OIL AND GAS DOCKET NO. 03-0228995

THE APPLICATION OF COMSTOCK OIL AND GAS, INC., FOR EXCEPTION TO STATEWIDE RULE 38, W.T. CARTER AND BRO. LEASE, WELL NO. 15; DOUBLE A WELLS (WOODBINE) FIELD, POLK COUNTY, TEXAS

Heard by: Margaret Allen, Technical Examiner
Mark Helmueller, Legal Examiner

Procedural history

Application for Rule 38 exception received: July 11, 2001
Hearing held: October 17, 2001
Transcript received: November 19, 2001
Proposal for decision issued: March 20, 2002

Appearances

	Applicant
David Gross	Comstock Oil & Gas, Inc.
R. Gray Powers	
Mark Williams	
	Protestant
Glenn Johnson	Alabama-Coushatta Indian Tribe
James M. Clark	

EXAMINERS' REPORT AND PROPOSAL FOR DECISION

STATEMENT OF THE CASE

Comstock Oil & Gas, Inc. ("Comstock") is seeking an exception to Statewide Rule 38 to prevent waste and protect correlative rights by producing Well No. 15 on its 704-acre W.T. Carter and Bro. Unit Lease in the Double A Wells (Woodbine) Field, Polk County. This application is protested by the Alabama-Coushatta Indian Tribe ("the Tribe"), who is the interest owner of an unleased tract that corners into the W.T. Carter and Bro. Unit ("Carter") Lease. The Tribe has other property offsetting the Carter Lease that is leased to Comstock.

The Tribe believes Well No. 15 is not necessary to prevent waste. The Carter Lease is already more densely developed than Comstock's Tribal lease and therefor may drain reserves from the Tribal lease.

DISCUSSION OF THE EVIDENCE

Applicant's evidence

The Double A Wells (Woodbine) Field was discovered in 1985, and rules were adopted

December 4, 1996, under Oil & Gas Docket No. 03-0213347. The field rules specify 640-acre density, with optional 320-acre density, and wells must be at least 933' from lease lines and 1867' apart. The subject well was spudded on August 23, 2001, under a permit for a Wildcat Field. It does not require an exception to Rule 37 in the subject field as it is 965' from the nearest lease line and 2000' from the nearest well in the same field.

Comstock assumed operations of the 19 wells in the field in 1996, and has drilled another 40 wells since then. At the time Comstock purchased the field, the field's cumulative production was 57.9 BCFe,[1] and the predicted total recovery was 180 BCFe. Cumulative production is already over 300 BCFe, and the field's ultimate recovery is now estimated to be 400 BCFe. Daily field production is 80 million cubic feet of gas (MMCF) and 2800 barrels of condensate. Comstock believes that ultimate recoveries have always been underestimated in this field due to the use of inappropriate water saturation and porosity cutoffs.

The reservoir rock was deposited in a complex deltaic environment and there is considerable variation in permeability and porosity between wells, even those on the same lease. The productive capabilities of wells also vary dramatically. The initial bottom-hole pressure on the Carter Lease was 11,311 psi, and in this hearing Comstock assumed the abandonment pressure will be 515 psi, for a 93% recovery factor. Based on Comstock's average porosity and water saturation values, the recoverable gas underneath the Carter Lease is estimated to be 72.465 BCFe.

The first well on the Carter Lease, No. 6, was drilled in 1993, and was perforated from 13,988 to 14,101 feet. It encountered better sand quality and thickness than previous field wells and initially flowed at a daily rate of 15 MMCF and 1200 barrels of condensate. Well No. 6 has already recovered 25.5 BCFe of gas. The second well on the lease, No. 7, was drilled in 1994, and this well has already recovered 26.5 BCFe.

Comstock testified at this hearing that net pay in Well No. 6 is 105' and in Well No. 7 is 116'. Average porosity in Well Nos. 6 and 7 is 13% and the water saturation is 25 to 32%. Comstock testified that it expects the ultimate recovery for each well to exceed 29 BCFe. Well No. 12 was drilled early in 2000, as an exception to Rule 38, and it encountered reservoir properties similar to the two previous wells. However, the reservoir was partially depleted and Well No. 12's ultimate recovery is expected to be only 4.9 BCFe. Comstock drilled Well No. 10 in December of 2000, also as an exception to Rule 38. Well No. 10 encountered poorer quality reservoir, with only 10% porosity and 40% water saturation, and its ultimate recovery is now expected to be 3.6 BCFe. Comstock testified that the total production from the first four wells on this lease will be 67.2 BCFe--which is 5.244 BCFe less than what it believes was originally recoverable from the lease.

Well No. 15 has not yet been tested in the Double A Wells (Woodbine) Field. Based on its characteristics during drilling, Comstock estimates the bottom-hole pressure in Well No. 15 to be 8652 psi. This pressure would mean that the reservoir around Well No. 15 still has 89% of the original gas in place. The well encountered 78' of net pay, porosity of 9% and water saturation of 52%, and Comstock estimates its ultimate recovery will be only 1.67 BCFe. According to Comstock, Well No. 15 will only be able to recover a portion of the 5.244 BCF originally present under the Lease that will

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[1] BCFe stands for billion cubic feet equivalent. The condensate production--3,000,000 barrels at this time--has been converted to its equivalent in cubic feet and added to the cumulative gas production measured in cubic feet.

not be recovered by the first four wells.

Comstock calculated the drainage area of Well No. 15 to be 43 acres based on its reservoir properties. Well No. 15 is the most south-easterly well on the lease and Comstock testified that the reservoir rock becomes less porous and less permeable in this direction. The area has not been substantially drained by the previous wells and Comstock believes that no other well at a regular location would be able the recover the reserves that Well No. 15 can. Because of the deterioration of the reservoir on this side of the field, any regular wells on offsetting leases would also have small drainage areas and not be able to fully drain the area around Well No. 15.

Assuming radial drainage, Well No. 15 will drain the recoverable gas from as far 772 feet away. Because the well is 1080' from the Tribe's unleased land, Comstock believes the Tribe will be unaffected by production from Well No. 15. If drainage is not radial, Well No. 15 will drain preferentially from the better, thicker reservoir away from the lease line and less than 772 feet in the direction of the Tribe's unleased land.

Protestant's evidence

The Tribe believes that Comstock must show that the area around Well No. 15 is different from the rest of the field to show waste will occur in Well No. 15 is not produced. Although the depositional environment of the reservoir is complex, Well No. 15 is not located on any unusual feature.

The Tribe presented evidence from Comstock's testimony to the Commission at the field rule hearing and from the two previous administrative Rule 38 exception applications. According to the Tribe, Comstock's previous submissions show that its interpretations have alternated over time, as needed to justify whatever exception Comstock sought at that time. For example, in the 1996 field rule hearing, the Carter Well No. 7 was reported to have the thickest section at 78', and now Comstock gives it 116' of net pay. Comstock's assumed recovery factor has increased from 79% in 1996, to 93% in this hearing, and its assumed abandonment pressure has decreased from 1500 to 500 psi. Changes such as these allow Comstock to keep inflating the recoverable reserves on the Lease, according to the protestant, to keep justifying more wells.

Similarly, the Tribe believes that over time Comstock has kept revising downward most of its estimates of the ultimate recovery that the existing wells will achieve. The data sheet filed October 5, 2000, for the administrative Rule 38 for Well No. 10, estimates recovery from Well No. 12 will be 6.47 BCFe. The data sheet filed July 11, 2001, for an administrative Rule 38 for the subject well, estimates Well No. 12 will recover 6.38 BCFe. At this hearing, Comstock testified Well No. 12 will produce 4.90 BCFe. In July, Comstock estimated Well No. 12 would produce 6.365 BCFe, but three months later at the hearing, Comstock estimated Well No. 12 would produce only 3.648 BCFe.

Comstock's October 2000 data for the administrative Rule 38 for Well No. 10, estimated the original recoverable reserves for the lease to have been 72.78 BCFe and the EUR (estimated ultimate recovery) of the three existing wells to be 66.2 BCFe. In its July 2001 Rule 38 application for the subject well, Comstock estimated the recoverable reserves under the lease to have been 88 BCFe, and the ultimate recovery of the first four wells to be 72 BCFe. At the October hearing, Comstock re-interpreted the recoverable reserves to have been 72.465 BCFe, and the EUR of the first four wells to be 67.2 BCFe. The recovery factor Comstock used in July was 1180 MCF per acre-foot, but in October, 2001, it testified to a recovery factor of 1050 MCF per acre-foot. Comstock gave the average reservoir

thickness as 88' in October of 2000, as 106' in July of 2001 and as 98' at the hearing.

The Tribe believes that the existing wells on the Carter Lease will ultimately produce more reserves than were originally recoverable under its 704 acres. The Tribe made its own analyses of the possible recoveries of the four producing wells using three different methods--material balance, producing rate vs cumulative production, and P/Z^2. Depending on the method chosen, the estimated recovery totals for the four producing wells ranged from 83.4 BCFe to 95.6 BCFe. This is more than the volumetric calculation of 72.465 BCFe that Comstock presented at this hearing.

The Tribe believes that Comstock has inflated its volumetric calculations by increasing its net pay estimates whenever it suited Comstock's purposes. In fact, assuming the net pay and recovery factors from the 1996 field rule hearing, Well Nos. 6 and 7 alone would have been sufficient to drain the entire lease as, based on the Tribe's calculations, their combined drainage area is 705 acres.

According to the Tribe, Comstock's Carter wells will certainly drain gas from the acreage the Tribe has leased to Comstock, as the Tribe's producing units are underdeveloped in comparison to the Carter Lease and other Comstock units. The Carter Lease, with four producing wells, is already developed to 176 acres per well, while the two offsetting Tribal units have 625 acres assigned per well and 289 acres per well, respectively. Two offsetting non-Tribal units are developed with 142 acres per well and 128 acres per well, respectively.

The Tribe also believes the ultimate recovery and drainage area of Well No. 15 have been underestimated, based on the evidence that Comstock previously submitted to the Commission. If the drainage area of Well No. 15 is greater than 43 acres, the Tribe's unleased acreage may well also be affected.

EXAMINERS' OPINION

To establish that it is entitled to an exception to Rule 38 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 is not possible 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, as part of this proof, the applicant must provide a calculation of the current reserves underlying its lease. Under this standard, Comstock must show that Well No. 15 is necessary to provide it with a reasonable opportunity to recover its fair share of the reserves currently underneath the Carter Lease. Comstock was not able to show the existing wells will not recover its fair share.

According to Comstock's testimony, the G-10 pressures it reports to the Commission are not accurate enough for the Tribe to use for material balance calculations, because it does not shut the wells in long enough. It also testified that its wells have had production restricted and their historical rates cannot be used to project ultimate recoveries. Comstock thus tried to explain that contrary evidence based on its own data could not be trusted due to flaws that it alone could know about.

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[2] P/Z refers to a graphical plot of the decline of bottom-hole pressure, divided by a Z-factor, as the cumulative production increases. The Z-factor is based on the gas composition, pressure and temperature.

Comstock's rebuttal testimony to the Tribe's estimated ultimate recoveries of the existing wells was not persuasive in showing that the Tribe's various methods were inaccurate. Comstock had included evidence with its administrative application for Well No. 10 in October 2000 that showed the decline rates on Well Nos 6 and 7 had been artificially low until the flowing pressure was reduced to the line pressure. However, the actual changes in the decline rates did not match the timing that Comstock testified to. Comstock claimed the recent changes in slope on the protestant's material balance and P/Z curves for Well Nos. 6 and 7 proved that the decline rate changed when flowing pressure reached line pressure, and therefor these methods were invalid here. In fact, based on Comstock's exhibits, the flowing pressure reached line pressure long before the material balance and P/Z curves changed slope.

Comstock's volumetric calculations of the amount of recoverable reserves originally present under the Carter Lease are not reliable. While it is certainly reasonable to change interpretations as new wells are drilled and more production data can be plotted, Comstock's changes do appear to be always in the direction needed to justify whatever exception it is requesting at that time.

No analysis of the amount of current reserves under the Carter Lease was made. Comstock's witness responded to a question about current reserves that "...it is very difficult to quantify gas that would have left the unit to another unit." It is therefor unknown if the four producing wells on the Carter Lease, with or without an additional Rule 38 exception well, have caused or will cause uncompensated drainage from offsetting tracts.

In order to get an exception to Rule 38 to prevent waste, an applicant must establish three elements:1) that unusual conditions, different from conditions in adjacent parts of the field, exist under the tract for which the exception is sought; 2) that, as a result of these conditions, hydrocarbons will be recovered by the well for which a permit is sought that would not be recovered by any existing well or by additional wells drilled at regular locations; and, 3) that the volume of otherwise unrecoverable hydrocarbons is substantial.

It does appear that allowing Well No. 15 to produce will permit the recovery of a substantial amount of hydrocarbons that would otherwise not be produced by any existing well or any well that could be drilled at a regular location.

The reservoir characteristics at Well No. 15 are poor and it is 2000' from the nearest producing well. The first four wells on the lease have already produced 56 BCFe yet the bottom-hole pressure is still over 8000 psi at the location of Well No. 15. Better parts of the reservoir are drained more quickly, as is typical. When Well No. 12 was drilled 1900' from the nearest well, earlier wells had recovered 47 BCFe and drained the reservoir around Well No. 12's location sufficiently that it's bottom-hole pressure was only 2771 psi. Whether the existing wells produce 10 or 30 BCFe more little of it will come from the poorer reservoir around Well No. 15.

Well No. 15 different from the other nearby wells because it is near the southwestern edge of the reservoir. The reservoir rock is thinner than the other wells on the Carter Lease, though there are other producing wells with 41' of net pay or less according to Comstock's exhibits. The reservoir rock is also getting less porous and the pore space has a higher saltwater saturation on the southwest side of the lease. There were two wells drilled farther to the southeast than Well No. 15, each about 1000' southeast of the Carter Lease line, and neither were successful in the Woodbine Formation. Both were drilled by Union Oil of California on Alabama-Coushatta leases--one encountered 26' of sand and one

encountered 45' of sand. It is doubtful that anyone would ever drill a regular well for the Woodbine Formation on the acreage to the southeast of Well No. 15. Such a well would be less than 100' closer to the field than the unsuccessful Union Oil of California wells. If Well No. 15 is not allowed to produce, most of the estimated recovery of this well--1.672 BCFe will remain unrecovered.

FINDINGS OF FACT

1. Notice of the Rule 38 application for the Comstock Oil & Gas, Inc. ("Comstock") W.T. Carter and Bro. Unit ("Carter") Lease Well No. 15 was issued to all offset operators and unleased mineral interest owners on July 30, 2001.

2. Notice of the hearing on the subject Rule 38 application issued to all offset operators and unleased mineral interest owners on August 30, 2001.

3. Field rules for the Double A Wells (Woodbine) Field require wells to be 933 feet from lease lines and 11867 feet apart, with 640-acre proration units with 320-acre optional units.

4. Comstock's Carter Lease Well No. 15 complies with Statewide Rule 37 but requires an exception to State Rule 38 because it will be the fifth producing well on a 704-acre pooled unit.

5. This application is protested by the Alabama-Coushatta Indian Tribe ("the Tribe"), who is the interest owner of an unleased tract that corners into the Carter Lease. The Tribe also has leased property offsetting the Carter Lease that is leased to Comstock.

6. Total production from the first four wells on this lease has been 57 BCF equivalent and the remaining production will be an additional10 to as much as 30 BCFe (converting condensate to its equivalent in cubic feet and adding this to the gas production).

7. The first two wells on the Carter Lease were drilled in 1993 and 1994, and the initial bottom-hole pressure was 11,311 psi.

8. Well No. 12 was drilled as an exception to Rule 38 in February of 2000, 1900' from the nearest well. At that time, the earlier wells had recovered 47 BCFe and drained the reservoir around Well No. 12's location sufficiently that its bottom-hole pressure was only 2771 psi.

9. Well No. 10 was drilled as an exception to Rule 38 in December of 2000, 2000' from the nearest well. The reservoir around Well No. 10's location was less drained and it encountered bottom-hole pressure of 8703 psi.

10. The reservoir in Well No. 10 has lower porosity and higher water saturation than the other three producing wells on the lease.

11. Insufficient evidence was presented to show that a fifth well is necessary for Comstock to have a reasonable opportunity to produce the current recoverable reserves under the subject lease.

    a. The volumetric calculations presented by Comstock do not address the amount of

current reserves underneath the lease.

b. Volumetric calculations require determination of net pay thickness but Comstock has not determined this value in a consistent manner in all of its Rule 38 exception applications.

c. Various methods of determining the remaining reserves of the four existing wells show that they will recover between 83.4 BCFe and 95.6 BCFe, more than the 72.465 BCFe that Comstock testified was originally recoverable.

12. Unusual conditions differentiating Well No. 15 from wells in adjacent parts of the field, comprise low porosity, high water saturation and nearby pinchout of the producing sandstones.

13. If Well No. 15 is not allowed to produce, most of the estimated recovery of this well--1.672 BCFe--will remain unrecovered.

a. The reservoir characteristics at Well No. 15 are the poorest of any well on the lease and it is 2000' from the nearest producing well.

b. The first four wells on the lease have already produced 56 BCFe yet there is still over 8000 psi of bottom-hole pressure at the location of Well No. 15.

c. Better parts of the reservoir, northwest of Well No. 15, are drained more quickly as is shown by the lower reservoir pressure encountered by Well No. 12.

d. No existing well will be able to recover all of the reserves around Well No. 15 on the Carter Lease.

e. Reservoir quality deteriorates further to the southeast of Well No. 15 and there are two wells that unsuccessfully tested the Woodbine Formation about 1000' southeast of the Carter lease line.

CONCLUSIONS OF LAW

1. Proper notice was given to all necessary parties as required by 16 TEX. ADMIN. CODE § 1.45 and other applicable statutory and regulatory provisions.

2. All things necessary to give the Commission jurisdiction to decide this matter have been performed or have occurred.

3 An exception pursuant to Statewide Rule 38 to the field rules regarding well densities is necessary to permit producing the W.T. Carter and Bro. Unit Lease Well No. 15 in the Double A Wells (Woodbine) Field.

4. An exception to Statewide Rule 38 to produce W.T. Carter and Bro. Unit Lease Well No. 15 in the Double A Wells (Woodbine) Field is necessary to prevent waste.

EXAMINERS' RECOMMENDATION

The examiners recommend that the application of Comstock Petroleum Corporation for a Rule 38 exception permit for the W.T. Carter and Bro. Unit Lease Well No. 15, at the requested location, in the Double A Wells (Woodbine) Field, Polk County, be **GRANTED.**

Respectfully submitted,

Mark Helmueller
Hearings Examiner

Margaret Allen
Technical Hearings Examiner

Date of Commission Action_____