May 2, 2005

RULE 37 CASE NO. 0240684
DISTRICT 7C

APPLICATION OF ENCORE OPERATING, L.P. FOR AN EXCEPTION TO STATEWIDE RULE 37 TO DRILL WELL NO. 2 ON THE VADA BEAN LEASE, OZONA (CANYON SAND) FIELD, CROCKETT COUNTY, TEXAS.

APPEARANCES:

FOR APPLICANT:	**APPLICANT:**
Glenn Johnson	Encore Operating, L.P.
James Plemons	" "
Lee Peterson	" "
Ben Nivens, Jr.	" "
FOR PROTESTANTS:	**PROTESTANT:**
John Soule	Devon Energy Production, L.P.
Owen Broyles	" "
Arthur O'Neal, Jr.	" "

PROPOSAL FOR DECISION

PROCEDURAL HISTORY

APPLICATION FILED:	October 22, 2004
NOTICE OF HEARING:	January 12, 2005
HEARING DATE:	January 26, 2005
HEARD BY:	Mark Helmueller - Hearings Examiner Margaret Allen - Technical Examiner
TRANSCRIPT RECEIVED:	February 7, 2005
PFD CIRCULATION DATE:	May 2, 2005

STATEMENT OF THE CASE

Encore Operating, L.P. ("Applicant" or "Encore") seeks an exception to Statewide Rule 37 to drill Well No. 2 on the Vada Bean Lease as a gas well in the Ozona (Canyon Sand) Field.[1] The Vada Bean Lease is a narrow rectangular shaped 63.30 acre tract with no locations regular to lease line spacing requirements in the Ozona (Canyon Sand) Field due to the configuration of the lease. Encore previously drilled the Vada Bean No. 1 Well on the southernmost 40 acres of the lease, 938 feet south of the proposed location for the Vada Bean No. 2. The proposed well will be located 275 feet from the eastern lease line and 254 feet from the western lease line on the remaining 23.30 acres.[2] The proposed well is regular to all other lease line boundaries. A copy of the plat filed with Applicant's W-1 Application for Permit to Drill, Deepen, Plug Back or Re-Enter is attached. The Ozona (Canyon Sand) Field is subject to spacing requirements of 467 feet minimum distance to the nearest lease line and 1200 feet minimum distance between wells for oil wells and 660 feet minimum distance to the nearest lease line and 933 feet minimum distance between wells for gas wells.

The application is protested by Devon Energy Production, L.P. ("Devon"), the offset operator of the adjacent eastern tract. The offset operator to the west did not protest Encore's application.

APPLICANT'S POSITION AND EVIDENCE

Encore claims that the applied-for well is necessary to prevent confiscation as its existing Well No. 1 will not recover its fair share of the remaining recoverable natural gas underlying the Vada Bean Lease. Encore also claims that the proposed well would produce a significant volume of natural gas underlying the northernmost 23 acres of the Vada Bean Lease in the Ozona (Canyon Sand) Field which would not be recovered by either any existing wells or wells which would be located at any regular location, thereby warranting an exception permit to prevent waste.

With respect to its confiscation argument, Encore's volumetric analysis estimates that between 2.2 Bcf and .365 Bcf of natural gas underlying its Vada Bean Lease will not be recovered from the existing Vada Bean No. 1 Well. For its high end estimate, Encore believes that the low permeability in the Ozona (Canyon Sand) Field, prevented any offsetting wells from draining reserves from the Vada Bean Lease. Encore therefore asserts that the original recoverable gas in place of 3.2 Bcf, less the estimated cumulative reserves which will be recovered from the Vada Bean No. 1 Well of .97 Bcf, is a proper measure for calculating its fair share of reserves currently underlying its lease.

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[1]Field Rules for the Ozona (Canyon Sand) Field reference both the oil field rules and the gas field rules. Encore's presentation and all evidence was limited to the drilling of a gas well, accordingly the proposed final order is limited to a gas well at the proposed location.

[2]The Field Rules for gas wells in the Ozona (Canyon Sand) Field allow for 320 acre units, with optional 40 acre units. Statewide Rule 38(c) allows for "tolerance wells", without a density exception, if the remaining acreage on a lease is equal or greater to 50% of the smallest amount established for an optional drilling unit.

In support of the high estimate, Encore contends that its Vada Bean No. 1 Well came in at or near virgin reservoir pressure. Assuming virgin pressure of 2604 psig as the bottomhole pressure, the calculated recoverable reserves of the Veda Bean Lease under original conditions were 3.2 Bcf. Encore believes a well at the proposed location will also encounter virgin reservoir conditions due to the low reservoir permeability.

With respect to its low estimate of .365 Bcf, Encore's volumetric analysis uses a reservoir pressure of 1530 psig to calculate the remaining recoverable reserves. This pressure was calculated from the shut-in tubing pressure test measured in Encore's Vada Bean No. 1 Well after it had produced for three days. Encore does not believe that the shut-in tubing pressure test accurately reflects current reservoir conditions as the test was not performed over a long enough period of time. Encore suggests that an accurate test in such a tight formation would require a well to be shut in for several hundred hours. Using 1530 psig in Encore's volumetric calculations yields an estimate of recoverable gas in place of 1.336 Bcf. Subtracting the estimated cumulative recovery from the Vada Bean No. 1 Well of . 972 Bcf yields a remainder of .365 Bcf of recoverable reserves that will not be produced by the existing well.

Encore also relies on maps depicting the drainage patterns of the existing wells on and adjacent to its Vada Bean Lease to support its case. Based on these maps, Encore asserts that the acreage in the northern end of the Vada Bean Lease has not and will not be drained by its existing well, other existing wells offsetting its lease, or any well which would be drilled at a regular location.

Encore's volumetric analysis relies on a phi h[3] isopach map derived from its geologic interpretation of reservoir and digital log analyses estimating the total net pay encountered from a cross section of wells completed in the Ozona (Canyon Sand) Field, including its Vada Bean No. 1 Well. Encore contends that a high phi h value for the Vada Bean No. 1 Well is justified by the current production from that well, which came in among the top wells in the field. Encore also presented a decline curve analysis for its existing Vada Bean No. 1 well to show that the estimated cumulative recovery from that well will only be .972 Bcf. Finally, Encore further asserts that the location is reasonable because there are no regular locations on the tract and the location is roughly equidistant between the eastern and western lease lines.

Encore also claims that Devon's competing phi h isopach map does not accurately depict the Ozona (Canyon Sand) Field, pointing out several inaccuracies in contouring and reported phi h values for individual wells. Encore also asserts that Devon's volumetric analysis is flawed because it relies on an inaccurate 24 hour pressure test result reported from Devon's Vada Bean No. 12 well.

[3] Phi h is a dimensionless number calculated by multiplying the number of feet of net pay by the estimated porosity in that net pay.

PROTESTANT'S POSITION AND EVIDENCE

Devon contends that Encore has overestimated the amount of remaining recoverable natural gas underlying the Vada Bean Lease in the Ozona (Canyon Sand) Field. Devon argues that using Encore's own decline curve analysis with a volumetric analysis based on more current pressure data, Encore's Vada Bean No. 1 Well will ultimately recover more than its fair share of the remaining recoverable natural gas underlying the Vada Bean Lease.

Devon did not offer a competing geologic interpretation for the depositional environment or a top of structure map for the Ozona (Canyon Sand) Field. However, Devon challenges the precision of Encore's estimates of pay from the digital log studies and phi h values Encore assigns to the Vada Bean No. 1 Well.

Devon asserts that Encore overestimates the net pay for the Ozona (Canyon Sand) Field for its Vada Bean No. 1 Well. Devon claims that Encore's log analysis for its Vada Bean No. 1 Well erred because the porosity log was run on a limestone matrix instead of a sandstone matrix, thereby overestimating porosity by at least 4%. Devon further argues that Encore failed to account for spalling in its Vada Bean No. 1 Well, a common phenomenon during drilling in this area. Spalling occurs when rock particles break off into the borehole face of the wellbore, leading to an inaccurate and inflated porosity reading. Devon contends that Encore's estimates should have capped maximum porosity readings at 14%. Encore considered the log reading as accurate even where it indicated as much as 30% porosity, thereby leading to a significantly higher phi h value for Encore's Vada Bean No. 1 Well than Devon believes is correct. Devon urges that its own phi h isopach map is based on proper porosity cut-offs at both the upper and lower ends of the scale, thereby showing a more accurate depiction of the reservoir conditions on Encore's Vada Bean Lease.

Devon also contends that the bottomhole pressure tested in the Vada Bean No. 1 Well of 1530 psi in October 2004 was correct. Devon further asserts that Encore's volumetric calculations and decline curve analysis ignore recent pressure data from Devon's Vada Bean No. 12 Well which offsets the Encore acreage. This pressure data comes from a build up test in January 2005 from which the reservoir pressure can be calculated at 1395 psi. Using this reservoir pressure and its phi h isopach map, Devon's calculations find that the remaining recoverable reserves underlying the Vada Bean Lease total approximately .84 Bcf. Devon calculates that the remaining recovery from the Vada Bean No. 1 Well will be .86 Bcf, which exceeds what Devon asserts is its more accurate estimate of the remaining recoverable reserves underlying Encore's Vada Bean Lease.

EXAMINERS' OPINION

As discussed below, Encore asserts that an exception to the lease line spacing requirements is justified both to prevent confiscation and waste. It is the examiners' opinion that Encore has established that an exception permit is warranted under the confiscation test. Accordingly, no discussion is required on Encore's claim that an exception is necessary to prevent waste.

To establish entitlement to an exception to Rule 37 to prevent confiscation, an applicant must show that, absent the applied-for well, it will be denied a reasonable opportunity to recover its fair share of hydrocarbons currently in place under the lease, or its equivalent in kind. The applicant must satisfy a two pronged test: 1) the applicant must show that it will not be afforded a reasonable opportunity to recover its fair share of hydrocarbons currently in place by drilling a well at a regular location; and 2) the applicant must show that the proposed irregular location is reasonable. Generally, the applicant must also provide a calculation of the current reserves underlying its lease.

As noted in *Gulf Land Co. v. Atlantic Refining Co.*, 131 S.W.2d 73, 80 (Tex. 1939):

> It is the law that every owner or lessee of land is entitled to a fair chance to recover the oil and gas in or under his land, or their equivalents in kind. Any denial of such fair chance would be 'confiscation' within the meaning of Rule 37 and the Rule of May 29th.

Encore presented volumetric evidence based on its interpretation of the geology and reservoir structure, determinations of net pay from digital analysis of a cross-section of well logs, and its phi h isopach map derived from the structural interpretation and the log analyses to estimate that, at the very least, approximately 1.336 Bcf of recoverable natural gas was present beneath its Vada Bean Lease at original conditions. Due to the low permeability in the Ozona (Canyon Sand) Field, the estimated recoverable reserves at original conditions, less the total cumulative recovery from the Vada Bean No. 1 well, is a sufficient measure to determine the current recoverable reserves underlying the Vada Bean Lease. Additionally, maps depicting the estimated drainage area of the wells on and offsetting the Vada Bean Lease establish that the northernmost 23.30 acres in the 63.30 acre tract have not been affected by any existing well.

Encore's decline curve analysis for its existing Vada Bean No. 1 well shows that the estimated cumulative recovery from that well will only be .972 Bcf, leaving a remainder of at least .365 Bcf of current recoverable reserves which will not be recovered by its existing well. Accordingly, this evidence satisfies the first element for an exception to prevent confiscation.

The examiners specifically note that while Encore's phi h value for its Vada Bean No. 1 Well may be higher than other wells in the field, the production history for this well supports its interpretation. Devon's proposed correction to the phi h value for the Vada Bean No. 1 Well would place it at or below the same capability as several wells drilled by Devon as direct offsets to Encore's Vada Bean Lease which are not reporting production capability at or near the reported production from the Vada Bean No. 1 Well. The examiners therefore believe that, while Encore's estimated phi h value for the Vada Bean No. 1 Well may be high in relation to the nearby offset wells, the empirical production data supports a higher value compared to the well's nearest neighbors.

Encore also presented evidence to establish that the proposed location is reasonable. The proposed well is located roughly equidistant from the lease lines on the narrow rectangular tract.

Additionally, maps depicting the drainage pattern from the existing wells, including the Vada Bean No. 1, show that the proposed well will recover reserves from the northern portion of its lease which will not be recovered from any other existing well. This evidence satisfies the second element necessary to support an application for an exception to prevent confiscation. Accordingly, it is the examiner's recommendation that Encore's application be approved on this basis.

CONCLUSION

Encore is entitled to an exception to Rule 37 to prevent confiscation of natural gas underlying its Vada Bean Lease in the Ozona (Canyon Sand) Field. Accordingly, the application for an exception to Rule 37 should be granted.

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. Encore Operating, L.P. ("Applicant" or "Encore") seeks an exception to Statewide Rule 37 to drill Well No. 2 on the Vada Bean Lease in the Ozona (Canyon Sand) Field, Crockett County. Encore appeared at the hearing and presented evidence in support of its application.

2. Encore's application is protested by Devon Energy Production, L.P., the operator of an offsetting tract to the east of the Vada Bean Lease. Devon appeared at the hearing and presented evidence in protest of Encore's application.

3. The Vada Bean Lease is a narrow rectangular shaped 63.30 acre tract with no locations regular to lease line spacing requirements in the Ozona (Canyon Sand) Field due to the configuration of the lease. The proposed well will be located 275 feet from the western lease line and 254 feet from the eastern lease line. The proposed well is regular to all other lease line boundaries.

4. The Ozona (Canyon Sand) Field is subject to spacing requirements of 467 feet minimum distance to the nearest lease line and 1200 feet minimum distance between wells for oil wells and 660 feet minimum distance to the nearest lease line and 933 feet minimum distance between wells for gas wells.

5. Encore's Vada Bean No. 1 Well will not recover its fair share of current recoverable reserves in the Ozona (Canyon Sand) Field currently underlying its Vada Bean Lease.

    a. Volumetric evidence based on a geologic interpretation of the depositional environment, maps depicting reservoir structure, determinations of net pay from digital analysis of a cross-section of well logs, and a phi h isopach map derived from the structural interpretation and the log analyses estimate that, at a minimum, approximately 1.336 Bcf of recoverable natural gas were underneath Encore's Vada

Bean Lease in the Ozona (Canyon Sand) Field at original conditions.

b. Maps depicting the estimated drainage area of the wells on and offsetting the Vada Bean Lease establish that the northernmost 23.30 acres in the 63.30 acre tract have not been affected by any existing well.

c. Due to the low permeability in the Ozona (Canyon Sand) Field, the estimated recoverable reserves at original conditions, less the total cumulative recovery from the Vada Bean No. 1 well, is a sufficient measure to determine the current recoverable reserves underlying the Vada Bean Lease.

d. A decline curve analysis for the Vada Bean No. 1 well shows that the cumulative estimated recovery will only be .972 Bcf, leaving a remainder of .365 Bcf of recoverable reserves underlying the Vada Bean Lease which will not be recovered by the existing well.

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. An exception to Statewide Rule 37 for a gas well at the applied-for location is necessary to prevent confiscation.

RECOMMENDATION

The examiners recommend that Encore's application be granted to drill Well No. 2 on the Vada Bean Lease as a gas well in the Ozona (Canyon Sand) Field in accordance with the attached final order.

Respectfully submitted,

Mark J. Helmueller
Hearings Examiner

Margaret Allen
Technical Examiner