RAILROAD COMMISSION OF TEXAS
HEARINGS DIVISION

OIL AND GAS DOCKET NO. 08-0303600

THE APPLICATION OF APACHE CORPORATION TO CONSIDER AMENDING THE FIELD RULES FOR THE JAILHOUSE (FUSSELMAN) FIELD, GLASSCOCK COUNTY, TEXAS

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

HEARING DATE: April 13, 2017
CONFERENCE DATE: June 6, 2017

APPEARANCES: **REPRESENTING:**

APPLICANT: Apache Corporation

Thomas "Buddy" Richter, P.E.
Kimberly Selman
Madeleine Kenyon

EXAMINERS' REPORT AND RECOMMENDATION

STATEMENT OF THE CASE

Apache Corporation ("Apache") requests to amend the field rules for the Jailhouse (Fusselman) Field, Glasscock County, Texas. Apache is requesting a fieldwide unlimited net GOR for wells completed in the field, and cancellation of all overproduction for all wells/leases, effective the date the Final Order is signed. All operators in the subject field were provided notice of the hearing. The application is unprotested and the Examiners recommend approval of the application.

DISCUSSION OF THE EVIDENCE

Temporary field rules for the Jailhouse (Fusselman) Field were adopted in Oil and Gas Docket No. 08-0211067, on February 27, 1996. Field rules for the Jailhouse (Fusselman) Field were made permanent in Oil and Gas Docket No. 08-0220598, on February 9, 1999, and the field rules were last amended in Oil and Gas Docket No. 08-0272628 on September 11, 2012.

The March 1, 2017 oil proration schedule for the Jailhouse (Fusselman) Field shows there are eight (8) operators in the field. Apache operates approximately 95% of the wells in the field. The oil proration schedule also shows that the field was discovered on August 10, 1995 at a depth of 10,207 feet. The top oil allowable in the field is 515 barrels of oil per day (BOPD), with a gas-oil ratio (GOR) of 2000:1, yielding a 1,030 Mcf per day (Mcfd) gas allowable.

Cumulative production for the Jailhouse (Fusselman) Field through January 2017 is 8,193,931 BO and 21.2 Bcf of gas. Between 1995 and 2010, there were only 2 to 3 active wells in the field per year. In 2010, the well count started to increase, and in March 2014, with a well count of 78 wells, the highest field production during entire life of the field was achieved with an average daily production of 6,918 BOPD. One year later, in March 2015, the well count in the field increased to 112, however, production declined to an average of 4,083 BOPD. In January 2017, the well count in the field was 105 wells, with an average production rate of just over 2,000 BOPD.

The number of drilling permits issued for the Jailhouse (Fusselman) Field shows a steady decline. The number of drilling permits dropped from over 200 in 2013 and 2014 to a total of 30 in 2015. In 2016, 7 drilling permits were issued, and as of March, no drilling permits have been issued in 2017. Productive intervals in other fields above the Jailhouse (Fusselman) Field include the Spraberry and the Garden City. Based on the rapid decline of drilling permits issued for the Jailhouse (Fusselman) Field is an indication that wells are being completed uphole instead of in the Jailhouse (Fusselman) Field. Based on the evidence, Apache believes that the Jailhouse (Fusselman) Field has reached its economic limit.

The Fusselman is a very thin, deep reservoir that appears to be depletion drive initially, followed by solution gas drive. The Jailhouse (Fusselman) Field is a series of discrete, aerially limited and vertically limited productive reservoirs as demonstrated by seismic data, drilling success and failure, production characteristics of wells in close vicinity differs dramatically, changes in fluid composition across the field, bubble point pressure differences across the field, lack of between well interference, and limited EURs of wells due to limited discrete reservoir volume. There is little to no additional drilling anticipated in the field due to high dry-hole risk.

Apache received an over-production letter for the Squire Lease, in the Jailhouse (Fusselman) Field on February 6, 2017. Upon receipt of the letter, Apache requested a hearing. A review of Apache's wells completed in the Fusselman interval with a GOR greater than the field limit of 2,000:1 shows 29 wells, with an average GOR of approximately 14,000:1. The production trend shows that oil and gas production is declining and the GOR in the field is increasing. In 2014, the average GOR in the field was 1,980:1. In 2015, the average GOR increased to 3,700:1, and in 2016, the GOR increased to 5,330:1. Apache's Red Snapper Neal 16 Lease, Well No. 1607 has a current GOR of 60,000:1, while Well No. 1608 has a GOR of 20,000:1. The GOR of several wells on the Squire Lease are listed in Table 1.

Table 1: GOR of Several Wells on the Squire Lease

Well Name	GOR	Notes
Squire 9003	20,000:1	
Squire 9004	28,000:1	Flowing
Squire 9005	36,000:1	Flowing
Squire 9006	29,000:1	Flowing
Squire 9007	5,000:1	
Squire 9010	6,000:1	Flowing
Squire 9012	6,000:1	
Squire 9013	55,000:1	Flowing

Apache conducted a casing choke test on the Ballenger 4203 well to determine whether the current field rule of a 2,000:1 GOR was attainable. The Ballenger 4203 is currently producing on a rod pump with a GOR of 18,000:1. The objective of the test was to investigate whether the GOR on a pumping well could be reduced by mechanical methods. Apache choked the casing pressure back on the well, downsizing the choke to a 12/64 choke. This did not yield a dramatic change in the well. Apache then choked down to 6/64 choke, which resulted in a casing pressure spike while, oil, water and gas rates all decreased, with oil production approaching zero. The GOR of the well remained in the 10,000 to 18,000 range, and did not decrease to the 2,000:1 field rule limit during the test. Once the well died, Apache opened the choke up to its original setting and the well returned to its original production.

Based on the current GOR of wells in the Jailhouse (Fusselman) Field, and the casing choke test on the Ballenger 4203, Apache believes that it would be beneficial for an unlimited GOR for Jailhouse (Fusselman) Field to prevent waste. The current GOR limit of 2,000:1 will result in premature abandonment of viable producing wells, as no method of reducing the GOR is effective. Restricting the GOR does not increase oil production, and hinders maximum EUR in the subject field. In Apache's opinion, Commission approval of the unlimited net GOR request will allow production of numerous wells in the field in an effective, economical manner that ensures all possible resources are recovered. The proposed field rule will prevent waste that would be caused by a GOR limit not justified.

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. Temporary field rules for the Jailhouse (Fusselman) Field were adopted in Oil and Gas Docket No. 08-0211067, on February 27, 1996. On February 9, 1999, the field rules were made permanent in Oil and Gas Docket No.

08-0220598. The field rules were last amended on September 11, 2012 (Oil and Gas Docket No. 08-0272628).

3. The top oil allowable in the Jailhouse (Fusselman) Field is 515 BOPD, with a GOR of 2000:1, yielding a 1,030 Mcfd gas allowable.

4. Apache is requesting a fieldwide unlimited net GOR for wells completed in the field, and cancellation of all overproduction for all wells/leases, effective the date the Final Order is signed.

5. The highest production during the entire life of the Jailhouse (Fusselman) Field was achieved in March 2014, with an average daily production of 6,918 BOPD, with a well count of 78 wells. One year later, the well count in the field was 112, however production had declined to an average of 4,083 BOPD. In January 2017, the well count in the field was 105 wells, with an average production rate of just over 2,000 BOPD.

6. The number of drilling permits issued for the Jailhouse (Fusselman) Field shows a steady decline in the number of permits approved. The number of drilling permits dropped from over 200 in 2013 and 2014, to a total of 30 in 2015. In 2016, 7 drilling permits were issued, and as of March, no drilling permits have been issued in 2017.

7. The Fusselman is a very thin, deep reservoir that appears to be depletion drive initially, followed by solution gas drive.

8. The Jailhouse (Fusselman) Field is a series of discrete, aerially limited and vertically limited productive reservoirs as demonstrated by:

   a) seismic data;

   b) drilling success and failure;

   c) production characteristics of wells in close vicinity differing dramatically;

   d) changes in fluid composition across the field;

   e) bubble point pressure differences across the field;

   f) lack of between well interference; and

   g) limited EURs of wells due to limited discrete reservoir volume.

9. There is little to no additional drilling anticipated in the field due to high dry-hole risk.

10. Apache received an over-production letter for the Squire Lease in the Jailhouse (Fusselman) Field on February 6, 2017. Upon receipt of the letter, Apache requested a hearing.

11. Apache has completed 29 wells in the Jailhouse (Fusselman) Field with a GOR greater than the field limit of 2,000:1. The average GOR of these 29 wells is approximately 14,000:1.

12. The production trend for the Jailhouse (Fusselman) Field shows that both oil and gas production is declining, while the GOR in the field continues to increase. The general trend shows an increase in GOR each year.

    a) In 2014, the average GOR of wells in the subject field was 1,980:1.

    b) In 2015, the average GOR increased to 3,700:1.

    c) In 2016, the average GOR increased to 5,330:1.

13. Apache conducted a casing-choke test on the Ballenger 4203 well to determine whether the current field rule of a GOR of 2,000:1 was attainable. The objective of the test was to see if the GOR on a pumping well could be reduced by mechanical methods.

    a) The Ballenger 4203 is currently producing on a rod pump with a GOR of 18,000:1.

    b) Apache choked the casing pressure back on the well, downsizing the choke to a 12/64 choke, and then choked down to a 6/64 choke, which resulted in a casing pressure spike while oil, water and gas rates all decreased, with oil production approaching zero.

    c) The GOR of the well remained in the 10,000 to 18,000:1 range, and did not decrease to the 2,000:1 GOR field rule limit during the test.

    d) Once the well died, Apache opened the choke up to its original setting and the well returned to its original production rate.

14. The current GOR limit of 2,000:1 for the Jailhouse (Fusselman) Field will result in premature abandonment of viable producing wells, as no method of reducing the GOR is effective, and restricting GORs does not increase oil production, and hinders maximum EUR in the subject field.

15. Approval of the unlimited net GOR request will allow production of numerous wells in the field in an effective, economical manner that ensures

all possible resources are recovered, preventing waste that would be caused by a GOR limit of 2,000:1.

16. Cancellation of all overproduction in the field will allow operators in the field to continue to produce the wells in the most efficient manner and not be restricted by a 2,000:1 GOR rule which is not achievable on some wells in the field.

17. Apache agreed, that, pursuant to the provisions of Texas Government Code §2001.144(a)(4)(A), this Final Order shall be effective on the date a Master Order relating to this Final Order is signed.

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. Amending the field rules for the Jailhouse (Fusselman) Field will prevent waste.

4. Pursuant to §2001.144(a)(4)(A), of the Texas Government Code, and the agreement of the applicant, this Final Order is effective when a Master Order relating to this Final Order is signed on June 6, 2017.

EXAMINERS' RECOMMENDATION

Based on the above findings of fact and conclusions of law, the Examiners recommend that the Commission amend the field rules for the Jailhouse (Fusselman) Field, Glasscock County, Texas, and cancel all overproduction.

Respectfully submitted,

Karl Caldwell
Technical Examiner

Jennifer Cook
Administrative Law Judge