

THE APPLICATION OF WESTPORT OIL & GAS COMPANY L.P. TO PERMANENTLY CLASSIFY WELLS IN THE BUNA, WEST (WILCOX) FIELD AS GAS WELLS, JASPER COUNTY, TEXAS

Heard by: Margaret Allen, Technical Hearings Examiner

Procedural history

Application received: July 31, 2003

Hearing held: September 17, 2003

Appearances

Dale Miller

Representing

Westport Oil & Gas Company

EXAMINER'S REPORT AND RECOMMENDATION

STATEMENT OF THE CASE

Westport Oil & Gas Company ("Westport") is seeking to have all wells in the Buna, West (Wilcox) Field permanently classified as gas wells. Two field wells have already been permanently classified as gas wells by final orders.

DISCUSSION OF THE EVIDENCE

The Buna, West (Wilcox) Field was discovered at a depth of 10,958' in 1956, and is considered an associated gas and oil field. There are twenty-five active gas wells, all operated by Westport, and no oil wells. Allocation is by Statewide Rule but has been suspended. Twenty-two of the gas wells were drilled between 1985 and 1989, one well was drilled in 1991, one in 1999 and two in 2001. All of these wells are located on a long, narrow structure between two east-west faults, and appear to be in a single reservoir.

The liquid gravities from all wells in this field are reported to be less than 50° API, and most had an initial gas/liquid ratio less than 12,500 cubic feet per barrel. Cumulative production from the 22 older wells is 53 BCF and 7,000,000 barrels of condensate. Westport's ARCO Fee Section 83 Lease Well No. 2 was permanently classified as a gas well under Oil & Gas Docket No. 03-0232857, on December 20, 2002. Westport's ARCO Fee Diamond GU Well No. 3 was permanently classified as a gas well under Oil & Gas Docket No. 03-0233212 on January 21, 2003.

At this hearing, Westport provided PVT data from five wells in addition to data from the two wells that were included in the previous hearings. Fluid samples from all of these wells were recombined at initial reservoir temperature and pressure, and the recombined fluids were evaluated at various pressures. In all cases, the reservoir fluid was single phase gas until the reservoir pressure reached the retrograde dew point pressure, when small amounts of liquid began to condense from the gas. The highest percentage of liquid that formed in the reservoir around these wells as the pressure

decreased ranged from 7% to 19%. The results of the tests for all seven wells are shown in the table below.

| WELL NAME | Test type | Dew pt pressure | Initial pressure | highest % liquid | pressure at highest liquid % |
|------------------------|-----------|-----------------|------------------|------------------|------------------------------|
| ARCO Fee Diamond GU #1 | CCE | 5920 | 8299 | 19.21 | 2500 |
| ARCO Fee Silsbee #1 | CCE | 4750 | 8509 | 13.13 | 2000 |
| Temple Eastex #1 | Sim | 5226 | 8533 | 17.58 | 2500 |
| Santa Fe Energy #1 | Sim | 5391 | 8069 | 15.84 | 2000 |
| ARCO East Diamond #1 | Sim | 5505 | 6988 | 6.59 | 3000 |
| ARCO Fee Sec. 83 #2 | CCE | 4666 | 7041 | 14.20 | 2000 |
| ARCO Fee Diamond GU #3 | CCE | 4629 | 7593 | 12.90 | 2000 |

It is widely accepted that oil in a reservoir is essentially immobile until it reaches a saturation of 10 to 20%¹. Westport believes all wells in this field should be permanently classified as gas wells because the small volumes of liquid in the reservoir below the dew points are 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.

Westport 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 not be used as a basis for classification of the wells as oil wells.

FINDINGS OF FACT

1. Notice of this hearing was given to all operators and interest owners in the Buna, West (Wilcox) Field on August 27, 2003.

¹ Craft and Hawkins, 1954, *Applied Petroleum Reservoir Engineering*

2. The Buna, West (Wilcox) Field was discovered in discovered at a depth of 10,958' in 1956, and is considered an associated gas and oil field.
3. The twenty-five active gas wells, all operated by Westport, have all been completed since 1985.
4. Two wells, the Westport's ARCO-Fee Section 83 Lease Well No. 2 and ARCO Fee Diamond GU Well No. 3, were permanently classified as gas wells during the last year.
5. PVT analyses from an additional five wells shows they also produce from a retrograde condensate reservoir and virtually all the liquids produced are the product of condensation after the hydrocarbons left the reservoir.
 - a. Their initial reservoir pressures ranged from 6988 to 8533 psia.
 - b. The fluids tested from each well were single-phase gas until the reservoir pressure reached the retrograde dew point pressure (which ranged from 4750 to 5920 psi), when small amounts of liquid began to condense from the gas.
 - c. The greatest percentage of liquid in the reservoir around each well ranged from 6.59% to 19.21%.
6. The Buna, West (Wilcox) Field is a retrograde condensate reservoir, which was initially a single-phase gas reservoir.
7. 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.
8. Any liquid hydrocarbons produced at the surface have condensed from the gas and do not meet the statutory definition of crude petroleum oil.
9. The condensed liquids produced by wells in the Buna, West (Wilcox) 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.

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 Buna, West (Wilcox) Field is a gas condensate reservoir and all field wells are gas wells based on the definition pursuant to Statewide Rule 79(a)(11)(C).

EXAMINER'S RECOMMENDATION

Based on the above findings and conclusions, the examiner recommends that present and future wells in the Buna, West (Wilcox) Field, be permanently classified as gas wells, as per the attached order.

Respectfully submitted,

Margaret Allen
Technical Hearings Examiner

Date of Commission Action: October 7, 2003