**OIL AND GAS DOCKET NO. 08-0265984**

---

**THE APPLICATION OF STORM PEAK ENERGY, LLC TO CONSOLIDATE THE GERALDINE (DELAWARE 4000) FIELD INTO THE GERALDINE (DELAWARE 3400) FIELD AND TO AMEND FIELD RULES FOR THE GERALDINE (DELAWARE 3400) FIELD, CULBERSON AND REEVES COUNTIES, TEXAS**

---

**OIL AND GAS DOCKET NO. 08-0265985**

---

**THE APPLICATION OF STORM PEAK ENERGY, LLC TO AMEND FIELD RULES FOR THE FORD, WEST (4100) FIELD, CULBERSON AND REEVES COUNTIES, TEXAS**

---

**HEARD BY:** Richard D. Atkins, P.E. - Technical Examiner

**HEARING DATE:** July 13, 2010

| **APPEARANCES:** | **REPRESENTING:** |
|---|---|
| **APPLICANT:** | |
| Glenn Johnson | Storm Peak Energy, LLC |
| David Cox | |
| Leigh Pate | |

## EXAMINER'S REPORT AND RECOMMENDATION

## STATEMENT OF THE CASE

Field Rules for the Geraldine (Delaware 3400) Field, ID No. 34529 200, were originally adopted in Final Final Order No. 8-78,365, effective July 19, 1982, as amended. The rules currently in effect for the field are summarized as follows:

1. 467'-933' well spacing;

2. 40 acre units;

3. Allocation based on 100% acres.

The Geraldine (Delaware 4000) Field, ID No. 34529 333, is currently operating under Statewide Rules.

**OIL AND GAS DOCKET NOS. 08-0265984 AND 08-0265985**

Field Rules for the Ford, West (4100) Field, ID No. 31913 500, were originally adopted in Final Order No. 8-76,358, effective April 6, 1981. The rules currently in effect for the field are summarized as follows:

1. 467'-933' well spacing;

2. 40 oil acre units;

3. Allocation based on 100% acres;

4. Surface casing requirements;

5. Multiple 49B allocation for gas wells with a maximum of 160 acre gas units.

Storm requests to consolidate the Geraldine (Delaware 4000) Field into the Geraldine (Delaware 3400) Field. Storm also requests that the Field Rules for the Geraldine (Delaware 3400) and Ford, West (4100) Fields be renumbered and amended to provide for a correlative interval, 330'-660' well spacing and 40 acre units with optional 20 acre density.

To satisfy State Statutes, the examiner recommended a two factor allocation formula and Storm did not consider this recommendation to be adverse. As a result, Storm proposed an allocation factor based on 95% acres and 5% per well for both fields.

The application was unprotested and the examiner recommends that the Geraldine (Delaware 4000) Field be consolidated into the Geraldine (Delaware 3400) Field and that Field Rules for the Geraldine (Delaware 3400) and Ford, West (4100) Fields be re-numbered and amended, as proposed by Storm.

## DISCUSSION OF EVIDENCE

The Geraldine (Delaware 3400) Field was discovered in March 1982. There is no designated interval for the field, but production is from a depth of approximately 3,500 feet. The field is classified as associated-49B and there are 23 producing oil wells and 1 shut-in gas well carried on the proration schedules. Cumulative production from the field through June 2010 is 1.9 MMBO and 7.4 BCFG.

The Geraldine (Delaware 4000) Field was discovered in April 1962. There is no designated interval for the field, but production is from a depth of approximately 4,000 feet. The field is classified as associated-49B and there is 1 producing oil well and no gas wells carried on the proration schedules. Storm is the only operator in the field. Cumulative production from the field through June 2010 is 179.3 MBO and 217.1 MMCFG.

**OIL AND GAS DOCKET NOS. 08-0265984 AND 08-0265985**

The Ford, West (4100) Field was discovered in April 1963. There is no designated interval for the field, but production is from a depth of approximately 4,100 feet. The field is classified as associated-49B and there are 36 producing oil wells and 2 shut-in gas wells carried on the proration schedules. Cumulative production from the field through June 2010 is 3.3 MMBO and 11.7 BCFG.

Storm is proposing to consolidate the Geraldine (Delaware 4000) Field into the Geraldine (Delaware 3400) Field. The two Geraldine fields to be consolidated are geographically intermingled and there are no other fields contained within the proposed correlative interval. The proposed designated interval for the consolidated field is the entire correlative interval between 2,362 feet and 4,504 feet as shown on the log of the Texaco, Inc. - Culberson “X” Fee Lease, Well No. 9 (API No. 42-109-31636), Section 5, Block 58, T-2-S, T&P RR Co. Survey, Culberson County, Texas. The proposed designated interval for the Ford, West (4100) Field is the entire correlative interval between 2,494 feet and 4,614 feet as shown on the log of the Texaco, Inc. - Culberson “V” Fee Lease, Well No. 2 (API No. 42-109-31428), Section 21, Block 58, T-1-S, T&P RR Co. Survey, Culberson County, Texas. The two correlative intervals include the Bell Canyon and Cherry Canyon formations which are part of the Permian age Delaware Mountain Group.

Both the Geraldine (Delaware 3400) and Ford, West (4100) Fields are comprised of the terminal portions of submarine fan channel sands that were deposited by turbidity currents. The sands have a broad lenticular geometry, northeast regional dip and terminate into laminated siltstones. Both fields have a depletion drive as the primary drive mechanism. Most of the production to date has been produced from the U-2 interval, which is located in the Upper Cherry Canyon formation. However, there are numerous other zones in the Bell Canyon and Lower Cherry Canyon formations that have been tested to be productive and are important secondary objectives.

Well spacing of 330'-660', 40 acre units with optional 20 acre density will provide flexibility in locating wells for future development in the area. Storm will be actively developing the consolidated interval by drilling infill wells on 20 acre density and completing existing wells into additional zones. Both the Geraldine (Delaware 3400) and Ford, West (4100) Fields lie just west of the Geraldine (Ford) Field, which has already been developed on 20 acre density. Storm believes that optional 20 acre density is necessary for the efficient and effective depletion of the fields.

Storm used an average porosity of 23.5%, an average water saturation of 47.7% and an average net pay of 15 feet and calculated an original oil in place and recovery factor for both fields. For the Geraldine (Delaware 3400) Field, the original oil in place was 28.4 MMBO and the field had a recovery factor of 9.5%. For the Ford, West (4100) Field, the original oil in place was 31.1 MMBO and the field had a recovery factor of 8.6%.

Storm analyzed the ultimate recoveries of 124 wells that had produced from the U-2 zone and the average ultimate recovery was 49 MBO and 156 MMCFG. Using a ratio of 20 acre wells to 40 acre wells that was calculated from the recovery factors for each field, Storm calculated an ultimate recovery for 20 acre infill wells in the Geraldine (Delaware 3400) Field of 33 MBO and an ultimate recovery for the Ford, West (4100) Field of 42 MBO.

In addition, Storm analyzed the ultimate recoveries from a cluster of 11 wells that were originally drilled in 1982 on forty acre spacing in the Geraldine (Delaware 3400) Field. The average ultimate recovery was 53 MBO. In 2001, 3 infill 20 acre wells were drilled inside the cluster of 11 wells. The average ultimate recovery for each of the three 20 acre infill wells is expected to be 35 MBO.

Based on the analysis above and the fact that some of the 20 acre infill locations are on the edge of the fields where the pay is thinner, Storm estimated the 20 acre infill well recoveries to be in the range of 25 MBO to 35 MBO. Since there are 40 potential 20 acre locations in both the Geraldine (Delaware 3400) and Ford, West (4100) Fields, Storm believes that the total incremental reserves will range from 1.0 MMBO to 1.4 MMBO.

A multi-factor allocation formula is necessary for the protection of correlative rights pursuant to State Statutes. Therefore, Storm proposed a two-factor allocation formula based on 95% acres and 5% per well.

## FINDINGS OF FACT

1. Notice of this hearing was given to all persons entitled to notice and no protests were received.

2. The Geraldine (Delaware 3400) Field was discovered in March 1982.

    a. There is no designated interval for the field, but production is from a depth of approximately 3,500 feet.

    b. The field is classified as associated-49B and there are 23 producing oil wells and 1 shut-in gas well carried on the proration schedules.

    c. Field Rules provide for 467'-933' well spacing, 40 acre units and allocation based on 100% acres.

3. The Geraldine (Delaware 4000) Field was discovered in April 1962.

    a. There is no designated interval for the field, but production is from a depth of approximately 4,000 feet.

b. The field is classified as associated-49B and there is 1 producing oil well and no gas wells carried on the proration schedules.

c. The field operates under Statewide Rules and Storm is the only operator in the field.

4. The Ford, West (4100) Field was discovered in April 1963.

a. There is no designated interval for the field, but production is from a depth of approximately 4,100 feet.

b. The field is classified as associated-49B and there are 36 producing oil wells and 2 shut-in gas wells carried on the proration schedules.

c. Field Rules provide for 467'-933' well spacing, 40 oil acre units, allocation based on 100% acres, surface casing requirements and multiple 49B allocation for gas wells with a maximum of 160 acre gas units.

5. The two Geraldine fields to be consolidated are geographically intermingled and there are no other fields contained within the proposed correlative interval. The designated interval for the consolidated field should be the entire correlative interval between 2,362 feet and 4,504 feet as shown on the log of the Texaco, Inc. - Culberson “X” Fee Lease, Well No. 9 (API No. 42-109-31636).

6. The designated interval for the Ford, West (4100) Field should be the entire correlative interval between 2,494 feet and 4,614 feet as shown on the log of the Texaco, Inc. - Culberson “V” Fee Lease, Well No. 2 (API No. 42-109-31428), Section 21, Block 58, T-1-S, T&P RR Co. Survey, Culberson County, Texas.

7. Both the Geraldine (Delaware 3400) and Ford, West (4100) Fields are comprised of the terminal portions of submarine fan channel sands that were deposited by turbidity currents.

a. The two correlative intervals include the Bell Canyon and Cherry Canyon formations which are part of the Permian age Delaware Mountain Group.

b. Both fields have a depletion drive as the primary drive mechanism.

c. Most of the production to date has been produced from the U-2 interval, which is located in the Upper Cherry Canyon formation.

d. There are numerous other zones in the Bell Canyon and Lower Cherry Canyon formations that have been tested to be productive and are important secondary objectives.

8. Well spacing of 330'-660', 40 acre units with optional 20 acre density will provide flexibility in locating wells for future development in the area.

a. Both the Geraldine (Delaware 3400) and Ford, West (4100) Fields lie just west of the Ford Geraldine Unit, which has already been developed on 20 acre density.

b. The ultimate recovery for 20 acre infill wells in the Geraldine (Delaware 3400) Field is 33 MBO and the ultimate recovery for the Ford, West (4100) Field is 42 MBO.

c. The average ultimate recovery for each of the three 20 acre infill wells drilled to date is expected to be 35 MBO.

d. Since there are 40 potential 20 acre locations in both the Geraldine (Delaware 3400) and Ford, West (4100) Fields, the total incremental reserves will range from 1.0 MMBO to 1.4 MMBO.

e. Optional 20 acre density is necessary for the efficient and effective depletion of the fields.

9. The proposed two-factor allocation formula based on 95% acres and 5% per well will satisfy State Statutes.

## 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. Consolidating the Geraldine (Delaware 4000) Field into the Geraldine (Delaware 3400) Field and renumbering and amending the Field Rules for the Geraldine (Delaware 3400) and Ford, West (4100) Fields is necessary to prevent waste, protect correlative rights and promote development of the fields.

**OIL AND GAS DOCKET NOS. 08-0265984 AND 08-0265985**

## RECOMMENDATION

Based on the above findings of fact and conclusions of law, the examiner recommends that the Commission consolidate the Geraldine (Delaware 4000) Field into the Geraldine (Delaware 3400) Field and renumber and amend the Field Rules for the Geraldine (Delaware 3400) and Ford, West (4100) Fields, as proposed by Storm Peak Energy, LLC.

Respectfully submitted,

Richard D. Atkins, P.E.
Technical Examiner