

THE APPLICATION OF MASTERS RESOURCES, LLC., TO PERMANENTLY CLASSIFY ITS STATE TRACT 9-12B LEASE, WELL NO. 1, IN THE FISHERS REEF (9800 FB D) FIELD AS A GAS WELL, CHAMBERS COUNTY, TEXAS

Heard by: Margaret Allen, Technical Hearings Examiner

Procedural history

Application received: August 25, 2003

Hearing held: September 24, 2003

Appearances

Dale Miller
Keith Lilie

Representing
Masters Resources, LLC

EXAMINER'S REPORT AND RECOMMENDATION

STATEMENT OF THE CASE

Masters Resources, LLC ("Masters") is seeking to have its State Tract 9-12B Lease, Well No. 1, in the Fishers Reef (9800 FB D) Field, permanently classified as a gas well. The applicant is also seeking to have this well's overproduction canceled.

DISCUSSION OF THE EVIDENCE

The Fishers Reef (9800 FB D) Field was discovered in December, 2000, with the completion of Masters' State Tract 9-12B Lease, Well No. 1, still the only well in the field. The subject well was perforated from 9684' to 9714' and tested, on January 20, 2001, at a maximum daily rate of 3811 MCF and a gas/oil ratio of 5899 cubic feet per barrel. Cumulative production since that time is 615 MMCF of gas and 72,000 barrels of condensate.

On the distillation test reported on Form G-5, this well did not meet the standards for classification as a gas well. The gas/oil ratio was less than 12,500 cubic feet per barrel and the hydrocarbon liquid was colored brown. The initial boiling point was 183° F., above the maximum permitted for gas wells of 120°; and at 80% recovery the boiling temperature was 567° F., exceeding the maximum temperature of 520° permitted for gas well classification.

A fluid sample was taken and recombined at initial reservoir temperature and pressure, and the recombined fluids were evaluated at various pressures. The initial reservoir pressure was 7645 psi and temperature was 213° F. Constant composition expansion showed the reservoir fluid was a single phase gas until the reservoir pressure declined to the retrograde dew point pressure of 4577 psi, when small amounts of liquid began to condense from the gas. There were no critical points detected in the analysis

of the reservoir fluid, indicating the gas is above the critical point and will not encounter a bubble-point.

Retrograde gas reservoirs may have a gas/oil ratio as low as 3300 cubic feet per barrel. The low gas/oil ratio in this one indicates that a relatively high percentage of liquid will form in the reservoir after the pressure falls below the dew point. The liquid formed in a retrograde condensate reservoir can seldom flow and is rarely produced. The well stream from this reservoir contains 67.461 Mole % methane and 10.221 Mole % heptanes plus. The liquid gravity is 53.7° API. Retrograde gases contain less than 12.5 Mole % heptanes plus, while typical retrograde gases contain more than 70 Mole % methane. The gas in this well is unusually rich for a retrograde condensate reservoir.

The maximum percent of hydrocarbon pore volume occupied by the retrograde liquid will be 36.4% when the reservoir pressure reaches 3404 psia. It is widely accepted that the minimum saturation for liquid to flow in the reservoir is 10% to 20%. However, very rich retrograde gases, with initial producing gas/oil ratios of 3300 to 5000 cubic feet per barrel, will condense sufficient liquid to fill 35% or more of the reservoir volume. Even this large quantity of condensate will rarely flow and normally cannot be produced.¹

Masters believes its State Tract 9-12B Lease, Well No. 1, should be permanently classified as a gas well because the small volumes of liquid in the reservoir below the dew point is not mobile and will not be recovered as liquid at the surface.

Statewide Rule 79 defines a gas well as:

....a well which produces hydrocarbon liquids, a part of which is formed by a condensation from a gas phase and a part of which is crude petroleum oil, shall be classified as a gas well unless there is produced one barrel or more of crude petroleum oil per 100,000 cubic feet of natural gas; and that the term "crude petroleum oil" shall not be construed to mean any liquid hydrocarbon mixture or portion thereof which is not in the liquid phase in the reservoir, removed from the reservoir in such liquid phase, and obtained at the surface as such.

The subject well was temporarily classified as a gas well in January, 2002, based on the results of a PVT test. This classification expired January 29, 2003, but the Commission did not inform the applicant of the well's reclassification as an oil well until August 4, 2003. Masters believes that because the liquid hydrocarbons in the reservoir are immobile, the liquid produced at the surface does not meet the definition of 'crude petroleum oil'. Instead, the produced liquid is a product of condensation and should therefor not be used as a basis for classifying the well as an oil well. Masters also believes that any overproduction that occurred after the well was reclassified to oil should be canceled.

FINDINGS OF FACT

1. Notice of this hearing was given to all operators and interest owners in the Fishers Reef (9800 FB-D) Field on September 11, 2003.

¹ McCain, William D, 1990, The Properties of Petroleum Fluids.

2. The Masters Resources, LLC., State Tract 9-12B Lease, Well No. 1 was the discovery well for the Fishers Reef (9800 FB-D) Field in December, 2000.
3. The Masters Resources, LLC., State Tract 9-12B Lease, Well No. 1 produces from a retrograde condensate reservoir and virtually all the liquids produced by this well are the product of condensation after the hydrocarbons left the reservoir.
 - a. This well was perforated from 9684' to 9714'.
 - b. It was tested January 20, 2001, at a maximum rate of 3811 MCF/D, with a gas/liquid ratio of 5899 cubic feet per barrel.
 - c. The initial reservoir pressure was 7645 psia, and the initial reservoir temperature was 213° F.
 - d. The fluid was a single-phase gas until the reservoir pressure reached 4577 psig (the retrograde dew point pressure), when small amounts of liquid began to condense from the gas.
 - e. The highest percentage of liquid in the reservoir, 36.4%, will be reached when the bottomhole pressure declines to 3404 psi.
 - f. As the bottomhole pressure declines below 3404 psi, the percentage of liquid in the reservoir will decline, reaching 31.73% when the bottomhole pressure is 1104 psi.
4. The Fishers Reef (9800 FB-D) Field is a retrograde condensate reservoir, which was initially a single-phase gas reservoir.
5. At some time during the life of the field, liquid hydrocarbons will exist in the reservoir at a ratio of less than 100,000 cubic feet per barrel.
6. The liquid hydrocarbons will be present at a maximum volume of 36.4% of the hydrocarbon pore space in the reservoir but will be immobile.
7. Any liquid hydrocarbons produced at the surface have condensed from the gas and do not meet the statutory definition of crude petroleum oil.
8. The condensed liquids produced by wells in the Fishers Reef (9800 FB-D) Field should not be considered in determining the gas-oil ratio or the classification of wells as oil wells because the liquids produced at the surface are not crude petroleum oil.
9. The Masters Resources, LLC., State Tract 9-12B Lease, Well No. 1 has accumulated overproduction since January 29, 2003, when the Commission reclassified it as an oil well.
10. There are no other wells in the Fishers Reef (9800 FB D) Field and cancellation of the overproduction will not harm correlative rights.

CONCLUSIONS OF LAW

1. Proper notice was given as required by statute.
2. All things have been done or occurred to give the Railroad Commission jurisdiction to resolve this matter.
3. The Masters Resources, LLC., State Tract 9-12B Lease, Well No. 1 is completed in a gas condensate reservoir and is a gas well based on the definition pursuant to Statewide Rule 79(a)(11)(C).
4. Cancellation of overproduction for the Masters Resources, LLC., State Tract 9-12B Lease, Well No. 1 in the Fishers Reef (9800 FB D) Field will not harm correlative rights.

EXAMINER'S RECOMMENDATION

Based on the above findings and conclusions, the examiner recommends that the Masters Resources, LLC., State Tract 9-12B Lease, Well No. 1, in the Fishers Reef (9800 FB D) Field, be permanently classified as a gas well, as per the attached order. All overproduction for this well should be canceled.

Respectfully submitted,

Margaret Allen
Technical Hearings Examiner

Date of Commission Action: October 21, 2003