RAILROAD COMMISSION OF TEXAS

HEARINGS DIVISION

OIL AND GAS DOCKET NO. 09-0277667

THE APPLICATION OF ELEPHANT OIL & GAS TO ADOPT PERMANENT FIELD RULES FOR THE JEFFERSON, NE (CADDO LIME) FIELD, ARCHER COUNTY, TEXAS

HEARD BY: Brian Fancher, P.G. - Technical Examiner
Randall Collins - Legal Examiner

DATE OF HEARING: September 14, 2012

APPEARANCES:	**REPRESENTING:**
APPLICANT:	
Bill Spencer	Elephant Oil & Gas
Jim Clark	

EXAMINERS' REPORT AND RECOMMENDATION
STATEMENT OF THE CASE

The Jefferson, NE (Caddo Lime) Field is currently governed by county regular rules. Elephant Oil & Gas ("Elephant") seeks to adopt special field rules and seeks to incorporate the following rules for the subject field:

1. Designated correlative interval from 4,687 feet to 5,054 feet, as shown on the log of the James D Lindemann-Garvey #1 (API No. 42-009-40906), Archer County, Texas;

2. 330'-660' vertical well spacing, no minimum spacing requirement between horizontal and vertical wells, horizontal well spacing based on "take-points", a "box" rule, off-lease penetration points, and Non-Perforated Zones ("NPZs");

3 80-acre proration units for oil wells with 40-acre tolerance and 3,250' maximum diagonal for vertical wells; 20-acre optional units with 1,500' maximum diagonal for vertical wells. Additionally, the following formula shall be utilized to determine allocation of additional acreage to horizontal wells:

A = (L x 0.11488) + 80 acres, where A = acreage assignable, if available, to a horizontal drainhole for proration purposes rounded upward to the next whole

number evenly divisible by 40 acres; and L is the length of the horizontal displacement in feet;

The maximum diagonal for a horizontal drainhole shall be determined by the following formula:

Maximum diagonal = 475.933 x √A;

4. Maximum daily oil allowable of 158 barrels of oil per well, and allocation based on 95% acreage and 5% of the maximum daily oil allowable.

At the hearing, the examiners opined that adoption of a two-factor allocation formula is inconsistent with Texas Natural Resources Code ("TNRC") §86.081. Elephant did not consider the examiners' opinion adverse to its application. As a result, Elephant requested that allocation be based on 100% acreage.

DISCUSSION OF THE EVIDENCE

The Jefferson, NE (Caddo Lime) Field was discovered in November 1955 at an average depth of 4700 feet and is designated as an oil field. The August 2012 oil proration schedule indicates there are six producing oil wells in the field with JDL Operating, LLC as the only operator. Cumulative production from the field is estimated at 263.8 million cubic feet of casing-head gas ("MMCF") and 516.1 thousand barrels of oil ("MBO"). Elephant testified that its Ikard Trust Lease, Well No. 1H (API No. 42-009-42443) is completed in the subject field. Elephant testified that its Ikard Trust Lease, Well No. 1H is the sole horizontally completed well in the subject field. Elephant testified it plans to drill additional horizontal wells in the subject field.

Currently, the subject field is not defined by a designated, correlative interval. Elephant seeks to incorporate the entire Caddo Lime formation ("Caddo") as the correlative interval for the subject field. The Caddo is stratigraphically positioned above the Marble Falls Limestone formation. Elephant testified it seeks the correlative interval from 4,687 feet to 5,054 feet, as shown on the log of the James D. Lindemann-Garvey #1 (API No. 42-009-40906), Archer County, Texas. Elephant testified the Caddo is a single reservoir predominately comprised of carbonate strata.

Elephant submitted a stratigraphic cross-section that traverses west to east and incorporates the top of the Caddo as the datum[1]. The cross-section includes the type log along with two well logs taken from two wells currently completed in the subject field. Based upon its petrophysical analysis, Elephant testified the subject field has twenty-seven feet of net pay, 11.8% average porosity, and 49% average water saturation.

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[1] Datum is defined as a fixed or assumed line or surface, in relation to which others are determined.

Elephant seeks to incorporate field rules that provide 80-acre proration units and optional 20-acre proration units. Elephant testified the subject field is a solution-gas reservoir that is currently in the primary stage of hydrocarbon recovery. Elephant submitted a production decline curve and drainage area calculation sheet for the JDL Operating, LLC, McKinney/Garvey Unit, Well No. 1 (API No. 42-009-40270). Elephant testified this well has produced 73 MBO with an estimated ultimate recovery of 83.9 MBO. Elephant testified this well is capable of draining approximately 79 acres of hydrocarbons.

Additionally, Elephant submitted a production decline curve and drainage area calculation sheet for the JDL Operating, LLC, Garvey Lease, Well No. 1 (API No. 42-009-40906). Elephant testified this well has produced approximately 26.8 MBO with an estimated ultimate recovery of 86.6 MBO. Elephant testified this well is capable of draining approximately 83 acres of hydrocarbons.

In support of its application, Elephant submitted a copy of the county regular field rules that currently govern the subject field. County regular field rules stipulate that well spacing and proration density units are classified by a well's completion depth. Elephant testified that the correlative field interval it seeks falls within a depth range from 3,001 feet to 5,000 feet. As such, a well completed in this depth range is provided 330'-933' well spacing and 20-acre proration units. Elephant testified it anticipates that certain wells completed in the subject field will only drain approximately 20 acres per well, therefore it seeks to incorporate 20-acre optional units in its proposed field rules.

Elephant performed a Borehole Image Log on the subject well. Elephant alleged this log shows two distinct planes of natural fractrures along the wellbore path of the subject well in the Caddo. Elephant testified one of these fracture orientations is along a plane that runs northwest to southeast. The second principle fracture orientation runs northeast to southwest. Elephant testified the predominant dip of the Caddo is to the southeast. Elephant testified that wells in the subject field will not be stimulated by hydraulic fracturing. Instead, wells drilled horizontally in the subject field will intersect naturally occurring fractures in the Caddo that are perpendicular to the natural stress orientation of the Caddo.

Elephant requests that a field rule be adopted which includes language relevant to the measurement of distances to lease lines for horizontal drainhole wells. Elephant's proposed rule specifies that, for purposes of lease line spacing, the nearest "take point" in a horizontal well be used. This take-point could be a perforation in a horizontal well that is cased and cemented, an external casing packer in a cased well, or any open-hole section in an uncased well. Elephant requests that the first and last take-point be 100' from the nearest perpendicular lease line. Elephant testified the 100' lease line spacing for the first and last take points will result in an additional recovery of reserves. All points on a wellbore between the first and last take points must remain 330' from the nearest lease line; otherwise, the wellbore will require a Rule 37 exception to obtain a legal location.

Additionally, Elephant requests that no spacing requirement between horizontal and vertical wells be incorporated in the field rules. Also, Elephant requests that the between well spacing requirement for horizontal wells be 660'.

Elephant proposes a tolerance "box rule" for horizontal drainhole wells that would allow drainholes to deviate 33 feet from either side of their permitted track without the necessity of obtaining a Statewide Rule 37 exception. As drilled wells for which all points are located within the "box" would be considered in compliance with their drilling permits.

In some cases, it is beneficial to penetrate the reservoir off lease, while still having "take points" no closer to lease lines than allowed under the field rules. Elephant requests that Field Rules for the subject field provide for an "off-lease" penetration point. Statewide Rule 86 requires that the penetration point of a horizontal drainhole be on the lease. Elephant alleges that a horizontal well in the subject field generally requires approximately 600 feet of horizontal displacement to make the 90 degree turn from vertical to horizontal. If the penetration point is required to be on the lease, then the first point of production would be about 600 feet from the lease line. The proposed rule will allow approximately 300 feet of additional producing drainhole, resulting in the recovery of additional oil and gas reserves. The Commission has adopted similar rules allowing offsite penetration points in other fields, after the operator has given notice to the mineral owners of the off-lease tract on which the penetration point is to be located and received no protest. For purposes of the assignment of additional acreage , it is proposed that the distance between the first and last take-point in a horizontal drainhole well be used.

Elephant testified it seeks an exception to Statewide Rule 86, with respect to the allocation of additional acreage to horizontal. Elephant testified it seeks the maximum number of acres assignable to a horizontal well be based on a formula where:

> $A = (L \times 0.11488) + 80$ acres, where A = acreage assignable, if available, to a horizontal drainhole for proration purposes rounded upward to the next whole number evenly divisible by 40 acres; and L is the length of the horizontal displacement in feet.

Elephant testified that the above formula has been adopted in other fields throughout the state that produce from carbonate reservoirs. Elephant purports the proposed formula is an appropriate exception to Statewide Rule 86 for horizontal wells in the subject field and will promote development.

Elephant seeks to include a formula for the maximum diagonal in which a proration unit for a horizontal well may be allowed in the subject field. As proposed, Elephant seeks the following formula:

$$\text{Maximum diagonal} = 475.933 \times \sqrt{A}$$

Elephant testified there are numerous fields in Texas that have adopted the above maximum diagonal formula, and that it is better suited for field rules that govern horizontal wells.

At the hearing, Elephant testified it wished to include a two-factor allocation formula based on 95% acreage and 5% of the top allowable. The examiners opined it inappropriate to incorporate

a two-factor allocation formula for the subject field, based on the correlative interval Elephant seeks to adopt for the subject field. Elephant did not consider the examiners' opinion adverse. Also, Elephant testified it wished to incorporate P-15 plats for each horizontal well to properly identify the amount of acreage assigned to each proration unit.

FINDINGS OF FACT

1. Notice of this application and hearing was provided to all persons entitled to notice at least ten (10) days prior to the date of the hearing.

2. The Jefferson, NE (Caddo Lime) Field was discovered in November 1955 at an average depth of 4700 feet and is designated as an oil field.

3. The August 2012 oil proration schedule for the Jefferson, NE (Caddo Lime) Field indicates there are six producing oil wells in the field with JDL Operating, LLC as the only operator.

4. Elephant Oil & Gas ("Elephant") seeks to adopt permanent special field rules for the Jefferson, NE (Caddo Lime) Field.

5. Elephant's Ikard Trust Lease, Well No. 1H (API No. 42-009-42443) is completed in the subject field. Elephant testified it plans to drill additional horizontal wells in the Jefferson, NE (Caddo Lime) Field.

6. Elephant seeks to define the Jefferson, NE (Caddo Lime) Field as the correlative interval from 4,687 feet to 5,054 feet, as shown on the log of the James D Lindemann-Garvey #1 (API No. 42-009-40906), Archer County, Texas.

6. A vertical well completed in the Jefferson, NE (Caddo Lime) Field is capable of draining 79 acres of hydrocarbons.

7. Field Rules providing for 330'-660' vertical well spacing, no minimum spacing requirement between horizontal and vertical wells, horizontal well spacing based on 100' first and last take points and 660' between horizontal well spacing, a 33' box rule, off lease penetration points, and Non-Perforated Zones ("NPZs") will provide consistency in developing the field and will allow greater flexibility in selecting future drilling locations.

8. Allocation based on acreage will protect 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. Adopting the proposed rules will promote development, protect correlative rights, and prevent waste.

EXAMINERS' RECOMMENDATION

Based on the above findings of fact and conclusions of law, the examiners recommend that the field rules proposed for the Jefferson, NE (Caddo Lime) Field be adopted, as requested by Elephant Oil & Gas and modified by the examiners.

Respectfully submitted,

Brian Fancher, P.G.
Technical Examiner

Randall Collins
Legal Examiner