



RAILROAD COMMISSION OF TEXAS

HEARINGS DIVISION

OIL AND GAS DOCKET NO. 7C-0296431

THE APPLICATION OF DEVON ENERGY PRODUCTION CO., L.P. TO CONSIDER INCREASED NET GAS OIL RATIO AUTHORITY AND CANCELLATION OF OVERPRODUCTION FOR THE DARLING NORTH A LEASE, WELL NO. 1, JAR (PENNSYLVANIAN) FIELD, UPTON COUNTY, TEXAS

HEARD BY: Karl Caldwell – Technical Examiner
John Dodson – Hearings Examiner

HEARING DATE: July 8, 2015
CONFERENCE DATE: September 15, 2015

APPEARANCES:

REPRESENTING:

APPLICANT:

Devon Energy Production Co., L.P.

John Soule
Olga Kobzar
Kenneth Sigl

EXAMINERS' REPORT AND RECOMMENDATION

STATEMENT OF THE CASE

Devon Energy Production Co., L.P. (Devon) requests authority to produce the Darling North A Lease, Well No. 1 under increased net gas-oil ratio authority with a casinghead gas limit of 1,500 MCF per day and cancellation of all overproduction of gas for the subject well. The application is unopposed and the Examiners recommend approval of the application.

DISCUSSION OF THE EVIDENCE

The Darling North A Lease, Well No. 1 (API No. 42-461-38032), is completed in the Jar (Pennsylvanian) Field, Upton County Texas. On initial potential testing the well produced 192 BOPD and 228 MCF gas per day, at a gas-oil ratio (GOR) of 1,187.¹ The

¹ Initial Potential Test Date: September 1, 2013.

June 1, 2015 oil proration schedule lists the oil allowable for the field to be 237 BOPD with a GOR of 2,000:1, resulting in a daily gas allowable of 474 MCF per day.

The subject well is completed in a small reservoir in the later stages of depletion. Devon estimates the reservoir to be at approximately 70% depletion. Shortly after the subject well was completed, the reservoir pressure rapidly dropped below the bubble point, which has resulted in a constantly increasing GOR. The monthly GOR has increased from 4,832 in September 2013 to 37,776 in May 2015, while gas production from September 2013 to the end of May 2015 shows that the cumulative gas over-production, as of the end of May 2015, is 485,222 MCF.

The Darling North A Lease, Well No. 1 will not flow naturally and is on plunger lift. The plunger lift does not have choke settings to test the well at various rates without manually manipulating the plunger lift to have down time. Devon attempted to test the well at various daily production rates by having a flow hand manually manipulate the plunger lift. This resulted in down-time, measured in minutes, leaving the well shut-in to reduce the daily gas flow volumes. The flow hand manually shut the well in for 15, 30, and 60 minutes of down time per cycle. Devon's witness could not remember the total number of cycles per day.

Table 1 shows the results of manual down time to adjust the daily gas production for the well. No down time represents the current well production on plunger lift. Manual down time of 60 minutes per cycle was used to approach the 474 MCF daily gas allowable for the Jar (Pennsylvanian) Field. Devon could not reach the 474 MCF daily level, and the lowest daily gas rate measured was 497 MCF per day, with no oil production with a shut-in time of 60 minutes per cycle during the test period. Devon's witness described the 60 minutes of down-time resulting in near-wellbore pressure build up in the reservoir due to the down time. As a result, fluid stopped entering the subject well and there was essentially no oil production at the lowest test rate (largest down-time per cycle).

According to Devon's engineering witness, the well was producing equally efficient at the top three rates (no down time, 15 minutes of down-time per cycle, and 30 minutes of down-time per cycle), since the producing gas-oil ratios were within statistical error. However, the current production method with no down-time is the optimum production method since it resulted in the highest daily oil rate. In addition, from an operational stand-point, Devon is not set-up to operate the subject well with intermittent daily down-time. Daily down-time of the well would require a flow-hand on location to monitor the well as Devon does not consider shutting down the plunger lift on a daily basis to be a safe operational procedure without someone on-location watching the well.

To maximize oil recovery, flow to the wellbore should not be altered by shutting down the plunger lift intermittently each day. Producing the well at a higher daily gas

rate does not harm the reservoir, whereas intermittently shutting down the plunger lift on a daily basis may put unnecessary cyclic stress on the proppant pack, decreasing the ultimate recovery of the well. Therefore, the current production method of plunger lift with no pre-scheduled shut-down periods is the most efficient method of producing the subject well at this time and will maximize the recovery of oil. Therefore, Devon is requesting to increase the allowable gas production for the subject well to 1,500 MCF per day and cancel all accumulated over-production. All gas that has been overproduced has been sold and there continues to be a market for all gas produced.

Table 1: Darling North A Lease, Well No. 1 Test Results

Number of Days in Test Period (Days)	Average Daily Oil Production (BOPD)	Average Daily Gas Production (MCF per day)	Average GOR	Down Time Per Cycle (Minutes)
8	28	1,200	43,645	0
5	2	541	246,091	60
7	19	753	39,812	30
7	26	981	37,747	15

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 Darling North A Lease, Well No. 1 (API No. 42-461-38032), is completed in the Jar (Pennsylvanian) Field, Upton County Texas.
3. The June 1, 2015 oil proration schedule lists the oil allowable for the field to be 237 BOPD with a GOR of 2,000:1, and a daily gas allowable of 474 MCF per day.
4. The Darling North A Lease, Well No. 1 is completed in a small reservoir in the later stages of depletion. The reservoir pressure is below the bubble point, which has resulted in a constantly increasing GOR and an increase in casinghead gas production.
5. The Darling North A Lease, Well No. 1 will not flow naturally and is on plunger lift.
6. The plunger lift does not have choke settings to test the well at various rates without manually manipulating the plunger lift to have down time. Devon attempted to test the well at various daily production rates by having a flow hand manually manipulate the plunger lift.

7. Manual down time of 60 minutes per cycle was used to approach the 474 MCF daily gas allowable for the Jar (Pennsylvanian) Field. Devon could not get down to the 474 MCF daily level, and the lowest daily gas rate measured was 497 MCF per day with no oil production with a shut-in time of 60 minutes per cycle during the test period.
8. The current production method with no down-time is the optimum production method as it resulted in the highest daily oil rate, and there was no statistical difference in the GOR between the current production method with no shut-down and shutting down the plunger lift for 15 minutes and 30 minutes per cycle.
9. Producing the well at a higher daily gas rate does not harm the reservoir, whereas intermittently shutting down the plunger lift on a daily basis may put unnecessary cyclic stress on the proppant pack, decreasing the ultimate recovery of the well.
10. All gas that has been overproduced has been sold and there continues to be a market for all gas produced.

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 a casinghead gas limit of 1,500 MCF per day for the Darling North A Lease, Well No. 1 in the Jar (Pennsylvanian) Field, Upton County, Texas and cancellation of all over-production will not cause waste and will not harm correlative rights.

EXAMINERS' RECOMMENDATION

Based on the above findings of fact and conclusions of law, the Examiners recommend that the Darling North A Lease, Well No. 1, in the Jar (Pennsylvanian) Field, Upton County Texas be authorized to produce under net gas-oil ratio authority with a casinghead gas limit of 1,500 MCF per day and that all accumulated gas production for the well be cancelled.

Respectfully submitted,



Karl Caldwell
Technical Examiner



John Dodson
Hearings Examiner