

**OIL & GAS DOCKET NO. 8A-0253692**

---

**THE APPLICATION OF APACHE CORPORATION TO CONSIDER UNITIZATION AND SECONDARY RECOVERY AUTHORITY FOR THE VON ROEDER WEST UNIT IN THE VON ROEDER, W. (CLEAR FORK) FIELD, BORDEN COUNTY, TEXAS**

---

**HEARD BY:** Andres J. Trevino P.E., Technical Examiner  
James Doherty, Hearings Examiner

**DATE OF HEARING:** November 8, 2007

**APPEARANCES:**

Micheal McElroy  
James Sughru  
Robert A. Ogle  
Kevin Mayes  
Omon Aburime

George C. Neale  
John Ruwwe

**REPRESENTING:**

Apache Corporation

Ruwco Oil & Gas Corp.

**EXAMINERS' REPORT AND RECOMMENDATION**

**STATEMENT OF THE CASE**

Apache Corporation requests Commission authority for unitization of the Von Roeder West Unit and approval of secondary recovery operations on the proposed Unit in the Von Roeder, W. (Clear Fork) Field.

This application was unopposed and the examiners recommend approval.

**DISCUSSION OF THE EVIDENCE**

The Von Roeder, W. (Clear Fork) Field was discovered in 1969 at an approximate depth of 4,338 feet. Production peaked in 2005 with a daily production rate of 600 BO per day. Current production is approximately 489 BO per day from 6 wells in the Unit area.

The area proposed for the subject unitization covers acreage that includes the

majority of the productive reservoir. The reservoir limits are well defined and are believed to include both drained and undrained areas. Leaseholders of productive areas not in the unit were offered to participate in the unit. The area is in the mid stage of primary depletion. Cumulative primary production from the 6 wells is 1,017,471 BO, or 8.0% of original oil in place. Remaining primary production from wells on the unit is estimated to be 1,659,000 BO.

The unitized formation is the Clear Fork formation which is a shelf margin deposit composed of dolomitized limestone. The proposed Clear Fork interval contains detrital material sloughed off an adjacent shelf margin. The material deposited is of limited areal extent. The reservoir contains high porosity values in the oil column and lower porosity in the water column. The reservoir is contained by stratigraphic pinch out to the east and a oil/water contact to the west. The reservoir contains a slight waterdrive that is driving oil to the east. The formation is described as the carbonate formation encountered in the interval from 4,310 feet to 4,420 feet on the log of the Apache Corp. Davis, M. E. Etal No. 1, (API No. 42-033-31808) located in the H & TC RR Co Survey, A-1103, Borden County, Texas.

Average porosity is 19.7% and average water saturation is 32%. The initial reservoir pressure was approximately 2,000 psi and current pressure beneath the unit area is less than 1,000 psi. The field was produced with a single well for almost thirty five years. The GOR has been steady at 350 scf/bbl and has recently increased to 550 scf/bbl. Apache believes the reservoir pressure has dropped below the bubble point and needs to repressurize the reservoir to prevent waste. Apache performed extensive waterflood studies to predict the waterflood's performance. The waterflood program will consist of six producing wells and two injection wells set up in a line drive pattern. Initially make up water will be supplied from the Santa Rosa saltwater aquifer to supplement the waterflood project. Apache has drilled two new injection wells and may drill an additional new producing well.

The proposed Von Roeder West Unit consists of 4 tracts which contain a total of 812.79 acres. There are approximately 12,200 acre-feet of Clear Fork in the proposed unit area. The participation formula is based on a ratio of oil production from the Tract and oil production from all Tracts in the Unitized Formation. The Unit Agreement has been ratified by over 78% of the royalty interest ownership and 100% of the working interest ownership. There are no state lands in the Unit Area.

It is estimated that the total cost to implement the project will be \$1,182,000. Secondary reserves are estimated to be 1,623,000 BO. Estimated net revenue from the secondary recovery project is \$83 million at \$65/bbl.

### **FINDINGS OF FACT**

1. Notice of this hearing was sent to all operators and royalty interest owners within the proposed unit and to offset operators and mineral owners of unleased tracts. Notice was also published in *The Borden Star*, a newspaper

of general circulation in Borden County, for four consecutive weeks beginning October 3, 2007. There were no protests to the application.

2. The proposed unit consists of 4 tracts which contain a total of 812.79 acres.
3. The unitized formation is the subsurface portion of the Unit Area commonly known as the Clear Fork reservoir. The formation is described as the interval from 4,310 feet to 4,420 feet on the log of the Apache Corp. Davis, M. E. Etal No. 1, (API No. 42-033-31808) located in the H & TC RR Co Survey, A-1103, Borden County, Texas.
4. Secondary recovery operations will result in the recovery of an estimated 1.623 MMBO which would otherwise go unrecovered.
5. The cost to implement the project does not exceed the value of additional reserves to be recovered.
6. The participation formula is based on a ratio of remaining primary reserves plus a ratio of original oil in place and a ratio of ultimate primary reserves.
7. The secondary recovery project will not be successful unless the area is unitized.
8. The secondary recovery program will use salt water from Santa Rosa Aquifer initially.
9. The agreement was voluntarily executed by all parties affixing their signatures thereto and no person has been compelled or required to enter into the agreement. The unit agreement binds only those persons who have executed it, their heirs, successors, assigns and legal representatives. The rights of all owners of interests in the field will be protected under the operation of the unit, regardless of whether an owner signed the unit agreement.
10. The owners of interest in the oil and gas under each tract of land within the area reasonably defined by development have been given an opportunity to enter into the unit on the same yardstick basis as owners of interest in the oil and gas under the other tracts in the unit.
11. The proposed injection program will move hydrocarbons across lease lines, and unitization is necessary in order to protect the correlative rights of the various interest owners.

12. The unitization agreement is necessary to accomplish the purposes of establishing a unit to effect secondary recovery operations and to operate the necessary cooperative facilities. Other available or existing methods or facilities for secondary recovery operations are inadequate for the purpose of secondary recovery.
13. The unit agreement does not provide, either directly or indirectly, for the cooperative refining or marketing of crude petroleum, distillate, condensate, or gas, or any by-product thereof.
14. The unit agreement is subject to all valid orders, rules and regulations of the Railroad Commission.
15. The unit agreement contains no provision regarding field rules, nor does it limit the amount of production of oil or gas from the unitized area. The unit agreement does not release the operator from his obligation to reasonably develop lands or leases as a whole.
16. The unit agreement is a voluntary agreement entered into for the purpose of conducting secondary recovery operations.
17. The unit agreement does not provide for the location of wells.
18. There are no State lands in the unit.
19. The reservoir described in the unit agreement is a suitable reservoir for the proposed secondary recovery operation.
20. The unit agreement contains only the acreage reasonably necessary to accomplish the proposed secondary recovery project.
21. The unit agreement has been ratified by 100% of the working interest ownership and over 78% of the royalty interest ownership.
22. On tracts where 100% sign-up is not attained, the applicant will continue to use periodic well testing to account for production from that tract.

**CONCLUSIONS OF LAW**

1. Proper notice was given to all persons legally entitled to notice.
2. All things have occurred or have been accomplished that are necessary to give the Commission jurisdiction in this matter.

3. Applicant's proposed secondary recovery project satisfies all of the requirements set out in TEX. NAT. RES. CODE ANN. §§101.001 et seq. (Vernon 1993).
4. Approval of the proposed unit agreement and secondary recovery operations is in the public interest and is necessary to prevent waste and to promote the conservation of oil or gas or both.

**EXAMINERS' RECOMMENDATION**

Based on the above findings of fact and conclusions of law, the examiners recommend approval of the proposed Von Roeder West Unit and secondary recovery operations project as set out in the attached order.

Respectfully submitted,

Andres J. Trevino  
Technical Examiner

James Doherty  
Hearings Examiner