

**THE APPLICATION OF UNIT PETROLEUM COMPANY TO RECLASSIFY THE BAKER RANCH (CANYON) FIELD AS ASSOCIATED-PRORATED, IRION COUNTY, TEXAS**

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**Heard by:** Margaret Allen, Technical Examiner  
Scott Petry, Legal Examiner

**Procedural history**

Application received: June 6, 2002  
Hearing held: July 19, 2002  
Proposal for decision issued: September 4, 2002

**Appearances**

	Representing
<u>Applicant</u>	
Barry Hagemann	Unit Petroleum Company
Kelly Ryan	
<u>Protestant</u>	
Sol Smith	Fortune Production Corporation

**EXAMINERS' REPORT AND PROPOSAL FOR DECISION**

**STATEMENT OF THE CASE**

The Baker Ranch (Canyon) Field has both oil and gas wells and is therefor considered to be an associated field. Statewide Rule 49(b) governs the daily gas limits for both oil and gas wells in associated fields to protect the oil production from premature loss of reservoir energy. Unit Petroleum Company ("Unit") is asking that the allowables for the gas wells be prorated, rather than be determined by the formula in Rule 49(b).

The application is protested by Fortune Production Company ("Fortune") who operates oil and gas wells in the Baker Ranch (Canyon) Field.

**DISCUSSION OF THE EVIDENCE**

The Baker Ranch (Canyon) Field was discovered in 1976, and has cumulative production of 1,795,000 BO and 42 BCF of gas. Field rules specify 80-acre oil proration units with a top daily allowable of 184 barrels assigned on the basis of acreage. Increased gas/oil ratio was approved in 1978 that allows oil wells a daily gas limit of 500 MCF. Gas wells on 80 acres receive a daily allowable of 575

MCF on 80 acres and may be assigned up to 160 acres, with a daily allowable of 1150 MCF, under a multiple 49(b) rule. In 1985, the Cal (Canyon) and Cal, South (Canyon) Fields were consolidated into the Baker Ranch (Canyon) Field.

There are fifteen operators in the field, with 44 active gas wells and 70 active oil wells. Fortune operates 37 oil wells and Unit operates two. Oil production has declined to very marginal levels and the average daily oil potential is 2.2 barrels per well. The oil well with the highest potential of 9 barrels per day is operated by Capitol Well Servicing Company. Four of Fortune's wells are capable of producing 5 BOPD and the rest of the oil wells in the field are capable of three barrels per day or less. Unit believes that gas production no longer has to be restricted to protect oil recovery because the remaining oil is marginal.

Most of the gas wells are also marginal as the average daily deliverability is only 63 MCF/D per well. Fortune operates fifteen of the gas wells, all with a deliverability less than 100 MCF/D. Unit operates seven gas wells, six of which have capabilities less than 100 MCF/D. One other operator, TXP, Inc., has wells with capabilities over 100 MCF/D. TXP's University "23" Lease Well Nos. 5 and 6 are relatively new wells with capabilities of 192 MCF/D and 293 MCF/D, respectively.

Unit completed its University "D" Lease Well No. 3 in November, 2001. The flush production of this well alone temporarily reversed the long-term decline trend of the field. Unit reported that it has a newly-completed well capable of producing 2 MMCF/D, and is interested in drilling more wells.

Well No. 3 was perforated from 6896' to 6942', and tested at a rate of 695 MCF/D. The original gas/oil ratio was 40,000 cubic feet per barrel. Production increased after the well was fracture-stimulated in February 2002, and the well's daily average production in March was over 1600 MCF and 24 barrels of condensate ("BC"). Production has since declined and the average daily production during June 2002 was 1079 MCF and 9 BC, for a gas/oil ratio of 123,000 cubic feet per barrel. Between the end of May and the end of June, the tubing pressure fell from 725 to 660 psi, indicating to Unit that production will continue to decline.

Although the daily production rate of Well No. 3 has fallen below the maximum gas allowable of 1150 MCF/D, Unit believes that the new well it has recently drilled and future wells will be able to produce above the current 49(b) allowable. Although there are no wells in the Baker Ranch (Canyon) Field in competition with Well No. 3, Unit's lease is offset by wells carried in the Gustav (Canyon) Field that Unit asserts produce from the same sandstone lens. Allowing new wells in the Baker Ranch (Canyon) Field to be prorated will encourage further development of the Canyon sandstones in the area, according to Unit.

Unit believes that only marginal amounts of oil are left in the Baker Ranch (Canyon) Field, but that significant gas reserves remain to be produced. Its University "D" No. 3 apparently encountered an undrained Canyon lens since it had virgin pressure of 2735 psi. It should be able to drain 160 acres, even though drilled 12 years after the first well in the same section. Well No. 1, the first well, has expected ultimate recovery of 782 MMCF, which is 85.5% of the calculated recoverable reserves underneath 40 acres. Well No. 3 has a thicker section and estimated ultimate recovery of 1,659 MMCF--87% of the calculated recoverable reserves under 160 acres.

Unit admitted that it could have reduced the amount of overproduction assigned to Well No. 3 (60,872 MCF) by assigning the well 160 acres from the beginning instead of waiting to see if the well was capable of draining this much. Also, it did not promptly file a new G-10 test showing Well No. 3's increased deliverability after fracture-stimulation.

According to Unit, not only is the remaining oil in the Baker Ranch (Canyon) Field marginal, but there may also be a permeability barrier within field. There is an area of no production (which Unit refers to as a "dead zone") extending northeast-southwest, dividing the field. The same sandstone is productive on both sides of the 'dead zone' but wells that were drilled into the zone were non-productive. Unit's Well No. 3, and the other higher-potential gas wells, are southeast of this 'dead zone'. All of the oil wells (along with numerous gas wells) are on the northwest side of this 'dead zone'.

Fortune believes its oil wells produce from the same reservoir as Unit's University "D" Well No. 3 because the Canyon sandstone lens in the oil wells appears similar to and correlative with the producing sandstone in Well No. 3. Fortune does not believe there is a permeability barrier between its oil wells and Unit's gas wells because the producing sandstones correlate well. Even though its oil wells are marginal, Fortune believes that gas wells producing more than the current gas well allowables could harm future oil production.

Fortune also believes that Unit's University "D" No. 3 should suffer the consequences spelled out in Rule 31 for an overproduced well. According to Fortune, Well No. 3 should be shut-in or produce at half its allowable rate until its overproduction is made up. Unit admitted that it would not cause waste to produce Well No. 3 at a reduced rate.

### **EXAMINERS' OPINION**

This application proposes a change in the field rules to resolve the overproduction problem of only one well. Unit's University "D" Lease Well No. 3 does have overproduction now but its capability has decreased such that it cannot accrue any more overproduction. Unit admitted that its own actions contributed to the overproduction problems of Well No. 3. However, other wells in the future may encounter the same problem.

The examiners do not believe that increased gas production from any of Unit's wells will waste reservoir energy in the Baker Ranch (Canyon) Field. Field production had declined steadily before 2001. Production from Unit's new gas wells is enough to suggest that the new wells are encountering previously undrained reservoir.

Unit's University "D" No. 3 gas well is two miles from the nearest oil well across what appears to be a zone of low porosity and permeability within the Canyon sandstone. Even if the new gas wells were in the same interconnected reservoir, all of the oil wells are being pumped, indicating very little reservoir energy left in the reservoir around the oil wells.

There are other methods besides removing the 49(b) restrictions that would allow Unit's new gas wells to compete with the gas wells in the same sandstone in the Gustav (Canyon) Field. Possibly one or two wells need to be transferred from one field to the other. More likely, the fields should be consolidated and the consolidated gas field then separated from the low-potential, oil and gas wells on the northwest side of the 'dead zone'. However, insufficient evidence was presented at this hearing for

these alternative remedies. The proposed remedy cannot harm the existing production and will encourage further development.

Therefore, the examiners recommend that the overproduction of Unit's University "D" Lease Well No. 3 be canceled and that the application to prorate the gas wells in the Baker Ranch (Canyon) Field be granted.

### **FINDINGS OF FACT**

1. Notice of this application to convert the basis of gas allocation in the Baker Ranch (Canyon) Field from Statewide Rule 49(b) to proration under Rule 31 was issued to all operators in the Baker Ranch (Canyon) Field on June 27, 2002.
2. Current maximum daily gas allowable is 500 MCF for oil wells on 80 acre density, 575 MCF for gas wells on 80 acre density, and 1150 MCF for gas wells on 160 acre density.
3. Oil production has declined to very marginal levels with the daily oil potential averaging only 2.2 barrels for the 70 active oil wells.
4. Most of the gas wells are marginal producers with only three newly-drilled gas wells having capabilities over 100 MCF per day.
5. Unit Petroleum Company's University "D" Lease Well No. 3 was completed at a location regular to lease lines in November 2001, and its production averaged over 1600 MCF per day after fracture-stimulation. This well has accumulated 60,872 MCF of overproduction.
6. At this time in the life of the field, oil recovery will not be increased by restricting gas well allowables to those imposed under Statewide Rule 49(b).
  - a. All of the oil wells are on pumps, indicating little reservoir energy left around them.
  - b. The newly-drilled, higher-potential gas wells are separated from all the oil wells by a permeability barrier.
  - c. The University "D" Well No. 3 had virgin pressure and encountered undrained reservoir.
7. Gas allowables based on proration under Statewide Rule 31 will encourage new drilling and the development of new gas reserves.

### **CONCLUSIONS OF LAW**

1. Proper notice of hearing was timely given to all persons legally entitled to notice.
2. All things have occurred or have been done that are necessary to give the Commission jurisdiction to decide this matter.
3. Cancellation of Unit Production's overproduction on the University "D" No. 3 is appropriate pursuant to Statewide Rule 49 and will not harm correlative rights.

4. A conversion of the basis of gas allocation in the Baker Ranch (Canyon) Field from Statewide Rule 49(b) to proration under Statewide Rule 31 is necessary to protect correlative rights and to foster conservation, and will not cause waste.

**EXAMINERS' RECOMMENDATION**

The examiners recommend that this application to prorate the gas wells in the Baker Ranch (Canyon) Field be **GRANTED**; and that the overproduction of Unit Petroleum Company's University D Lease Well No. 3 be canceled.

Respectfully submitted,

Scott Petry  
Hearings Examiner

Margaret Allen  
Technical Hearings Examiner

Date of Commission Action: \_\_\_\_\_