8, 2019. Consequently, the parties received more than 10 days' notice. The Notice contains (1) a statement of the time, place, and nature of the hearing; (2) a statement of the legal authority and jurisdiction under which the hearing is to be held; (3) a reference to the particular sections of the statutes and rules involved; and (4) a short and plain statement of the matters asserted. The hearing was held on November 8, 2019, as noticed. Applicant appeared and participated at the hearing. No one appeared in protest.
- 3. Deepening the designated correlative interval of the Field to include the entire Wolfcamp formation will provide for an orderly and more efficient development of all segments of the Wolfcamp formation in the Field.
- 4. Diamondback has extracted core samples from four (4) of its wells in multiple zones of the Wolfcamp formation. The Wolfcamp formation core sample demonstrate:
 - a. the formation permeability to be in the nano-darcy range or lower, and
 - b. hydrocarbon recovery will require hydraulic fracture stimulation to create secondary recovery.
- 5. When the reservoir rock is hydraulically fractured, the fractures tend to propagate parallel to the rock's natural fractures; i.e. perpendicular to the wellbore. There is little induced fracturing parallel to the direction of the wellbore. As a result,

hydrocarbons remain trapped in the reservoir rock proximal to the heel and toe of the drain-hole.

6. Using micro-seismic data from the Field, the drainage distance beyond the first and last take point in the heel-ward and toe-ward direction is estimated at forty-seven (47) feet. This estimate is based on the average heel-ward growth of monitored hydraulic fracture stimulation stages in a horizontal well targeting the Field.
7. Based on an analysis of the production results of several operators with wells in the Wolfcamp formation, the additional reserves that could be recovered by adding an additional one-hundred (100) feet of perforated interval along each end of a horizontal well ranged from 13,000 BOE to 28,000 BOE per one-hundred (100) feet of drain-hole length.
8. Reducing the distance to the lease line for the first and last take points in a horizontal well from two-hundred (200) feet to one-hundred (100) feet results in an additional expected recovery of 26,000 BOE to 56,000 BOE per horizontal drain-hole well. These additional reserves would otherwise go unrecovered and wasted without the proposed rule change in the Field.
9. Reducing the notice period for a mineral interest owner of an offset tract to file an objection to the Commission regarding a horizontal well's penetration point located on that offset tract from twenty-one (21) days to (14) days will streamline the notice provision and bring the notice in line with similar Commission rules, such as Statewide Rule 37, and prevent delays in permitting and drilling wells.
10. Diamondback agreed on the record that, pursuant to the provisions of Texas Government Code § 2001.144(a)(4)(A), this Final Order shall be final and effective on the date a Master Order relating to this Final Order is signed.

CONCLUSIONS OF LAW

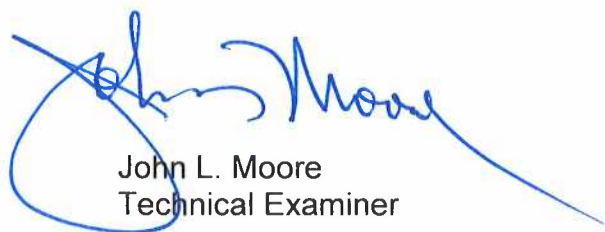
1. Proper notice of hearing was timely issued to persons entitled to notice. Tex. Gov't. Code §§ 2001.051 and 2001.052; Tex. Admin. Code §§ 1.42 and 1.45.
2. The Commission has jurisdiction in this case. Tex. Nat. Res. Code § 81.051.
3. Approval of Diamondback's application is necessary to prevent waste, protect correlative rights and promote the orderly development of the Field.
4. Pursuant to Tex. Gov't. Code § 2001.144(a)(4)(A) and by agreement of Diamondback on the record, Diamondback has waived the right to file a motion for rehearing and the Final Order in this case can be final and effective on the date

the Master Order relating to this Final Order is signed.

EXAMINERS' RECOMMENDATION

Based on the above findings of fact and conclusions of law, the Examiners recommend that the Commission amend the field rules for Hoefs T-K (Wolfcamp) Field, Reeves and Pecos Counties, Texas as requested by Diamondback.

Respectfully submitted,



John L. Moore
Technical Examiner



Jennifer N. Cook
Administrative Law Judge