

**THE APPLICATION OF CHISHOLM EXPLORATION FOR MER DETERMINATION IN  
THE MULBERRY CANYON (CISCO) FIELD, NOLAN COUNTY, TEXAS**

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**HEARD BY:** Donna K. Chandler, Technical Examiner  
Mark J. Helmueller, Hearings Examiner

**PROCEDURAL HISTORY OF CASE:**

Application Filed:	May 9, 2000
Notice of Hearing:	May 19, 2000
Hearing Held:	June 19, 2000
PFD Issued:	July 5, 2000

**APPEARANCES:**

**REPRESENTING:**

**APPLICANT:**

Lloyd Muennink  
Earl Burns  
Charles Schroeder

Chisholm Exploration

**PROTESTANT:**

George Bishop  
Steve Harrell

LCS Production Company

**EXAMINERS' REPORT AND PROPOSAL FOR DECISION**

**STATEMENT OF THE CASE**

Chisholm Exploration requests that an MER of 100 BOPD per well be adopted in the Mulberry Canyon (Cisco) Field. This application was protested by LCS Production Company. LCS Production Company is not an operator in the field but holds leases adjacent to producing leases in the field.

**DISCUSSION OF THE EVIDENCE**Chisholm Evidence

The Mulberry Canyon (Cisco) Field was discovered in September 1998 upon completion of the Texaco Fee No. 1 by Chisholm Exploration at a depth of approximately 3,860 feet. There are currently ten producing wells in the field. Chisholm operates six wells on the Texaco Fee lease, R. L. Adkins Corp. operates two wells and Irving W. Avery operates two wells. The top allowable in the field is 100 BOPD, which is the discovery allowable for this depth. The discovery allowable will expire in September 2000, or when the 11th well is completed in the field. The 1965 Yardstick Allowable of 44 BOPD will be implemented in the field upon expiration of the discovery allowable, unless the requested fieldwide MER is approved.

From core analysis, the average porosity of this reservoir is 20% and average permeability is over 1,000 md. Cumulative production from the field is approximately 150,000 BO. Reported gas production is approximately 7,100 MCF, though some small volumes of casinghead gas has been vented or flared.

The majority of the production from the field is from Chisholm's Texaco Fee lease, which has produced 134,309 BO through May 2000. The most recent completion on this lease was the No. 6 well, completed in late April 2000 with an initial test of 105 BOPD and 12 MCFD. May production from the lease was 20,042 BO, which is an average of slightly more than 100 BOPD per well for the six wells on the lease.

Chisholm tested two wells on the lease at various rates in preparation for this hearing. The No. 3 was initially completed in January 2000 and was recently tested. The results of the testing are as follows:

<u>choke</u>	<u>oil rate</u>	<u>gas rate</u>	<u>gas-oil ratio</u>
12/64"	136 BOPD	33 MCFD	242 cu ft/bbl
11/64"	113 BOPD	36 MCFD	319 cu ft/bbl
10/64"	92 BOPD	28 MCFD	304 cu ft/bbl
9/64"	59 BOPD	25 MCFD	424 cu ft/bbl
8/64"	38 BOPD	28 MCFD	737 cu ft/bbl

The Texaco Fee No. 6, completed on April 26, was also tested at various rates. The results of the testing are as follows:

<u>choke</u>	<u>oil rate</u>	<u>gas rate</u>	<u>gas-oil ratio</u>
23/64"	285 BOPD	52 MCFD	183 cu ft/bbl
21/64"	277 BOPD	50 MCFD	180 cu ft/bbl
20/64"	257 BOPD	52 MCFD	202 cu ft/bbl
18/64"	261 BOPD	45 MCFD	172 cu ft/bbl
10/64"	114 BOPD	23 MCFD	199 cu ft/bbl
9/64"	92 BOPD	18 MCFD	195 cu ft/bbl
8/64"	63 BOPD	16 MCFD	254 cu ft/bbl

The well began to load at the 8/64" rate and only produced 17 BOPD and 5 MCFD on the second day at that choke size and tubing pressure began to decline.

Chisholm believes that the field has a strong water drive and has identified an oil-water contact in the reservoir. With a strong water drive, the gas-oil ratios will not increase over time, but keeping the ratios as low as possible will benefit oil production by keeping the oil viscosity higher and promoting movement of oil into the wellbores. Testing of the No. 3 well indicates a reduced gas-oil ratio at the higher rates. The test results of the No. 6 indicate no real variation in gas-oil ratio, but the lower rate causes the wellbore to load with liquids.

Chisholm submitted letters in support of the MER from the two other operators in the field. Adkins completed its two wells in January and March 2000 and both tested over 100 BOPD and very little gas. Avery completed its two wells in March and June 2000 and the wells tested 97 and 100 BOPD.

#### LCS Evidence

LCS recently drilled the McReynolds No. 5 adjacent to the Texaco Fee lease. This well did not encounter any Cisco Sand but LCS plans to develop its acreage to the southeast and southwest of the Texaco Fee lease.

LCS believes that Chisholm's evidence is insufficient to justify adoption of an MER of 100 BOPD. LCS does not believe that the tests on the No. 3 and No. 6 wells can be relied on because they were not witnessed by either LCS or the Commission.

LCS further believes that the field has a solution gas drive. Continued production at 100 BOPD after expiration of the discovery allowable will more quickly deplete the gas which provides the energy in a solution gas drive reservoir, resulting in waste of oil reserves in the field.

### EXAMINERS' OPINION

The examiners recommend approval of the requested MER of 100 BOPD for wells in the Mulberry Canyon (Cisco) Field. The examiners further recommend that the casinghead gas limit in the field be 88 MCFD, which would be the limit if the 44 BOPD yardstick allowable were implemented. This permissible gas-oil ratio in the field would be 880 cubic feet per barrel instead of the 2,000 cubic feet per barrel authorized by Statewide Rule 49. The examiners recommend that these allowables be adopted on a temporary basis, subject to review in one year.

The examiners agree with Chisholm that the reservoir is most likely not a solution gas drive reservoir based on the fact that the gas volumes and ratios are so low. However, there is no pressure data available to substantiate Chisholm's claim that the reservoir has a water drive. Because LCS is concerned with gas production from the reservoir, a limit of 88 MCFD should alleviate this concern because wells would be entitled to produce this volume even if the 44 BOPD allowable were in effect with a 2,000:1 gas-oil ratio. None of the wells will currently produce 88 MCFD.

If the reservoir has a solution gas drive and is above the bubble point now, then when the reservoir pressure falls below bubble point and a secondary gas cap is formed, the 88 MCFD limit will conserve the gas cap. If the reservoir has a solution gas drive and is already below the bubble point pressure, then gas production will not increase from current rates; the gas has already come out of solution and the lower gas limit of 88 MCFD will be sufficient. If the reservoir has a strong water drive, as Chisholm believes, then gas production will remain at the current level until the field nears depletion.

This field has very little production history available for most of the wells. Eight of ten wells were completed in 2000. Adoption of the allowables for the field on a temporary basis will provide time for additional production data and pressure data to be accumulated. With additional data, a more definite determination of the drive mechanism for the field can be made. In the interim, there will be no harm to the reservoir if oil production is maintained at 100 BOPD per well, regardless of the drive mechanism.

### FINDINGS OF FACT

1. Notice of this hearing was given to all persons entitled to notice.
2. The Mulberry Canyon (Cisco) Field was discovered in September 1998 and is currently developed with 10 producing oil wells.
3. The allowable in the field is 100 BOPD, which is the discovery allowable. Upon expiration of the discovery allowable, the allowable will be reduced to the 1965 Yardstick allowable of 44 BOPD.

4. Well tests demonstrate that production at 100 BOPD will not cause waste.
  - a. The Chisholm Exploration - Texaco Fee No. 3 was tested at various rates and gas-oil ratios increased from 242 cubic feet per barrel at 136 BOPD to 737 cubic feet per barrel at 38 BOPD.
  - b. The Chisholm Exploration - Texaco Fee No. 6 was tested at various rates and produced with a gas-oil ratio of approximately 200 cubic feet per barrel with rates between 92 and 290 BOPD. The No. 6 began to load at rates lower than 92 BOPD and would not stabilize.
5. All ten wells in the field initially tested approximately 100 BOPD and most are still capable of producing at least 100 BOPD.
6. A casinghead gas limit of 88 MCFD would be assigned in the field upon expiration of the discovery allowable and implementation of the 1965 Yardstick allowable of 44 BOPD and a 2,000 cubic foot per barrel ratio.
7. Limitation of casinghead production to 88 MCFD is necessary to conserve reservoir energy should it be later determined that the reservoir has a solution gas drive. If the reservoir is not solution gas drive, the lower casinghead gas limit will not harm the reservoir.
8. Additional data is necessary to determine the drive mechanism for the reservoir and appropriate allowables on a permanent basis.

#### 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. Approval of an MER of 100 BOPD per well and a permissible gas-oil ratio of 880 cubic feet of gas per barrel of oil in the Mulberry Canyon (Cisco) Field on a temporary basis will not cause waste and will not harm correlative rights.

**EXAMINERS' RECOMMENDATION**

Based on the above findings of fact and conclusions of law, the examiners recommend that an MER of 100 BOPD per well be adopted for the Mulberry Canyon (Cisco) Field upon expiration of the discovery allowable. In addition, it is recommended that the casinghead gas limit be 88 MCFD for wells in the field, or a ratio of 880 cubic feet per barrel. These allowables should be adopted on a temporary basis, subject to review in a hearing to be called in June 2001.

Respectfully submitted,

Donna K. Chandler  
Technical Examiner

Mark J. Helmueller  
Hearings Examiner