HEARINGS DIVISION

OIL AND GAS DOCKET NO. 03-0298114

THE APPLICATION OF SM ENERGY COMPANY TO CONSOLIDATE THE DEEP PINES WEST (WOODBINE) AND DEEP PINES WEST (AUSTIN CHALK) FIELDS INTO THE PROPOSED DEEP PINES (WDBN/AC) FIELD AND TO ADOPT SPECIAL TEMPORARY FIELD RULES FOR THE CONSOLIDATED FIELDS, WALKER AND SAN JACINTO COUNTIES, TEXAS

HEARD BY: Richard Eyster, P.G. - Technical Examiner
Laura Miles-Valdez - Hearings Examiner

REVIEWED BY Jennifer Cook- Administrative Law Judge

HEARING DATE: October 27, 2015

CONFERENCE DATE: September 27, 2016

APPEARANCES:	**REPRESENTING:**
H. Philip Whitworth	SM Energy Company
Davin McGinnis	
Wilson Cash	
Jeff Jankowski	
Zac Griffin	
Hans Swolfs	

EXAMINERS' REPORT AND RECOMMENDATION

STATEMENT OF THE CASE

Notice of this hearing was provided to all persons entitled to notice at least ten (10) days prior to the date of the hearing and no protests were received.

SM Energy Company ("SM") requests that the Deep Pines West (Woodbine) and the Deep Pines West (Austin Chalk) Fields be consolidated into a new field called the Deep Pines (WDBN/AC) Field and that special temporary field rules to remain in effect for 24 months be adopted for the Deep Pines (WDBN/AC) Field as follows:

1. That the consolidated field be defined as that certain correlative interval and its stratigraphic equivalent from 12,435' to 13,272' as shown on the electric

log of the SM Energy Company Horizon Properties Well No. 2H (API No. 407-307342), John L. Lynch Survey, A 197, San Jacinto County, Texas), and shall be designated as a single reservoir for proration purposes and designated as the Deep Pines (WDBN/AC) Field.

2. Spacing:

   (a) 330' lease line spacing for vertical wells;

   (b) 330'/100' lease line spacing for horizontal wells;

   (c) 0' between well spacing for both horizontal and vertical wells;

   (d) take point rule incorporating the distances in 2(b) above including provisions that the 100' minimum distance applies to any property line in a non-perpendicular distance from the orientation of the drainhole and the 330' minimum distance applies to any property line in a perpendicular distance from the orientation of the drainhole;

   (e) 50' box rule; and

   (f) off-lease penetration point rule;

3. Density/proration unit rule:

   (a) 320 acre standard gas drilling and proration units plus a 10% tolerance for both vertical and horizontal wells;

   (b) Special formula to determine the maximum acreage that may be assigned to a horizontal gas well as follows:

   A = (L x 0.11488) + 320 acres, where A = calculated area assignable, if available, to a horizontal drainhole well for proration purposes rounded upward to the next whole number evenly divisible by 40 acres; and L = the horizontal displacement of the well measured in feet between the first take point and the last take point within the designated interval provided that L is at least 100';

   (c) No maximum diagonal limitation for gas proration units; and

   (d) No requirement to file proration unit plats for individual wells in the field but allowing operators to file such plats if they so desire;

4. Allocation formula based upon 95% acreage and 5% per well;

5. Stacked Lateral Rule:

(a) All take points of a Stacked Lateral Well's horizontal drainholes shall be within a rectangular area the width of which is 660' and the length of which is 1.1 times the distance between the first and last take points of the Record Well; and

(b) No maximum or minimum distance limitation in a vertical direction between drainholes of the same Stacked Lateral Well;

6. Suspend the allocation formula for the field; and

7. These rules to be adopted as temporary field rules for a period of 24 months.

This application was unprotested and theTechnical Examiner and the Administrative Law Judge (collectively the "Examiners") recommend that the fields be consolidated and that special temporary field rules be adopted as requested by SM Energy Company for the Deep Pines (WDBN/AC) Field, Walker and San Jacinto Counties, Texas.

DISCUSSION OF THE EVIDENCE

The Deep Pines West (Austin Chalk) Field was discovered by SM's Horizon Properties No. 1H Well, in Walker County, on July 29, 2012. Cumulative gas production through June 2015, in this field was 90 mmscf and cumulative condensate production was 13 mstb. The Deep Pines West (Woodbine) Field was discovered by SM's Horizon Properties No. 2H Well, in San Jacinto County, on March 28, 2013. Cumulative gas production from the Deep Pines West (Woodbine) Field through June 2015, in this field was 2,201 mmscf (millions of standard cubic feet) and 132 mstb, (million stock tank barrels). SM's discovery wells for each of these two fields are the only wells completed in the two fields in question as reflected on the proration schedules. However, SM has permitted and completed six additional wells in the Deep Pines West (Woodbine) Field as Wildcat wells that are not shown on the proration schedule for this field. The cumulative production figures for the Deep Pines West (Woodbine) Field set forth above include the production from these six additional wells. All of these wells should be transferred to the Deep Pines (WDBN/AC) Field. Both the Deep Pines West (Austin Chalk) and the Deep Pines West (Woodbine) Fields are governed by statewide rules as non-associated gas fields.

The proposed field interval for the consolidated field is from the top of the Austin Chalk to the base of the Woodbine. This correlative interval includes separate accumulations of hydrocarbons requiring a two-factor allocation formula. This field interval is defined as that certain correlative interval and its stratigraphic equivalent from 12,435' to 13,272' as shown on the electric log of SM's Horizon Properties No. 2H Well, API No. 42-407-30734, J.L. Lynch Survey, A-197, San Jacinto County, Texas. This field interval extends across a vast area in Walker and San Jacinto Counties.

The proposed development is through the drilling of horizontal wells with the primary

target being a thin Woodbine sand immediately below a shale interval separating the Woodbine from the Austin Chalk. There is a secondary Woodbine sand target interval that is below the primary target within the Woodbine and separated from it by silty shale. These Woodbine sand target intervals have a porosity from 2% to 12% and a permeability of 20 md to 200 md. The Austin Chalk interval is a much poorer reservoir quality rock with porosities from 3% to 5% and permeabilities of 10 md to 100 md, although fractures could provide darcies of permeability.

The consolidation of the Austin Chalk and Woodbine fields will facilitate the horizontal development necessary to produce the recoverable reserves in the target Woodbine sand intervals. The drilling of these horizontal drainholes at depths approaching 13,000' may result in the unintentional deviation of drainholes targeting the Woodbine sands into the Austin Chalk. Combining these fields will allow any production from the Austin Chalk with the Woodbine and maximize ultimate recovery while avoiding unnecessary Rule 10 downhole commingling exceptions and the regulatory burdens associated for both operators and the Commission. In addition, a fluid analysis comparing the Woodbine to the Austin Chalk demonstrates that these fluids are compatible and that their commingling would not impair production while allowing hydrocarbons to be produced that would otherwise not be recovered.

Despite the infancy of development of these target Woodbine sand intervals, the available information indicates that where horizontal wells encounter stratigraphic traps containing porosity that has been preserved or created and that have high permeability, these wells may drain vast areas depending on the extent of the stratigraphic traps, also described as event beds. SM presented evidence of 1,455 acre drainage for a well in a high permeability event bed. The proposed 320 acre density rule and the special formula to determine the maximum acreage that may be assigned to a horizontal gas well of A = (L x 0.11488) + 320 acres is therefore appropriate for assigning acreage to wells that may be drained by horizontal wells completed in these event beds.

The available data indicates that the orientation of these horizontal wells is important to maximizing ultimate recovery. These wells should be drilled perpendicular to the orientation of maximum stress existing in these Woodbine Sands. All 10 of the horizontal wells drilled to date in the proposed field have been drilled essentially in a north/south direction which is consistent with the orientation of maximum stress. This data indicates that a properly oriented horizontal well will drain greater distances in directions perpendicular to the horizontal well's orientation but much less distance in orientations that are not perpendicular from the orientation of the drainhole. This drainage pattern supports the 100/330' dual lease line spacing for horizontal wells and the application of the 100' minimum distance to property lines in a non-perpendicular direction from the drainhole orientation throughout the length of the lateral. The 100'/330' dual lease line spacing rule has also been adopted in numerous other Woodbine and Austin Chalk fields, including the Halliday (Woodbine) Field, the Madisonville W. (Woodbine A) Field, the Sugarkane (Austin Chalk) Field, and the Kurten (Woodbine) Field.

The Commission has also adopted SM's requested 50' box rule and off-lease penetration point rule in fields where there is horizontal development. Additionally, the recently adopted UFT amendments also incorporate these rules. The Stacked Lateral Rule proposed by SM will enable Stacked Laterals to be drilled in both the primary Woodbine sand target and the secondary target, and is appropriate to facilitate the development and maximize production from this consolidated interval.

The Commission has also adopted SM's requested 50' box rule and off-lease penetration point rule in fields where there is horizontal development. In addition, the recently adopted UFT, (Unconventional Fracture Treated Field) amendments also incorporate these rules. The stacked lateral rule proposed by SM will enable stacked laterals to be drilled in both the primary Woodbine sand target and the secondary target, and is appropriate to facilitate the development and maximize production from this consolidated interval.

The Commission has also adopted the requested special formula to determine the maximum acreage that may be assigned to a horizontal well for fields in Commission Districts 1, 2, and 3 in Austin Chalk fields, including the First Shot (Austin Chalk) Field, the Giddings (Austin Chalk-1) Field, the Giddings (Austin Chalk-gas) Field, the Giddings (Austin Chalk-3) Field, the Lomita (Austin Chalk) Field, the Magnolia Springs (Austin Chalk) Field, and the Sugarkane (Austin Chalk) Field. Because there is a market for all the gas that may be produced from the consolidated fields, suspension of the allocation formula is appropriate.

The proposed field rules will provide incentive and facilitate additional development to allow the production of the recoverable reserves from these consolidated fields. Adopting these proposed rules on a temporary basis, to be reviewed by the Commission in 24 months, is appropriate.

FINDINGS OF FACT

1. Notice of this hearing was provided to all persons entitled to notice at least ten (10) days prior to the date of the hearing, and no protests were received.

2. SM discovered the Deep Pines West (Austin Chalk) Field at a depth of 12,430' on July 29, 2012.

   (a) SM's Horizon Properties No. 1H discovery well is the only well that has been drilled and completed in this field.

   (b) Cumulative gas production from this field through June 2015 was 90 mmscf and cumulative condensate production was 13 mstb.

   (c) This field is currently governed by Statewide rules.

3. SM discovered the Deep Pines West (Woodbine) Field at a depth of 12,564' on March 28, 2013.

   (a) SM's Horizon Properties No. 2H discovery well is the only well shown on the Commission's proration schedule that has been drilled and completed in this field.

   (b) SM has drilled and completed six additional wells as Wildcat wells in the Deep Pines West (Woodbine) Field.

   (c) Cumulative gas production from this field through June 2015, including the six wells currently shown as Wildcat wells, was 2,201 mmscf and cumulative condensate production was 132 mstb.

   (d) This field is currently governed by Statewide rules.

4. The proposed consolidated field interval is from the top of the Austin Chalk to the base of the Woodbine.

   (a) This correlative interval includes separate accumulations of hydrocarbons.

   (b) The primary target for horizontal wells is a thin Woodbine sand immediately below a shale interval separating the Woodbine from the Austin Chalk.

   (c) There is a secondary target interval below the primary target within the Woodbine and separated from the primary target by a silty shale.

   (d) The Woodbine sand target intervals have a porosity of 2% to 12% and a permeability of 20 md to 200 md.

   (e) The Austin Chalk interval is of much less reservoir quality with porosities from 3% to 5% and permeabilities of 10 md to 100 md.

5. All wells completed in the Austin Chalk and Woodbine fields, including those currently carried as Wildcat wells, should be transferred to the consolidated field.

6. Consolidation of the Austin Chalk and Woodbine fields will facilitate the horizontal development necessary to produce the recoverable reserves in the target Woodbine sand intervals.

(a) Drilling horizontal drainholes at these deep depths may result in the unintentional deviation of the drainhole targeting the Woodbine sands into the Austin Chalk.

(b) Combining these fields will allow any production from the Austin Chalk with the Woodbine and will maximize ultimate recovery while avoiding unnecessary Rule 10 downhole commingling exceptions.

(c) Fluid analysis confirms that the fluids from the Austin Chalk and Woodbine are compatible and their commingling will not impair production while allowing hydrocarbons to be produced that would otherwise not be recovered.

7. A dual lease line spacing rule of 100'/330' and no between-well spacing limitation will provide flexibility for drilling new wells and allow the efficient development of the consolidated interval.

(a) Horizontal wells must be oriented perpendicular to the maximum stress.

(b) Drainage is more effective in a direction that is perpendicular to the orientation of the horizontal lateral but very limited in a direction that is non-perpendicular from the orientation of the drainhole.

(c) The ineffective drainage in non-perpendicular directions from the orientation of the drainhole is applicable to property lines from the first and last take points and to property lines that may be encountered along the interior of the drainhole in question.

(d) The Commission has adopted this 100'/330' dual lease line spacing rule in numerous Woodbine and Austin Chalk fields.

8. A 320 acre density rule and the requested special formula to determine the maximum acreage that may be assigned to a horizontal gas well will provide for orderly development of this consolidated field.

(a) Wells completed in the high permeability event beds of the target Woodbine sands will drain significant acreage justifying this 320 acre density rule and special formula to determine the maximum acreage that may be assigned to a horizontal well.

(b) The Commission has adopted the same density rule and special formula to determine maximum acreage assignable to horizontal wells in a number of other fields being developed with horizontal wells.

9. Allocation based on 95% acreage and 5% per well and the suspension of the allocation formula will protect correlative rights and satisfy statutory requirements for consolidating separate fields with separate accumulations of hydrocarbons.

10. The proposed field consolidation and temporary special field rules will promote further development of the field and prevent waste.

11. There is a market for all of the gas that may be produced from the consolidated field interval.

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 of this matter.

3. Consolidating the subject fields and adopting the requested temporary field rules for the Deep Pines (WDBN/AC) Field will prevent waste, protect correlative rights, and promote the orderly development of the Field.

RECOMMENDATION

Based upon the above findings of fact and conclusions of law, the Examiners recommend that the Deep Pines West (Austin Chalk) Field No. 23903500 and the Deep Pines West (Woodbine) Field No. 23903750 be consolidated into a new field called the Deep Pines (WDBN/AC) Field, that all wells completed in the field interval be transferred to this new field and that the temporary field rules be adopted for the Deep Pines (WDBN/AC) Field for 24 months as requested by SM Energy.

Respectfully submitted,

Richard Eyster, P.G.
Technical Examiner

Jennifer Cook
Administrative Law Judge