

OIL AND GAS DOCKET NO. 08-0248239

THE APPLICATION OF PETRO-HUNT, L.L.C. TO CONSIDER NEW FIELD DESIGNATION AND FIELD RULES FOR THE (PROPOSED) TOYAH, NW (SHALE) FIELD, REEVES COUNTY, TEXAS

Heard by: Donna K. Chandler on August 23, 2006

Appearances:

Representing:

Mike McElroy
Mickey Olmstead
Lauri Block
John Roberts

Petro-Hunt, L.L.C.

Ron Widmayer

Texas General Land Office

Bill Spencer

Chesapeake Operating

EXAMINER'S REPORT AND RECOMMENDATION

STATEMENT OF THE CASE

Petro-Hunt, L.L.C. requests that a new field designation called the Toyah, NW (Shale) Field be approved for its Block 59 State 35 Well No. 1H. Petro-Hunt also requests that the following temporary field rules be adopted for the Toyah, NW (Shale) Field:

1. Designation of the field as the correlative interval from 11,812 feet (MD) to 13,040 feet (MD) as shown on the log of the Block 59 State 35 Well No. 1H;
2. 467'-1,200' well spacing;
3. 1,280 acre gas units with 10% tolerance and a maximum diagonal of 12,500 feet and special horizontal drainhole rules;
4. Allocation based on 75% acreage and 25% deliverability.

Petro-Hunt also requests that the allocation formula for the field be suspended.

There were no protests to this application and the examiner recommends approval of the new field designation and temporary field rules, with the rules being subject to review at hearing in 24 months.

DISCUSSION OF EVIDENCE

Petro-Hunt L.L.C. completed its Block 59 State 35 No. 1H in April 2006. The well was drilled to a measured depth of 15,232 feet, with a true vertical depth of 12,413 feet. The well penetrated the Barnett Shale at 12,196 feet (TVD) and has a horizontal lateral in the shale of approximately 3,000 feet. The well produced 213 MCFD on initial test and currently produces about 300 MCFD. There is no comparable production within several counties.

Development of a shale prospect is initiated by identifying the shale based on information from existing wells. Many wells in Culberson, Reeves and Pecos Counties have penetrated the Barnett/Woodford shale as a result of drilling to the deeper Devonian. Drill cuttings from 60 of these wells have been evaluated to determine whether the shale had qualities indicative of a gas productive shale. Well logs from over 120 wells have been analyzed, and sometimes reprocessed, in an effort to determine the areas where the reservoir quality is better. After identifying the shale, producibility of the shale is determined by drilling test wells and obtaining modern logs and cores. Once a shale is found to be producible, fracturing techniques must be developed which will result in economic production. The Barnett/Woodford shale in the Delaware Basin is different than the Barnett Shale development in the Fort Worth Basin, and the fracture techniques used in the Fort Worth Basin do not work effectively in the Delaware Basin shale. In the State 35 No. 1H well, Petro-Hunt believes that the production is coming only from a small part of the lateral due to problems with the fracture stimulation.

Petro-Hunt submitted a cross-section of logs covering about 120 miles through the three counties. The cross-section demonstrates that the thickness of the shale varies, but it is generally thicker in Reeves County, where the gross thickness of the Barnett Shale, Mississippi Lime, and Woodford Shale is 1,000-1,200 feet. The proposed correlative interval for the field is from 11,978 feet (MD) to 13,040 feet (MD) as shown on the log of the Block 59 State 35 Well No. 1H. This interval is from the top of the Barnett Shale to the Base of the Woodford Shale, which is the top of the Devonian.

In addition to the Block 59 State 35 No. 1H, Petro-Hunt has drilled four other wells to this shale, two in Pecos County, one in Culberson County and one in Reeves County. From these five wells total, Petro-Hunt has obtained core data and log data to further evaluate the shale interval. Two of the five wells have horizontal laterals. One well, the State 35 No. 1H, has a lateral in the Barnett Shale. The other well (in Pecos County) has a lateral in the Woodford Shale. The three other new wells are vertical wellbores in which

laterals have not yet been drilled. Laterals will be drilled in these three wells after further analysis of data obtained during drilling. Petro-Hunt has studied micro-seismic imaging obtained during fracture stimulation of the two wells which have laterals. This data indicates the areas of the shale affected by the fracture stimulation.

The State 35 No. 1H well cost over \$15 million for the vertical wellbore drilled to 13,000 feet. The well had to be sidetracked twice and difficulties in setting casing were experienced. Petro-Hunt expects a typical vertical well to the Barnett/Woodford Shale to cost about \$5 million. The cost to drill a horizontal lateral in the shale is expected to be about \$2 million. A typical horizontal well should take 3-4 months to drill.

Petro-Hunt believes there is significant potential for the Barnett/Woodford Shale in the Delaware Basin. The properties of the shale in this area were compared to properties of shales in the Fort Worth Basin, Arkoma Basin, Appalachian Basin and Black Warrior Basin. Based on the properties of this Delaware Basin Shale, Petro-Hunt believes that gas-in-place of the Barnett/Woodford Shale is a minimum of 116 BCF per square mile, and possibly up to 573 BCF per square mile. This compares to gas-in-place of 50-150 BCF per square mile in the Fort Worth Basin. Petro-Hunt estimates that up to 2.5 million acres may be productive in the Barnett/Woodford Shale in the Delaware Basin, more than half of which minerals are state-owned.

It wasn't until after the State 35 No. 1H well was drilled that 3-D seismic of the area was obtained. The seismic indicates that the Barnett/Woodford Shale in the area of the well is not as faulted as was believed when the well was drilled. The seismic also indicates that the faulting is in a different direction than anticipated. The lateral of the State 35 No. 1H actually turned out to be perpendicular to the major fault, instead of parallel to the fault. The preferred direction of lateral orientation is parallel to faults. Petro-Hunt's objective in drilling development wells is to drill laterals parallel to known faults, each of two laterals being about 5,000 feet in length and in opposite directions. The goal is also to avoid being too close to known faults, to avoid losing fracture stimulation energy to the fault instead of affecting only shale. Because there is no predominant fracture orientation in this area, operators will have to rely heavily on the 3-D seismic in picking locations. For this reason, Petro-Hunt is requesting 467'-1,200' well spacing for the field.

Conventional volumetric reserve calculations are not appropriate for shale. Core and log analyses of the State 35 No. 1H indicate total gas-in-place of 514 BCF/square mile, with recoverable gas of 77 BCF per square mile, based on the 15% recovery in the Fort Worth Basin shale. The proposed 1,280 acre density rule is necessary to proceed with continued exploration and development of this reservoir.

A two factor allocation formula is necessary because the proposed correlative interval for the field includes separate accumulations of hydrocarbons. Petro-Hunt requests that allocation be based on 75% acreage and 25% deliverability.

FINDINGS OF FACT

1. Notice of this hearing was given to all persons entitled to notice at least ten days prior to the date of hearing.
2. Petro-Hunt, L.L.C. completed its Block 59 State 35 No. 1H in April 2006. The well has a horizontal lateral in the Barnett Shale approximately 3,000 feet in length. There is no comparable production within several counties and the well is entitled to a new field designation.
3. The proposed designated interval for the new field is from 11,978 feet (MD) to 13,040 feet (MD) as shown on the log of the discovery well. This correlative interval includes the Barnett Shale, Mississippi Lime and Woodford Shale.
4. The shale in this area of the state has different properties than the Barnett Shale in the Fort Worth Basin and a suitable method of fracture stimulation is still being evaluated.
5. Four other wells have recently been drilled to the subject shale interval and core analyses and log analyses are being conducted.
6. Wells must be drilled parallel to known faults to encounter commercial production. Flexibility in placing wells based on seismic data is imperative for development of the field.
7. It is expected that wells will have two laterals, up to 5,000 feet in each direction from the vertical wellbore. The proposed density rule of 1,280 acres per well will accommodate continued exploration and development of this new field.
8. Allocation based on 75% acreage and 25% deliverability is a reasonable formula which will protect correlative rights and meet statutory requirements.

CONCLUSIONS OF LAW

1. Proper notice of this hearing was issued.
2. All things have been accomplished or have occurred to give the Commission jurisdiction in this matter.
3. Approval of the requested new field designation and adoption of temporary field rules will prevent waste, protect correlative rights and promote the orderly development of the field.

RECOMMENDATION

Based on the above findings and conclusions of law, the examiner recommends approval of the new field designation and adoption of temporary field rules for the Toyah, NW (Shale) Field.

Respectfully submitted,

Donna K. Chandler
Technical Examiner