



RAILROAD COMMISSION OF TEXAS OFFICE OF GENERAL COUNSEL

OIL & GAS DOCKET NO. 10-0224266

THE APPLICATION OF DISCOVERY OPERATING, INC. TO CONSIDER A DENSITY EXCEPTION ON THE A. L. BUZZARD LEASE, WELL NO. A1, TEXAS HUGOTON FIELD, SHERMAN COUNTY, TEXAS

HEARD BY: Donna K. Chandler, Technical Examiner
Mark H. Tittel, Hearings Examiner

PROCEDURAL HISTORY OF CASE:

Application for hearing:	April 5, 2000
Notice of Hearing:	April 20, 2000
Hearing Held:	May 19, 2000
Transcript received:	July 17, 2000
PFD Issued:	September 26, 2000

APPEARANCES:

APPLICANT:

Ana Maria Marsland
Mike Locke
Charlie Matcek

REPRESENTING:

Discovery Operating, Inc.

PROTESTANT:

Tim George
Joe Cochran
Richard Strickland
Mark Shirley
Michael Fox
Dwayne Purvis

Phillips Petroleum Company

EXAMINERS' REPORT AND PROPOSAL FOR DECISION

STATEMENT OF THE CASE

Discovery Operating, Inc. requests a density exception for its A. L. Buzzard Lease No. A1 in the Texas Hugoton Field, Sherman County. Field rules for the Texas Hugoton Field provide for 640 acre density. The A1 is an existing well which was shut-in in May 1997 when the No. 2 was completed on the A. L. Buzzard lease. The No. 2 had been permitted as a regular location with a

non-concurrent production restriction. Discovery seeks the exception to allow concurrent production from the Nos. A1 and 2 on the 653.42 acre lease.

The application was protested by Phillips Petroleum Company. Phillips is the offsetting operator to the east and north of the A. L. Buzzard Lease.

DISCUSSION OF THE EVIDENCE

Discovery Operating Evidence

The Texas Hugoton Field was discovered in 1945 at a depth of approximately 2,800 feet. There are approximately 900 producing gas wells in the field. Discovery Operating purchased the A. L. Buzzard lease in January 1999.

The A. L. Buzzard lease is Section 116 in the G & H Survey Block 1-C. (See Attachment 1, Phillips Exhibit 3). The first well drilled on the lease, the No. 1, was completed in 1948 and produced 939 MMCF of gas before being plugged in 1958. The second well drilled on the lease was the No. A1. The A1 was drilled in 1958 and produced 640 MMCF of gas before being shut-in in April 1997. At that time, the well was producing approximately 10 MCFD. The No. 2 was completed shortly after the A1 was shut-in. The No. 2 has produced approximately 52 MMCF of gas. Total production from the lease is therefore slightly more than 1,600 MMCF. By comparison, the average recovery from the surrounding eight sections is 4,500 MMCF per section.

The initial shut-in pressure in the A. L. Buzzard No. 1 was 445 psi in 1948. The A1 had an initial shut-in pressure of 340 psi in 1958 and the initial shut-in pressure in the No. 2 was 118 psi in 1997. In 1991, the shut-in pressure in the A1 was approximately 250 psi; just prior to the hearing, the shut-in pressure in the A1 was 273 psi. The most recent pressure in the No. 2 was 43 psi, indicating to Discovery that the No. 2 produces from a source of supply which is separate from the A1.

Discovery also compared the pressure in the wells on the A. L. Buzzard lease to pressures in wells on the offsetting sections. The offsetting wells all have shut-in pressures similar to the No. 2 well, approximately 50 psi, and significantly lower than the 273 psi seen in the A1. Discovery therefore believes that the requested density exception for the A1 is necessary to prevent waste.

Discovery submitted a pressure vs. cumulative production curve indicating that original gas-in-place available to the wells on the A. L. Buzzard lease was 3.9 BCF. The wells on the lease have produced substantially less than 3.9 BCF and Discovery believes that the requested density exception is therefore necessary in order for Discovery to recover its fair share of reserves from the A. L. Buzzard lease.

Phillips' Evidence

Phillips does not believe that Discovery has met its burden of proof in showing that concurrent production from both wells is necessary to prevent waste or protect correlative rights. Discovery did not present evidence regarding completion intervals in the wells or the effects of water production from wells, which Phillips believes explains the pressure differentials observed.

In the Texas Hugoton Field, production is from formations known as the Herington, Upper Krider, Lower Krider and Winfield, with the Herington being the shallowest. Reservoir quality increases with depth. Phillips' study of the nine section area revealed that all wells are completed in the Upper Krider and all wells except the A1 are also completed in the more prolific Lower Krider.

Phillips' structure map on the top of the Upper Krider shows that the A. L. Buzzard No. 1 is 70 feet low to the No. 2 and almost 50 feet low to the No. A1. Structure increases to the north and west. (Attachment 1)

The A. L. Buzzard No. 1 was completed in the Herington, Upper Krider and Lower Krider. Phillips believes that this well was plugged in 1958 because it watered out. The well had been producing at a fairly constant rate from 1947 until 1955 when production declined rapidly from approximately 400 MCFD to less than 50 MCFD. Phillips attributes the sharp decline to water production.

There is no water production data available from the No. 1 to substantiate Phillips' theory that the No. 1 watered out. However, other wells in the field have produced water and demonstrated similar behavior. The Lasley No. 1, to the northwest and adjacent to the A. L. Buzzard lease, was completed in 1951 in the Upper Krider, Lower Krider and Winfield. Production from the Lasley No. 1 declined sharply in about 1962 and a pumping unit was put on the well in 1971 to lift water. In 1979, the Lasley No. 1 ceased producing and the Lasley No. 2 was drilled with completion in a comparable interval to the Lasley No. 1. The Lasley No. 2, however, was structurally higher than the Lasley No. 1 and has exhibited normal decline with no water production.

The Nusbaum No. 1, to the southeast and adjacent to the A. L. Buzzard lease, exhibited a sharp decline in production similar to the Lasley No. 1. Drilled in 1950, the Nusbaum No. 1, was completed in the Upper Krider and Lower Krider, came in at high rates, then declined sharply and was plugged in 1955. The Nusbaum No. 1 was replaced in 1959 by a second well, also called the Nusbaum No. 1. Both wells were completed in comparable intervals, but the second well is higher on structure. The later Nusbaum No. 1 has exhibited normal decline with no water. Phillips believes that the original Nusbaum No. 1 and A. L. Buzzard No. 1 wells both watered out, based on the similar performance of the two wells to the Lasley No. 1, for which water production data is available to verify that the well watered out.

Water production information is also available on the A1 well. One of the completion

intervals in the A. L. Buzzard No. 1 was in the lower section of the Upper Krider, correlative to an interval which tested water in the A1. Phillips believes it is reasonable to believe that the No. 1 also produced water from the lower portion of the Upper Krider because the No. 1 is structurally lower than the A1.

The A. L. Buzzard A1 initially produced 300- 400 MCFD and exhibited a normal decline over its producing life. This well has produced only 640 MMCF of gas, much less than offsetting wells. Phillips attributes the poorer performance of the No. A1 to the fact that it is not completed in the better quality Lower Krider, like all other wells in the nine section area. This fact also explains why the No. A1 has a much higher pressure, 270 psi compared to other wells in the area which are generally about 50 psi. The No. A1 is completed in tighter, lower permeability, lower porosity rock which has not depleted even though the well was producing only 10 MCFD when it was shut-in.

The higher pressure in the No. A1 does not prove that the well is completed in a separate reservoir and that reserves available to the No. A1 will not be recovered by any other well. The Lasley No. 1 also had high pressures when its Lower Krider perforations were covered by water, leaving only the Upper Krider perforations open. When a pump was installed on the Lasley No. 1 and water was removed from the Lower Krider perforations, the pressure decreased. Higher pressure in the A1 does not indicate different reserves available to the well, but instead indicates a tighter reservoir which will have low producing rates.

EXAMINERS' OPINION

Exceptions to Statewide Rule 38 may be granted to prevent waste or to protect correlative rights. An applicant seeking an exception to Rule 38 based on waste must establish three elements: 1) that unusual conditions, different from conditions in adjacent parts of the field, exist under the tract for which the exception is sought; 2) that, as a result of these conditions, hydrocarbons will be recovered by the well for which a permit is sought that would not be recovered by any existing well or by additional wells drilled at regular locations; and, 3) that the volume of otherwise unrecoverable hydrocarbons is substantial. The evidence in the record does not support Discovery's claim that an exception is necessary in this case to prevent waste due to the existence an unusual condition underneath the lease. In addition to failing to establish the existence of any unusual condition, Discovery failed to prove that the reserves could not be recovered by its other existing well on the lease.

Discovery claims that the No. A1 will recover reserves not available to any other well based on the higher pressure observed in that well. However, as Phillips pointed out, the No. A1 is perforated only in the Herington and Upper Krider, which are tighter, poorer quality reservoir rock than the Lower Krider. The pressure in the A1 is higher because the Lower Krider is not open in this well as it is in all other wells which have lower pressures. Other wells have exhibited higher pressures when only the Upper Krider and Herington were open to production. For example, the

Lasley No. 1 exhibited higher pressure when the Lower Krider perforations were covered by water prior to installation of a pumping unit. Removal of water from the Lasley No. 1 caused the pressure to decrease again. The higher pressure in the No. A1 does not prove that Upper Krider and Herington reserves available to the A1 will not be recovered by any other well. Further, Discovery is not precluded from producing the A1 now, as long as it is not produced concurrently with the No. 1.

Discovery also failed to prove that the density exception is necessary in order to protect its correlative rights in the Texas Hugoton Field. To obtain an exception to Statewide Rule 38 to protect correlative rights, the applicant must show that it is not possible to recover its fair share of minerals under its tract from existing wells on the tract. Although Discovery presented its estimate of original recoverable gas, it did not give any estimate for current recoverable reserves for the A. L. Buzzard lease. There has been production from the Texas Hugoton Field on all tracts adjacent to the A. L. Buzzard Lease. Discovery did not show whether or not these offsetting wells drained any portion of the A. L. Buzzard Lease. Accordingly, Discovery failed to establish that it would not recover its fair share of remaining recoverable reserves under its tract through production from the No. 2, or non-concurrent production from the No. A1.

Because Discovery failed to prove that concurrent production from the No. A1 and No. 2 wells on the A. L. Buzzard lease is necessary to prevent waste or protect correlative rights, the examiners recommend that Discovery's application be denied.

FINDINGS OF FACT

1. Notice of this hearing was given to all persons entitled to notice.
2. Discovery Operating, Inc. requests an exception to the density rule in the Texas Hugoton Field for its A. L. Buzzard No. A1. This application was protested by Phillips Petroleum Company, an offset operator.
3. Field rules for the Texas Hugoton Field provide for 640 acre density.
4. The A. L. Buzzard lease consists of 653.42 acres. The No. A1 is a shut-in well which produced from 1958 to 1997 and has been shut-in since the No. 2 was completed on the lease in 1997.
5. Cumulative production from the three wells which have produced from the A. L. Buzzard lease in the Texas Hugoton Field is approximately 1,600 MMCF of gas.
 - a. The No. 1 was drilled in 1948 and was plugged in 1958 after producing 939 MMCF of gas.
 - b. The No. A1 was drilled in 1958 and produced 640 MMCF of gas before

being shut-in in 1997. Most recent production is approximately 10 MCFD.

- c. The No. 2 was drilled in 1997 and has produced approximately 52 MMCF of gas. Current production is 40-50 MCFD.
6. In the Texas Hugoton Field, production is from formations known as the Herington, Upper Krider , Lower Krider and Winfield. The Herington and Upper Krider are tighter and less permeable than the Lower Krider and the Winfield.
7. The No. A1 has a shut-in pressure of 273 psi, which is substantially higher than the pressures in other wells in the area, which are approximately 50 psi.
8. The higher pressure in the A1 is a result of the well being completed only in the Herington and Upper Krider. All offsetting wells have completion intervals in the Lower Krider, in addition to perforations in one or more of the other productive formations which comprise the field.
9. The requested density exception is not necessary to prevent waste in the Texas Hugoton Field.
 - a. The A1 was producing less than 10 MCFD when it was shut-in in 1997.
 - b. Discovery did not prove that the limited Herington and Upper Krider remaining recoverable reserves available to the A1 will not be recovered by any other well in the field which is completed in similar intervals.
 - c. The A1 may be produced non-currently with the No. 2 on the A. L. Buzzard Lease.
10. The requested density exception is not necessary to protect correlative rights.
 - a. Discovery did not prove whether or not offsetting wells had drained any portion of the A. L. Buzzard Lease.
 - b. Discovery estimated original recoverable reserves beneath the lease, but gave no estimate of current recoverable reserves for the A. L. Buzzard Lease.

CONCLUSIONS OF LAW

1. Proper notice was issued as required by all applicable codes and regulatory statutes.
2. All things have occurred and been accomplished to give the Commission jurisdiction

to decide this matter.

3. An exception pursuant to Statewide Rule 38 to the field rules regarding well densities is necessary to permit concurrent production from the A.L. Buzzard Nos. A1 and 2.
4. Approval of the requested density exception is not necessary to give the owners of the A.L. Buzzard lease a reasonable opportunity to recover their fair share of the currently recoverable hydrocarbons in the applied-for fields underlying the tract, or the equivalent in kind.
5. Approval of the requested density exception is not necessary to prevent the waste of a substantial volume of hydrocarbons in the applied-for field.

EXAMINERS' RECOMMENDATION

Based on the above findings of fact and conclusions of law, the examiners recommend denial of the application of Discovery Operating Inc. for density exception in the Texas Hugoton Field.

Respectfully submitted,

Donna K. Chandler
Technical Examiner

Mark H. Tittel
Hearings Examiner