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**THE APPLICATION OF SHELL WESTERN E & P TO CONSOLIDATE VARIOUS MCALLEN RANCH FIELDS INTO A NEW FIELD TO BE KNOWN AS THE MCALLEN RANCH (VKSBG P-V,S CONS) FIELD AND TO ADOPT OPERATING RULES AND REGULATIONS FOR THE MCALLEN RANCH (VKSBG P-V,S CONS) FIELD, HIDALGO COUNTY, TEXAS**

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**Heard by:** Margaret Allen, Technical Hearings Examiner

**Procedural history**

Application received: January 29, 2002

Hearing held: March 1, 2002

**Appearances**

	Representing
George Zimmerman	Shell Western E & P
Lisa M. Corder	
Stella Fleming Welsh	

**EXAMINER'S REPORT AND RECOMMENDATION**

**STATEMENT OF THE CASE**

Shell Western is seeking to consolidate eleven McAllen Ranch Vicksburg fields into a new field to be known as the McAllen Ranch (Vksbg P-V, S Cons) Field. The fields are listed in Finding of Fact 2. The proposed operating rules for the McAllen Ranch (Vksbg P-V, S Cons) Field are summarized as follows:

1. Designated interval between 10,578 feet as shown on the log of the Shell Western Woods Christian Lease Well No. 1, and 13,850 feet as shown on the log of the Shell Western A.A. McAllen Lease Well No. 86;
2. minimum lease-line spacing for gas wells of 467 feet, with no minimum between-well spacing;
3. 80 acre gas proration units with 10% tolerance and a maximum diagonal of 3250', and 40-acre optional units with a maximum diagonal of 2100'; and
4. allocation based 5% per well and 95% on deliverability.

The applicant requested that the allocation formula of the consolidated field be suspended. The examiner suggested that an allocation formula based 50% on acreage and 50% on deliverability would better protect correlative rights. Shell Western did not consider this to be an adverse recommendation.

**DISCUSSION OF THE EVIDENCE**

There are eleven fields in the proposed consolidation and Shell has wells in all of them. Five of the fields also have wells belonging to other operators. Totalfinaelf has one well in each of the McAllen Ranch (Vicksburg R Cent), (Vicksburg S, S.), and (Vicksburg S, SE.) Fields and two in the

McAllen Ranch (Vicksburg -U-V, SE) Field. Forest Oil Corp. has two wells in the McAllen Ranch (Vicksburg S) Field, five in the (Vicksburg S, SE.) Field and 24 in the (Vicksburg -U-V, SE) Field. Texaco operates four in the (Vicksburg-U-V, SE) Field.

Shell operates 72 of the 112 active wells that will be in the consolidated field, and there were also approximately 60 wells that used to produce from the same section but are now plugged and abandoned. Cumulative production from all the wells that have produced from this interval is 904 BCF and 15 million barrels of condensate. There are no oil fields in the area. The first gas field was discovered in 1962 and the last gas field in the proposed consolidation was designated in 1994.

The consolidated field interval comprises various lower Vicksburg sands that were deposited above a major Eocene glide plane. The sands were deposited in delta systems and get thicker to the west as they roll over into the glide plane. The sandstones are cut by many synthetic and antithetic faults and new completions have showed that these faults are barriers or baffles to flow.

The oldest of the five sand packages was deposited on the eastern side of the field area, pinching out against the glide plane near the center of the area. Each younger unit was deposited a little farther to the west, pinching out a little farther west along the glide plane. The youngest sands in the proposed interval were deposited on the western edge of the field and did not extend as far as the eastern edge of the proposed consolidated field.

Shell has suggested using a well on the eastern side of the field to define the bottom of the type section and a well on the western side to define the top of the type section. There is little overlapping section between the two wells--almost all of the rocks in the field's interval are older in the eastern well than those in western well. The top of the designated interval is 10,578 feet in Shell's Woods Christian Lease Well No. 1; this log penetrates the P, Q and R sands before reaching the top of the glide plane at about 13,000 feet. Shell's A.A. McAllen Lease Well No. 86 is four miles east of the Woods Christian Lease Well No. 1. The first sand within the producing section that this well encountered was the R at about 10,600' and the well also penetrated the S, T and UV before reaching the glide plane at 13,850 feet.

The various Vicksburg sandstones can be divided into five packages of sands but all have similar properties, with 17 to 20% porosity and 40 to 55% water saturation. The net feet of productive sandstone in the various packages is quite variable from well to well and may be 150 feet or more. All permeabilities are very low, between 0.03 and 0.13 md, which should limit cross-flow even though the reservoirs are geopressed with initial pressure from 9800 to 11,000 psi. The fluids in the various sands are similar which would limit damage from any cross-flow that occurred.

Because of the multiple reservoirs included within the proposed designated interval, a two-factor allocation formula is necessary. One based 5% per well and 95% on deliverability is close to the Statewide Rules, and will satisfy statutory requirements. Shell has also requested that the gas allocation formula for the consolidated field be suspended and suspension of the formula is part of the notice of hearing. All of the producing wells are in one-well fields or fields where the allocation formula has been suspended.

All of the gas fields to be consolidated have had special field rules adopted, eight with 160-acre standard proration units. All of the fields had well spacing of 467-1200'. Because of the large designated interval in the consolidated field, there may be wells carried in separate fields that are closer

together than 1200 feet. To eliminate problems with closely spaced wells being carried in the same field even though completed in different reservoirs, Shell requested that between-well spacing be eliminated. A number of wells have already been downhole commingled in more than one of the current fields. Shell expects that more intervals will be commingled if this application is approved.

Shell also intends to drill new wells in the Vicksburg P through Vicksburg V sandstones of the McAllen Ranch area to recover remaining reserves in separate fault blocks. Many of the sandstones that will be commingled are no longer economic to produce by themselves and their remaining reserves will be recovered only if wells can be completed in multiple sands. The applicant believes that approval of this application will result in the recovery of reserves that would otherwise be unrecovered. If sandstones can be downhole commingled, the economic limit per completion will be reduced and a wellbore can be produced longer. The cost of a well in this area is four to five million dollars and one to two million dollars of the cost is the fracture stimulation.

Shell calculated the recoveries and drainage areas of 10 wells in the proposed consolidated field. The estimated ultimate recoveries ranged from 1.2 to 11 BCF, with 48 to 74% of the gas-in-place being recovered. The drainage areas ranged from 28 to 85 acres, with the mean and median drainage areas less than 60 acres.

### **FINDINGS OF FACT**

1. Notice of this hearing was given to all operators of wells in the fields to be consolidated on February 6, 2002.
2. The following fields can be produced economically, and without causing waste, if consolidated into a single field:

<b><u>FIELD NAME</u></b>	<b><u>FIELD NO.</u></b>	<b><u>DOCKET</u></b>	<b><u>DATE</u></b>
McAllen Ranch (Vicksburg P, Q)	58742 340	04-0203812	04/11/94
McAllen Ranch (Vicksburg R Cent)	58742 470	4-54,265	11/02/64
McAllen Ranch (Vicksburg R-1, R-2)	58742 564	4-56,907	11/21/66
McAllen Ranch (Vicksburg R-3)	58742 600	4-71796	05/01/79
McAllen Ranch (Vicksburg S)	58742 611	4-54,265	11/02/64
McAllen Ranch (Vicksburg S, S.)	58742 705	4-55,684	11/1/65
McAllen Ranch (Vicksburg S, SE.)	58742 752	4-54,265	11/02/64
McAllen Ranch (Vicksburg T)	58742 799	4-54,265	11/02/64
McAllen Ranch (Vicksburg T, S.)	58742 846	4-56,907	11/21/66
McAllen Ranch (Vicksburg T, SE.)	58742 893	4-54,265	11/02/64
McAllen Ranch (Vicksburg -U-V-, SE)	58742 900	4-54,265	11/02/64

All Wildcat intervals between the above listed fields.

3. Shell has wells in all eleven fields in the proposed consolidation and five of the fields also have wells operated by Totalfinaelf, Forest Oil or Texaco.
4. Shell operates 72 of the 112 active wells that will be in the consolidated field, and about 60 wells that used to produce from the same section are now plugged and abandoned.
5. Cumulative production from all the wells that have produced from this interval is 904 BCF and 15 million barrels of condensate.

6. The first gas field was discovered in 1962 and the last gas field in the proposed consolidation was designated in 1994.
7. The oldest of the five sand packages in the proposed field interval was deposited on the eastern side of the field area, pinching out against the underlying glide plane near the center of the area; each younger unit was deposited a little farther to the west.
8. The youngest rock in the designated interval is at 10,578 feet in Shell's Woods Christian Lease Well No. 1; and the oldest is at 13,000 feet in Shell's A.A. McAllen Lease Well No. 86 is feet to the east. There is little overlapping section between the two wells.
9. Most of the fields were developed on 160-acre density with minimum lease line spacing of 467 feet and between-well spacing of 1200 feet.
10. Eliminating the between-well spacing will facilitate downhole commingling as many of the wells now carried in different fields are less than 1200 feet apart.
11. Adopting a density rule specifying 80 acres with 40-acre optional units is appropriate because a representative sample of the wells showed drainage areas of 28 to 85 acres, with an average drainage area of 56 acres.
12. Downhole commingling production from various sandstones in a single wellbore will lower the economic limit of each completion and allow the recovery of more reserves.
13. As the designated interval includes multiple, stratigraphic reservoirs within the lower Vicksburg, a two factor allocation is required for statutory reasons.
14. Gas allocation based 50% on acreage and 50% on deliverability will protect correlative rights and will satisfy statutory requirements.
15. The gas allocation formula can be suspended as all wells in the proposed consolidated field are now in non-prorated fields--either under AOF status or one-well fields.

#### **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. Consolidation of the requested fields will prevent waste and protect correlative rights, while encouraging conservation.
4. The requested field rules, with an allocation formula based 50% on deliverability and 50% on acreage, for the resultant field, the McAllen Ranch (Vksbg P-V, S Cons) Field, will prevent waste, protect correlative rights within the field, and satisfy statutory requirements.

**EXAMINER'S RECOMMENDATION**

Based on the above findings and conclusions, the examiner recommends that the requested fields be consolidated into a new field to be known as the McAllen Ranch (Vksbg P-V, S Cons) Field. The field rules proposed for the resultant McAllen Ranch (Vksbg P-V, S Cons) Field should be adopted, as per the attached order.

Respectfully submitted,

Margaret Allen  
Technical Hearings Examiner

Date of Commission Action: March 21, 2002