

**OIL AND GAS DOCKET NO. 03-0233630**

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**THE APPLICATION OF BRIGHAM OIL & GAS L.P. TO CONSOLIDATE VARIOUS ANGLETON FIELDS INTO A NEW FIELD TO BE KNOWN AS THE ANGLETON (FRIO, CONSOLIDATED) FIELD AND TO ADOPT OPERATING RULES AND REGULATIONS FOR THE ANGLETON (FRIO, CONSOLIDATED) FIELD, BRAZORIA COUNTY, TEXAS**

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**Heard by:** Margaret Allen, Technical Hearings Examiner

**Procedural history**

Application received: January 21, 2003

Hearing held: March 19, 2003

**Appearances**

Dick Schmidt

Representing

Brigham Oil & Gas L.P.

**EXAMINER'S REPORT AND RECOMMENDATION**

**STATEMENT OF THE CASE**

Brigham Oil & Gas is seeking to have the following fields consolidated into a new field to be known as the Angleton (Frio, Consolidated) Field:

Angleton (Frio 3-A)  
Angleton (Frio 9500)  
Angleton (Frio 9700)  
Angleton (Frio 9800)  
Angleton (Frio 9900)  
Angleton (Frio 10,100)  
Angleton (Frio 10,250)

Brigham also wants the overproduction of its Carr Lease Well No. 1 canceled. After the hearing the examiner recommended that the Angleton (Frio 9300), Angleton (Frio 9300 FB 1) and Angleton (Frio 9325) Fields be included in the field consolidation. These fields are inactive but area wells that were completed in them produced from Frio sandstones within the proposed designated interval. The applicant had no objection to this. The examiner also requested that field rules be adopted for the proposed new field and Brigham suggested the operating rules summarized below:

1. Designated interval between 9260 feet and 10,220 feet as shown on the log of the Brigham Oil & Gas L.P. Carr Lease Well No. 1; and
2. allocation based 10% per well and 90% on deliverability.

**DISCUSSION OF THE EVIDENCE**

Brigham has the only active well in the seven fields to be consolidated. Brigham's Carr No. 1 was recently completed in the Angleton (Frio 10,100) Field in November, 2002. One other well, the Brigham Sebesta Cloud Lease Well No. 1, last produced from the Angleton (Frio 9800) Field in 1990 and still on the proration schedule even though recompleted to another field.

The first of the fields to be consolidated was discovered in 1939 and the most recent of the subject fields was designated in 1978. Cumulative production from the various fields ranged from 216 MMCF to 37 BCF, and the total past production is 958,000 BO and 90.6 BCF of gas. Only the Angleton (Frio 9900) Field had special field rules which were adopted in 1979 and specified 320-acre proration units.

There were 29 completions in the subject fields before the Carr No. 1, but by 1970 only 8 of these were active. By 1980, only two wells remained active. The Frio sandstones produced in these fields have largely been depleted and are no longer economic to produce by themselves. Their remaining reserves will be recovered only if wells can be completed in multiple sands. Brigham plans additional wells if this application is approved.

The Carr No. 1 was drilled on a small seismic high on the upthrown side of a down-to-the-coast fault. It is between plugged and abandoned wells that had produced from the same interval. The Angleton fields, designated in the Frio Formation between 9200' and 10,300', trend northeast-southwest along this fault system. Numerous deeper wells were drilled to the northwest, but these wells are also largely depleted.

The original target sandstone of the Carr No. 1 turned out to be non-productive, and the well ended up being placed in the Angleton (Frio 10,100) Field. Four sets of perforations were made in thin Frio sandstones between 9778 and 10,216', and these tested at a maximum rate of 350 MCF/D. Perforations were added between 9741' and 9751' and between 9268' and 9535'. All of the perforations were tested together on October 18, 2002, and the gas rate was 1725 MCF/D. There are other unperforated sandstones between 9792' and 10,138' that are potentially productive or may be water bearing.

A production log showed no cross-flow between the various perforations but the contribution from each sandstone was undetermined. The combined production has been fairly stable at 1.5 to 2 MMCF per day while the gas/liquid ratio has risen somewhat to 50,000 cubic feet per barrel. Cumulative production for the first 3-1/2 months is 131 MMCF and 3420 BC. The bottom-hole pressure was measured at 3179 psi.

The top of the proposed designated interval is shown at 9260 feet and the base at 10,220 feet on the log of the Carr Lease Well No. 1. Because of the multiple reservoirs included within the proposed designated interval, a two-factor allocation formula is necessary. Allocation based 10% per well and 90% on deliverability is close to the Statewide Rules, and will satisfy statutory requirements.

The applicant believes that approval of this application will result in the recovery of reserves that would otherwise be unrecovered. If sandstones can be downhole commingled, the economic limit per

completion will be reduced and new wellbores can be economic. All of the sandstones in the proposed correlative interval are thin Frio sandstones with similar reservoir characteristics and compatible water.

**FINDINGS OF FACT**

1. Notice of this hearing was given to all operators of wells in the fields to be consolidated on January 28, 2003.
2. The following fields can be produced economically, and without causing waste, if consolidated into a single field:
  - Angleton (Frio 3-A)
  - Angleton (Frio 9300)
  - Angleton (Frio 9300 FB 1)
  - Angleton (Frio 9325)
  - Angleton (Frio 9500)
  - Angleton (Frio 9700)
  - Angleton (Frio 9800)
  - Angleton (Frio 9900)
  - Angleton (Frio 10,100)
  - Angleton (Frio 10,250)
3. The subject fields were discovered between 1939 and 1978, and cumulative production from them has been over 90 BCF and almost a million barrels of oil and condensate.
4. All 29 wells completed in these fields before 2002 have been plugged and abandoned.
5. In November, 2002, Brigham Oil & Gas completed its Carr Lease Well No. 1 with perforations in several thin Frio sandstones between 9268' and 10,216'.
6. The Carr No. 1 is economic only if multiple sandstones are produced together.
7. Downhole commingling marginal production from various sandstones in a single wellbore will lower the economic limit of each completion and allow the recovery of more reserves.
8. The proposed field consolidation will encourage the drilling of additional wells.
9. Because the designated interval includes multiple, stratigraphic reservoirs within the Frio, two-factor allocation is required by statute.
10. Gas allocation based 10% per well and 90% on deliverability will satisfy statutory requirements.
11. The Carr No. 1 is the only active well in the fields to be consolidated and cancellation of this well's overage will not harm correlative rights.

**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. Consolidation of the requested fields will prevent waste and protect correlative rights, while encouraging conservation.
4. The proposed field rules for the resultant field, the Angleton (Frio, Consolidated) Field, will prevent waste, protect correlative rights within the field, and satisfy statutory requirements.

**EXAMINER'S RECOMMENDATION**

Based on the above findings and conclusions, the examiner recommends that the requested fields be consolidated into a new field to be known as the Angleton (Frio, Consolidated) Field. The proposed field rules should be adopted, as per the attached order.

Respectfully submitted,

Margaret Allen  
Technical Hearings Examiner