
THE APPLICATION OF T-C OIL COMPANY AND HILCORP ENERGY COMPANY TO INCREASE GAS WITHDRAWALS BY GAS WELLS IN THE LAKE PASTURE (H-434) FIELD, REFUGIO COUNTY, TEXAS

Heard by: Margaret Allen, Technical Hearings Examiner

Procedural history

Application received: June 16, 2003

Hearing held: July 23, 2003

Appearances

John Soule
James Chandler
Russell Dorsett
Li Fan
Gary S. Childress

Representing
T-C Oil Company and Ralph R. Gilster, III

Archie R. Beckett, Jr. Hilcorp Energy Company

EXAMINER'S REPORT AND RECOMMENDATION

STATEMENT OF THE CASE

T-C Oil Company ("T-C") and Hilcorp Energy Company ("Hilcorp") requested that gas wells in the associated Lake Pasture (H-454) Field be allowed to produce up to 1500 MCF per day subject to the following conditions:

1. The increased gas allowables will apply only to wells completed on the east side of a water-block established between the east side of the field and the oil wells on the west side of the field;
2. Total daily field allowable will be 10 MMCF; and Hilcorp Energy Company wells will be allowed to produce up to 3.92 MMCF per day while T-C Oil Company wells will be allowed to produce up to 6.08 MMCF per day; and
3. No operator or well can produce more than these volumes calculated on a monthly basis. The representatives of the applicants at the hearing also represented Ralph R. Gilster III, the oil well operator in this field.

DISCUSSION OF THE EVIDENCE

The Lake Pasture (H-434) Field produces from the Greta sandstone in a complexly faulted area. The gas well production comes from an anticline on the east side of the field that also has a thin oil rim. The oil wells are located on an anticlinal ridge against a fault on the northwest side of the field. There is a fault between the gas wells and oil wells but it is not sealing. The two gas well operators (Hilcorp

and T-C) and oil well operator (Ralph R. Gilster, III) in this field have a co-operative injection well project to allow gas wells to produce more than the current Rule 49(b) allowable of 232 MCF per day.

There are seven closely spaced injection wells along the saddle between the gas wells and oil wells. Fourteen thousand barrels of water have been injected into these wells every day since March, 2002. There are four pressure monitor wells on the ends and western side of the line of injection. There are also five saturation monitoring wells on the ends and to the eastern side of the line of injection. These wells will monitor CO₂ to track the movement of the water being injected while gas well withdrawals are increased.

The Greta sandstone reservoir is about 35' thick on the east side of the field and 40' thick on the west side. Reservoir quality deteriorates to the east and the oil rim around the gas cap has never been productive in this poorer quality rock. The formation was divided into seven layers and each categorized by thickness, net pay, porosity and permeability. A model was matched to the historical production since 1962. The water bank between the oil wells and gas wells now has 2,200 to 2,500 psi while the reservoir pressure to the east and west of this bank is about 1550 psi.

Current withdrawals from the gas wells are about 3.7 MMCF per day. The operators are proposing to withdraw 10 MMCF per day for about two years. The extensive modeling performed by Schlumberger indicates that reservoir pressure will not decrease at this gas withdrawal rate either on the east side of the injection wells (gas reservoir) or west side (oil reservoir). After two years of producing 10 MMCF per day, the project will be re-evaluated and gas well withdrawals increased to 30 MMCF per day if the model is confirmed. This model shows that these further increases in gas withdrawal rates will draw down the gas well pressure but that these increased gas withdrawals will not harm oil well production.

The operators have agreed that, based on their percentage of the reservoir, T-C's wells will receive 60.8% of the gas allowable and Hilcorp's wells will receive 39.2%. No wells will be allowed to accumulate monthly underproduction or overproduction to produce against in a subsequent month. T-C now has eleven wells and Hilcorp has eight, though additional wells may be drilled. Typical daily production from the gas wells is expected to be about 600 MCF if this application is approved.

There is a separate pressure maintenance project in the oil reservoir to stabilize and maintain reservoir pressure west of the water block. All of the gas produced from these oil wells is reinjected on the updip side. There are also downdip water injection wells on the northwest edge of the oil field. Sufficient water is injected into these downdip wells to equal the liquid withdrawals from the oil wells. There are 29 active oil wells with allowables of 93 BOPD.

FINDINGS OF FACT

1. Notice of this hearing was given to all operators and interest owners in the Lake Pasture (H-434) Field on June 27, 2003.
2. The Lake Pasture, West (4450) Oil Field was consolidated into the Lake Pasture (H-434) Field in 2000 when 3d seismic confirmed that the fault in the saddle between the gas wells to the east and oil wells to the west was not sealing.

3. The two gas well operators (Hilcorp and T-C) and oil well operator (Ralph R. Gilster, III) in this field have a co-operative injection well project that will allow gas wells to produce more than the current Rule 49(b) allowable of 232 MCF per day.
4. Extensive modeling performed by Schlumberger, shows that increasing gas well withdrawals to 10 MMCF will not harm oil well production.
 - a. Pressure along the seven injection wells along the saddle between the gas wells and oil wells is now 2,200 to 2,500 psi, while the reservoir pressure to the east and west of this water bank is about 1550 psi.
 - b. Fourteen thousand barrels of water have been injected into these wells every day since March, 2002.
 - c. There are four pressure monitor wells on the ends and western side of the line of injection wells
 - d. There are also five saturation monitoring wells on the ends and eastern side of the line of injection wells that will track the movement of the water being injected.
 - e. The model indicates that reservoir pressure will not decrease on the east side of the water bank (gas reservoir) or west side (oil reservoir) at the proposed withdrawal rates.
5. T-C's eleven gas wells will receive 60.8% of the gas allowable and Hilcorp's eight gas wells will receive 39.2%, based on their percentage of the reservoir.
6. No wells will be allowed to accumulate monthly underproduction or overproduction to produce against in a subsequent month.

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. Increasing the daily gas well withdrawal rates to 10 MMCF will protect correlative rights and promote conservation.

EXAMINER'S RECOMMENDATION

Based on the above findings and conclusions, the examiner recommends that wells in the associated Lake Pasture (H-454) Field be allowed to produce up to 1500 MMCF per day subject to the following conditions:

1. The increased gas allowables will apply only to wells completed on the east side of a water-block

established between the east side of the field and the oil wells on the west side of the field;

2. Total daily field allowable will be 10 MMCF; and Hilcorp Energy Company wells will be allowed to produce up to 3.92 MMCF per day while T-C Oil Company wells will be allowed to produce up to 6.08 MMCF per day; and
3. No operator or well can produce more than these volumes calculated on a monthly basis.

Respectfully submitted,

Margaret Allen
Technical Hearings Examiner

Date of Commission Action: August 5, 2003