October 22, 1999

OIL AND GAS DOCKET NO. 8A-0222732

THE APPLICATION OF BURNETT OIL COMPANY, INC. FOR FIELD RULES IN THE WILD HOG (BUNGER SAND) FIELD, KING COUNTY, TEXAS

Heard by: Margaret Allen, Technical Hearings Examiner

Procedural history

Application received: September 20, 1999
Hearing held: October 22, 1999

Appearances

	Representing
Robert Grable	Burnett Oil Company
Sterling Randolph	

EXAMINER'S REPORT AND RECOMMENDATION

STATEMENT OF THE CASE

Burnett Oil Company requested that the following temporary field rules be adopted for the Wild Hog (Bunger Sand) Field:

1. Designated interval from 4047 to 4075 feet as shown on the log of the Burnett Oil Company A.W.M. Lease Well No. 1;

2. 467-467 foot well spacing;

3. 40 acre proration with 20-acre optional units; and

4. Allocation based on acreage with a maximum allowable of 140 BOPD.

The examiner believes that there is sufficient production history for permanent rules to be adopted rather than temporary rules. The examiner also noted that standard lease-line spacing for 20-acre optional units is 330 feet and recommends that the spacing rule be 330-467 feet. The applicant agrees with both recommendations.

DISCUSSION OF THE EVIDENCE

The Wild Hog (Bunger Sand) Field was discovered in 1994, and now has nine producing wells, all on one lease. The field produces from marine sandstones of Cisco age deposited on the Eastern Shelf of the Permian Basin. The trap was formed by anticlinal drape over a paleo-high in the Canyon section. The designated interval in the discovery well, the A.W.M. No. 1, extended from 4047 to 4075 feet and the applicant sees no reason to change this interval.

The reservoir porosity is 18%, permeability is 205 md, and the water saturation is 30%. The initial reservoir pressure was 1674 psi and there has been only a small decline since 1994. The reservoir has a strong water drive with the original oil/water contact being at -2286 feet. There is no significant gas production and five of the nine wells are being pumped at the top allowable of 93 BOPD. Cumulative production is 1,074,000 BO, equal to 27.5% of the estimated 7,860,000 barrels originally in place. The estimated ultimate recovery from the existing wells is 2,970,000 barrels but the applicant believes that ultimately 50% of the original oil in place can be recovered if additional wells are drilled.

Burnett has conducted a 3d seismic survey over this field and determined that the structure is more complicated than well control indicated. Burnett is now drilling one well at a location that the seismic survey indicated was a separate structural high, though it appears to be on the flank of the structure. A reservoir simulator, using input from the seismic survey, was able to match the production and rate history. This simulation showed that three additional wells on the crest of the structure were necessary for optimal recovery. These wells are predicted to recover 930,000 barrels of incremental oil.

The existing wells were drilled on Statewide density of 40 acres and placing these infill wells among the existing wells will create a density less than one well per 40 acres. Standard spacing for wells on 20-acre density is 330-660 feet, but the optimal locations for the infill wells are less than 660 feet from some of the existing wells. The applicant is requesting between-well spacing of 467 feet so that the infill wells will not require Rule 37 exceptions. There are no offset operators in this field.

The applicant is also requesting that oil wells in this field be allowed to produce up to 140 BOPD. The reservoir simulation and reservoir properties indicate that reservoir pressure is drawn down by only 400 psi when wells are pumped at rates up to 140 BOPD. Increasing the production rate is unlikely to waste the water drive reservoir energy, as it is due to a water drive. The gas/oil ratio is much less than 2000 cubic feet per barrel and unlikely to rise much above that if the oil rate is increased. There is some possibility of water coning if wells on the edge of the reservoir are produced at rates that are too high. The applicant intends to produce such edge wells at rates that will not cause downdip wells to water-out prematurely.

Producing the remaining oil reserves is expected to take another 40 years at maximum rates of 93 BOPD. Corrosive water from the Coleman Junction Formation is present behind pipe in these

wells and poses a risk of casing failures over time. Producing at a rate of 140 BOPD is expected to cut the time to deplete this reservoir in half, exposing the casing to corrosive water for a shorter period of time.

FINDINGS OF FACT

1. Notice of this hearing was given to all operators in the Wild Hog (Bunger Sand) Field and to all offset operators to the discovery tract on September 28, 1999.

2. The field was discovered in 1994 and has nine producing wells and one newly drilled well.

3. The Wild Hog (Bunger Sand) Field has a strong water drive and as much as 50% of the original oil in place can be produced under primary recovery.

4. Rules specifying 40 acre proration units with 20 acre optional units are appropriate.

    a. The existing wells were drilled on Statewide density and the reservoir properties indicate wells are probably capable of draining large areas.

    b. Cumulative production is 1,074,000 BO and the expected ultimate recovery from the existing wells is 2,970,000 BO.

    c. Reservoir simulation indicates that there are structurally high areas that cannot be drained by the existing wells.

    d. Three additional wells located between and among the existing wells are necessary to fully drain the reservoir and are expected to produce an incremental 930,000 BO.

5. Minimum well spacing of 330-467 feet will allow necessary infill wells to be drilled without between-well Rule 37 exceptions.

6. The productive Cisco section in this reservoir extends 4047 feet to 4075 feet as shown on the log of the first well in the field.

7. Allocation based on acreage will protect correlative rights.

8. Producing wells up to 140 BOPD will allow reserves to be produced more quickly and thus reduce the casing failures that are common in older wells in this area.

9. Reservoir simulation indicates that 140 BOPD per well will not adversely affect the reservoir as the pressure draw down at that rate is low.

CONCLUSIONS OF LAW

1. Proper notice was given as required by statute.

2. All things have been done or occurred to give the Railroad Commission jurisdiction to resolve this matter.

3. The recommended field rules will prevent waste, protect correlative rights within the field, and promote orderly development of the reservoir.

EXAMINER'S RECOMMENDATION

Based on the above findings and conclusions, the examiner recommends that the requested field rules for the Wild Hog (Bunger Sand) Field, with lease-line spacing of 330 feet, be approved on a permanent basis.

Respectfully submitted,

Margaret Allen
Technical Hearings Examiner

Date of Commission Action: November 2, 1999

Exhibits

1. Resume
2. Index map
3. New field designation letter
4. Requested rules
5. Reservoir data sheet
6. Proration schedule
7. Production history
8. Lease map
9. Cross section
10. Simulator study
11. Grid system
12. Rate match
13. Oil/water cut match
14. Cumulative oil prediction
15. Seismic map