

OIL AND GAS DOCKET NO. 08-0223800

THE APPLICATION OF GREAT WESTERN DRILLING COMPANY FOR INCREASED NET GAS OIL RATIO AUTHORITY FOR THE SETH CAMPBELL LEASE WELL NO. 1, KERMIT (MCKEE) FIELD, WINKLER COUNTY, TEXAS

Heard by: Margaret Allen, Technical Hearings Examiner

Procedural history

Application received: January 21, 2000

Hearing held: February 18, 2000

Appearances

Sam Roberts

Dennis Hendrix

David Osterlund

Representing

Great Western Drilling Company

EXAMINER'S REPORT AND RECOMMENDATION

STATEMENT OF THE CASE

Great Western is requesting increased net gas/oil ratio authority with a daily gas limit of 600 MCF for its Seth Campbell Lease, Well No. 1 in the Kermit (McKee) Field, Winkler County.

DISCUSSION OF THE EVIDENCE

The Kermit (McKee) Field was discovered in 1960, and has had over 20 gas wells assigned to it at various times. Cumulative production from the field is 11.8 BCF of gas and 235,000 barrels of condensate. Great Western worked over the Seth Campbell Well No. 1 (originally drilled by U.S. Smelting) and completed the well in the McKee formation during September of 1999. The operator filed a Form G-1 for the S. Campbell No. 1 but the form was rejected because several of the factors considered indicated the well produced oil not gas. Great Western has filed a Form W-2 to classify the well as oil but there is no lease number as yet.

All of the previous field wells have been classified as gas wells and the allocation formula is now suspended. The gas well classification of the field wells was based on a combination of factors including the gas/oil ratio and oil gravity.

The field produces from a structural closure within a northwest trending uplifted fault block. The McKee formation, located just above the Ellenburger comprises the rock between 9990 to 10,108 feet. The logs of the McKee formation indicate four pulses of sand deposition separated by shaly beds, with the lowermost sand being tight.

The subject well was perforated from 10,000 to 10,075 feet, and its initial daily potential, as tested in November 1999, was 550 MCF and 17 BO with 3 BW. The Campbell No. 1 is the lowest currently producing well on the structure but does not have the lowest gas/oil ratio nor the lowest liquid gravity. At least four gas wells at higher structural elevations produce liquids with lower API gravity than the 47.3 degree gravity oil in the Campbell Well No. 1. At least seven other gas wells at higher elevations have both initial and current gas/oil ratios less than the 39,000 cubic feet per barrel reported for the Campbell No. 1. The Campbell No. 1 is the first well to be classified by the Commission as an oil well in this field, due of its combination of both low gas/oil ratio and low API gravity.

Most of the field wells had initial gas/oil ratios of less than 100,000 cubic feet per barrel, which would indicate oil production rather than gas, assuming no consideration of the other factors on Form G-5. The applicant believes this field to be a retrograde condensate reservoir. Another well, completed at the same time as the Campbell No. 1, the W.E. Baird 13-81, tested at a rate of 362 MCF with only a small amount of condensate, but the gravity of that condensate was 41.6 degrees.

A step-rate test was conducted on the Campbell No. 1, between December 10, 1999, and January 19, 2000. On a 22/64th inch choke, the daily gas rate was 570 MCF and 14 barrels of oil, for a gas/oil ratio of 40,000 cubic feet per barrel. On a 10/64th inch choke, the well produced near the current gas allowable of 344 MCF along with 10 BOPD, for a gas/oil ratio of 32,000. The lowest gas/oil ratio during the test was 30,000 when the daily gas rate averaged 405 MCF, but both producing rates and GOR were erratic at that rate. At the lower gas rates, the well had to be produced on an automatic valve to prevent freezing and a permanent heater will be installed if this application is denied.

Great Western believes that its well exhibits the same general characteristics of a retrograde condensate reservoir as do the other field wells which are classified as gas wells. If these gas wells can produce unlimited amounts of gas due to the suspension of the allocation formula, the Campbell No. 1 should not have its gas production limited to the yardstick allowable of 344 MCF/D. The well has accumulated about 16 MMCF of gas overproduction.

FINDINGS OF FACT

1. Notice of this hearing was given to all operators in the Kermit (McKee) Field on February 7, 2000.
2. The Kermit (McKee) Field has produced 11.8 BCF and 235 MBO since 1960, and the newly-completed subject well is the first to be classified as an oil well.
3. The Kermit (McKee) Field produces from a retrograde condensate reservoir and the subject well has similar producing characteristics to those of the wells classified as gas wells.
4. All of the 15+ gas wells currently active in this field can produce at their maximum capability because the allocation formula has been suspended.
5. The initial daily test rate of the Campbell No. 1 was 17 BOPD and 550 MCF, and the well's current daily allowable is 172 barrels of oil and 344 MCF.
6. The subject well has the lowest structural elevation in this field, but its gas/oil ratio of 39,000 cubic feet per barrel is higher than in some wells (both initial and current ratios) and its API gravity of 47.3 degrees is higher than in some structurally higher wells.
7. A step rate test on the Campbell No. 1 was conducted from December 10, 1999, to January 19, 2000, and indicated relatively small differences in gas/oil ratio as the gas rate increased.
 - a. On a 22/64th inch choke, the well averaged 14 BOPD and 570 MCF/D, for a gas/oil ratio of 40,000 cubic feet per barrel.
 - b. On a 10/64th inch choke, the well averaged 334 MCF/D and 10 BOPD, for a gas/oil ratio of 32,000 cubic feet per barrel.
 - c. The lowest gas/oil ratio during the test was 30,000 but the well's production could not be stabilized at the producing rates necessary to achieve that gas/oil ratio.
 - d. On the smaller choke sizes, the well experienced freezing and a heater would be required to produce at the current gas allowable.
8. This well produces efficiently at a gas rate of 600 MCF/D and there is no reason to require the well to make up overproduction by producing it at a less efficient rate.

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. Granting increased gas oil ratio authority will prevent waste and protect correlative rights.

EXAMINER'S RECOMMENDATION

Based on the above findings and conclusions, the examiner recommends that increased net gas/oil ratio authority be approved for the Great Western Drilling Company Seth Campbell Lease Well No. 1 in the Kermit (McKee) Field. The recommended daily gas limit is 600 MCF. Any overproduction for this well should also be canceled.

Respectfully submitted,

Margaret Allen
Technical Hearings Examiner

Date of Commission Action: March 10, 2000

Exhibits

1. Map
2. Cross section A-A'
3. Cross section B-B'
4. Structure map near subject well
5. MicroLog of subject well
6. Electric log of subject well
7. Gamma ray/neutron log
8. Reservoir data
9. Characteristics of all producing wells
10. Graph of field production
- 10A. Table of field gas production since 1970
- 10B. Table of field condensate production
11. Initial gas rates of field wells
12. Map representation of maximum early gas rates
13. API gravity of field wells vs elevation
14. Initial GOR of field wells vs elevation
15. Current GOR of field wells vs elevation
16. Graph of well GOR data vs year
- 16A. Tabulation of well GOR data for three wells
- 17 and 18. Publications of McCain on retrograde condensate reservoirs
19. Graph of daily production data of subject well
- 19A. Tabulation of daily production data
20. Graph of step-rate test
- 20A. Tabulation of step-rate test
21. Impact of increased gas rate