



RAILROAD COMMISSION OF TEXAS

HEARINGS DIVISION

OIL AND GAS DOCKET NO. 7C-0300804

THE APPLICATION OF SHERIDAN PRODUCTION COMPANY, LLC TO CONSIDER INCREASED NET GAS-OIL RATIO AUTHORITY AND CANCELLATION OF OVERPRODUCTION FOR THE MENIELLE, L.B., LEASE, WELL NOS. 25 AND 29, I.A.B. (STRAWN) FIELD, COKE COUNTY, TEXAS

HEARD BY: Karl Caldwell – Technical Examiner
Jennifer Cook – Administrative Law Judge

HEARING DATE: July 22, 2016
CONFERENCE DATE: October 11, 2016

APPEARANCES: **REPRESENTING:**

APPLICANT: Sheridan Production Company, LLC

Bill Spencer
Jim Clark

EXAMINERS' REPORT AND RECOMMENDATION

STATEMENT OF THE CASE

Sheridan Production Company, LLC (Sheridan) requests authority to produce the Menielle, L.B., Lease, Well Nos. 25 and 29, I.A.B. (Strawn) Field, Coke County, Texas under increased net gas-oil ratio authority and cancellation of all overproduction. At the hearing, Bill Spencer, Sheridan's consultant, stated that Sheridan is no longer seeking an increased net gas:oil ratio (GOR) for the Menielle, L.B., Lease, Well No. 29. Sheridan has determined that increased net gas-oil ratio authority is not necessary for the current production rate. Therefore, Sheridan is only requesting the cancellation of over-production for the the Menielle, L.B., Lease, Well No. 29. For the the Menielle, L.B., Lease, Well No. 25, Sheridan is requesting a net gas limit of 350 Mcf per day and cancellation of all overproduction. The application is unopposed and the Technical Examiner and Administrative Law Judge (collectively "Examiners") recommend approval of the application.

DISCUSSION OF THE EVIDENCE

The Menielle, L.B. Lease, Well No. 25, API No. 42-081-31663, ("Well No. 25") and the Menielle, L.B., Lease, Well No. 29, API No. 42-081-31692, ("Well No. 29") are completed in the I.A.B. (Strawn) Field, in Coke County, Texas. The July 2016 oil and gas proration schedules show that Sheridan currently operates all wells in the I.A.B. (Strawn) Field. There are a total of two active oil wells in the subject field and one active gas well.

The two active oil wells in the field are Sheridan's Well Nos. 25 and 29. The July 2016 oil proration schedule shows the top oil allowable for oil wells in the field is 111 BOPD and the top casinghead gas allowable is 222 Mcf per day (2,000:1 GOR for the field). James Clark, a consulting petroleum engineer engaged by Sheridan, testified that no well in the field is capable of producing the daily top oil allowable. Mr. Clark testified that Well No. 29 has an oil allowable of 50 BOPD, which is the capacity of this well. Well No. 29 is not capable of producing the casinghead gas allowable of 222 Mcf per day. It is Well No. 25, that is exceeding the gas allowable.

The discovery well for the I.A.B. (Strawn) Field was the original completion of Well No. 25 in 1995. The potential test conducted on August 1, 1995 for Well No. 25 shows two sets of perforations, an upper set from 5,867 feet to 5,876 feet, and a lower set from 6,014 feet to 6,040 feet. Both sets of perforations are in the Strawn Formation. The two sets of perforations in Well No. 25 are not in communication. There is a water drive component to the reservoir and the well produces a fair amount of water, and the the potential test was conducted on a submersible pump. In looking at the upper zone and lower zone perforated in the discovery well, the lower zone is a gas zone, while the upper zone is an oil zone. Mr. Clark testified that both zones produce substantial amounts of water, and this is not a situation where you have a gas cap on top of an oil rim.

The Form W-2 for Well No. 25 filed on July 12, 1999 as a well-record only filing shows that a cast iron bridge plug (CIBP) was set at a depth of 6,000 feet with 3 sacks of cement on top of the CIBP. According to Mr. Clark the lower set of perforations were isolated in this well in an effort to shut off some of the water production. As a result, Well No. 25 was only producing from the upper set of perforations from 5,867 feet to 5,876 feet. The lower set of perforations remained isolated below the CIBP for more than 15 years. The most recent completion report for Well No. 25 shows that the CIBP has been drilled out, which has resulted in a significant increase in gas production. Well No. 25 is now producing from both the lower and upper zones that were originally perforated.

A production plot for Well No. 25 comparing production immediately before and after the CIBP was removed from the wellbore shows an oil rate, on average, of 30 to 40 barrels of oil per day (BOPD) with an average gas rate of 250 Mcf per day, and an

average water rate of 300 barrels of water per day (BWPD) prior to the plug being drilled out. Since the CIBP was removed, oil production has maintained an average rate of 30 to 40 BOPD. However, the daily average gas rate has increased from approximately 250 Mcf prior to the plug being removed, to the current rate of 350 Mcf per day. Water production has also increased by approximately 50 to 100 bbl per day since the plug was removed. Based on the production plot for Well No. 25, Mr. Clark concludes that the lower zone is contributing an additional 100 Mcf gas per day and 50 to 100 BWPD to the overall production of the well.

Sheridan attempted to perform a variable rate test on Well No. 25 by trying to choke the well back since the well is equipped with a submersible-pump that has a variable speed-drive. The test results show the GOR was fairly constant in producing Well No. 25 on a 32/64" choke, with a GOR between 11,000 to 13,000. On July 12, Well No. 25 was switched to a 28/64" choke size, which resulted in a drop in both oil and water production, while the gas rate did not drop significantly. The first few days after switching to the smaller choke size the GOR spiked to approximately 33,000. This was attributed to the electric submersible pump over-heating and shutting off because the pump did not have enough fluid passing through it to cool it. Mr. Clark testified that the pump is designed to move approximately 600 bbl of total fluid per day, and the pump was only moving between 210 to 220 bpd. After this issue was addressed, the GOR did not change from the 11,000 to 13,000 value observed when producing on the 32/64" choke. The oil rate remained fairly constant between July 15 and 19, 2016, while the gas rate declined from 350 Mcf to 330 Mcf during this same time period as the well was being choked back.

The main change observed in producing the well on the 28/64" choke as compared to the 32/64" choke was a change in the casing pressure. Casing pressure increased from 45 psi on the 32/64" choke to 135 psi on the 28/64" choke. Mr. Clark believes the increase in casing pressure is the result of a gas column building up on the tubing-casing annulus. This indicates to Mr. Clark that Well No. 25 is not equipped to be choked back because the submersible pump is designed to move more fluid on a daily basis, and the GOR remained fairly constant on the 32/64" choke and 28/64" choke. In Mr. Clark's opinion the GOR remained fairly constant on the different choke sizes because production from the Strawn interval in this field is not a situation where there is a gas cap above an oil rim. The gas production increase for Well No. 25 occurred between March and April of 2015, when the CIBP was drilled out, and the lower perforated zone was no longer isolated. Given that the lower zone produces approximately 100 Mcf per day with high water volumes, Mr. Clark does not see any other way for this lower zone to be produced if it is not produced along with the upper zone.

An analogous field to the I.A.B. (Strawn) Field in the area is the Jameson, SE. (Strawn) Field. According to Mr. Clark, both of these fields have the same stratigraphic equivalent net interval and both produce from the Pinnacle reef Strawn interval. The Jameson, SE. (Strawn) Field is located approximately 6.5 miles to the northwest of the

I.A.B. (Strawn) Field. The Jameson, SE. (Strawn) Field has a net GOR of 2,000 Mcf per day. Sheridan is requesting a net GOR of 350 Mcf per day for Well No. 25 based on the variable rate test results, and in Mr. Clark's opinion, the evidence supports a net GOR gas limit of 350 Mcf per day. In the absence of requested net GOR for Well No. 25, Sheridan would have to go back and set a CIBP above the lower zone in the well. If this were required, there is a real possibility that gas from lower zone would never be produced.

FINDINGS OF FACT

1. Notice of this hearing was provided to all operators in the field at least ten (10) days' prior to the date of the hearing and no protests were received.
2. The Menielle, L.B. Lease, Well No. 25, (API No. 081-31663) and the Menielle, L.B. Lease, Well No. 29, (API No. 081-31692), are completed in the I.A.B. (Strawn) Field, in Coke County, Texas.
3. The Menielle, L.B. Lease, Well No. 25 is the discovery well for the I.A.B. (Strawn) Field.
4. The Menielle, L.B. Lease, Well No. 25 was completed with two sets of perforations:
 - a. An upper set of perforations from 5,867 feet to 5,876 feet;
 - b. A lower set of perforations from 6,014 feet to 6,040 feet;
 - c. Both sets of perforations are in the Strawn Formation; and
 - d. The upper and lower set of perforations are not in communication.
5. The Menielle, L.B. Lease, Well No. 25 produces a fair amount of water as there is a water drive component to the reservoir.
 - a. On July 12, 1999 a cast iron bridge plug (CIBP) was set at a depth of 6,000 feet with 3 sacks of cement on top of the CIBP to isolate the lower set of perforations in an effort to shut off some of the water production;
 - b. The lower set of perforations remained isolated below the CIBP for more than 15 years;
 - c. The CIBP has been drilled out, which has resulted in a significant increase in gas production;

- d. The Menielle, L.B. Lease, Well No. 25 is now producing from both the lower and upper zones that were originally perforated;
 - e. Prior to the CIBP being drilled out, well production from the upper zone averaged 30 to 40 BOPD, 250 Mcf of gas per day, and 300 BWPD;
 - f. Since the CIBP was drilled out, oil production has maintained an average rate of 30 to 40 BOPD, while the gas rate has increased to 350 Mcf per day, and water production has increased by approximately 50 to 100 bbl per day; and
 - g. The lower zone is contributing an additional 100 Mcf gas per day and 50 to 100 BWPD to the overall production of the well.
6. The July 2016 oil proration schedule shows the top oil allowable for oil wells in the field is 111 BOPD and the top casinghead gas allowable is 222 Mcf per day (2,000:1 GOR for the field).
7. The lower zone in the Menielle, L.B. Lease, Well No. 25 makes approximately 100 Mcf per day with high water volumes.
- a. There is no other way for this lower zone to be produced if it is not produced with the upper zone; and
 - b. In the absence of requested net GOR for the Menielle, L.B. Lease, Well No. 25 Sheridan would have to go back and set a CIBP above the lower zone in the well.

CONCLUSIONS OF LAW

1. Proper notice was issued as required by all applicable statutes and regulatory codes.
2. All things have occurred and been accomplished to give the Commission jurisdiction in this matter.
3. Approval of the increased net gas-oil ratio authority with gas limit of 350 Mcf per day for for the Menielle, L.B. Lease, Well No. 25, and cancellation of all overproduction for the Menielle, L.B. Lease, Well Nos. 25 and 29 in the I.A.B. (Strawn) Field, Coke County, Texas will prevent waste.

EXAMINERS' RECOMMENDATION

Based on the above findings of fact and conclusions of law, the Examiners recommend that the Menielle, L.B. Lease, Well No. 25, be authorized to produce under net gas-oil ratio authority with a casinghead gas limit of 350 Mcf per day and that all accumulated gas production for the Menielle, L.B. Lease, Well Nos. 25 and 29 in the I.A.B. (Strawn) Field, Coke County, Texas be cancelled.

Respectfully submitted,



Karl Caldwell
Technical Examiner



Jennifer Cook
Administrative Law Judge