

April 7, 1995

OIL AND GAS DOCKET NO. 01-0208099

THE APPLICATION OF KCS RESOURCES, INC. TO CONSIDER A NEW FIELD DESIGNATION FOR THE PROPOSED SALT FLAT (EDWARDS) FIELD; TO CONSIDER TRANSFERRING CERTAIN WELLS FROM THE SALT FLAT FIELD TO THE PROPOSED NEW FIELD; AND FOR TEMPORARY SPECIAL FIELD RULES FOR THE PROPOSED FIELD, CALDWELL COUNTY, TEXAS

Heard by: Margaret Allen, Technical Hearings Examiner

Procedural History

Application received: March 2, 1995

Hearing held: April 6, 1995

Appearances

	Representing
Flip Whitworth	KCS Resources
Kerry A. Pollard	
Sam L. Pfister	himself

EXAMINER'S REPORT AND RECOMMENDATION

STATEMENT OF THE CASE

The Edwards, Georgetown, Buda and Austin Chalk are all productive formations in the Salt Flat Field. KCS Resources is seeking to have the Edwards production separated from the production of the other formations and transfer all wells producing from the Edwards to a new field to be known as the Salt Flat (Edwards) Field. KCS is also seeking the following temporary field rules for the proposed Salt Flat (Edwards) Field:

1. Designated interval from 2925 to 3440' as shown on the log of the Joe G. Gibson F Gray Estate Well No. 1;
2.
 - a. Well spacing of 100-200' for vertical wells;
 - b. For horizontal wells: all points within correlative interval to be a minimum of 50' from property lines; no minimum between-well spacing;

3. Well density of 2 acres for vertical wells with extra acreage assigned according to the following Table:

Formula: $A = (L \times 0.040) = \text{acres}$

Where

A = calculated area assignable to a Horizontal Drainhole for proration purposes; acres

L = the horizontal distance between the point at which the drainhole penetrates the top of the Edwards and the Horizontal Drainhole end point within the Edwards; feet. A Horizontal Drainhole shall have a minimum "L" of 100'.

L (Feet)	Calculated Area (Acres)	Proration Unit Size (Acres)	Maximum Diagonal (Feet)	Allowable (BOPD)
1 - 100		2	500	30
100-499	$2 \leq A \leq 20$	20	1500	300
500-999	$20 \leq A \leq 40$	40	2100	600
1000-1499	$40 \leq A \leq 60$	60	2675	900
1500-1999	$60 \leq A \leq 80$	80	3250	1200

4. 100% acreage allowable, subject to the additions listed in the Table above for horizontal drainholes.

DISCUSSION OF THE EVIDENCE

The Salt Flat Field was discovered in 1928, and has produced about 82,000,000 barrels of oil. There have been at least 1500 wells completed in the field though many are now inactive. Current production is about 26,000 BO per month, with a 90% water cut. Only about 500 wells are now active, so production averages less than 1 BOPD per producing well.

The Salt Flat Field includes production from the Austin Chalk, Georgetown, Buda and Edwards Formations. Most of the active wells are completed in the Austin Chalk. KCS has drilled one horizontal well in the Edwards Formation and wants to have the Edwards production separated from the production in the other formations. Edwards production is now about 99% water so there are not many wells still completed and active in the Edwards.

KCS is interested in developing the Edwards Formation with horizontal wells because of the recent successful horizontal completions in the nearby Darst Creek (Edwards) and Luling-Branyon Fields. These are also shallow fields developed in the Lower Cretaceous along major down-to-the-coast faults. The Darst Creek Field is along the same fault trend as the Salt Flat Field and has already had production in the Edwards Formation separated from production in the Buda Formation in contemplation of horizontal well development.

Some of the recent horizontal wells in the Darst Creek Field have been highly productive with initial potentials of as much as 1559 BOPD. The initial potential of the horizontal well which KCS completed on January 24, 1995, in the Edwards of the Salt Flat Field was only 41 BOPD and 5708 BWPD. The applicant believes that the addition of a submersible pump to move large volumes of water will increase the oil production though water production is still expected to be 99%. The well is shut-in now pending the new field designation and better disposal facilities.

These horizontal wells are drilled along the crest of the structural strike and are intended to encounter by-passed oil in the top of the structure rather than to cross the multiple fractures most other horizontal wells encounter. The applicant requested that an operator be allowed to situate the end of a horizontal well as close as 25' to a lease line while providing that the lease lines perpendicular to the trace of the drainhole be at least 100' away. This type of horizontal wellbore field rule was designed for a drainhole which crosses multiple fractures and which cannot not drain significantly from matrix reservoir which is perpendicular to the fractures.

The existing rules in the Salt Flat Field provide for 2 acre density with 150-300' well spacing. The applicant does not anticipate that more vertical wells will be drilled into the Edwards but is requesting that lease-line spacing for vertical wells be only 100' to be consistent with the horizontal field rules. KCS is requesting that between-well spacing be waived for horizontal wells in order to extend two drainholes in opposite directions from the same vertical well without regard to penetration points, and to drill the horizontal wells between the existing vertical wells.

KCS is requesting that the two acre density be maintained for the Edwards portion of the previous Salt Flat Field but that the horizontal wells be allowed to add acreage based on the length of the drainhole. Because two acre density is unusually small, the applicant provided a table of requested acre and allowable assignments which are somewhat smaller than in Statewide Rule 86.

The only well with a complete section of Edwards to use for a type log is located just across the fault in the Joe G. Gibson F. Gray Estate Well No. 1. The Edwards extends from 2925' to 3440' in this well. The section immediately above the Edwards is shale and production from the Edwards can readily be separated from production in the overlying beds. The applicant provided a list of wells which are completed in the Edwards section of the Salt Flat Field though there may be additional inactive wells with perforations in the Edwards.

The applicant requested that the horizontal wells be allowed to overproduce their allowables for as much as twelve months after the date of initial completion. If production is restricted by shutting-in a horizontal wellbore, there is a risk of losing the end of the wellbore. In addition, the pressure depletion would decrease and the aquifer might again overrun the remaining oil.

EXAMINER'S OPINION

The examiner recommends that horizontal wells be located at least a minimum of 50' from lease lines in all directions. Production is not from fractures which drain preferentially in one direction but will tend to be radial on the ends of the drainhole. The application did not consider this to be an adverse decision. Evidence from the Luling-Branyon (Edwards) Field indicates that despite horizontal wells being drilled extremely close to existing vertical wells there were no adverse effects on production from the lease.

FINDINGS OF FACT

1. Notice of this hearing was issued on March 17, 1995, to all operators in the Salt Flat Field and proposed Salt Flat (Edwards) Field.
2. The Salt Flat Field was discovered in 1928, and has produced about 82,000,000 BO from over 1500 wells.
3. The production in the Salt Flat Field has come from the Austin Chalk, Georgetown, Buda and Edwards Formations.
4. The Edwards Formation is separated by shale from the overlying productive formations and there are only a dozen or so wells which are still completed in the Edwards because of the high water-cut in the Edwards.
5. Recently horizontal wells have discovered unproduced reserves in the Edwards Formation in the Luling-Branyon and Darst Creek (Edwards) Fields which are similar to the Salt Flat Field.
6. The Salt Flat Field has been developed on 2 acre density and if the Salt Flat (Edwards) Field is separated out from the Salt Flat Field, it should continue the 2 acre density.
7. Recent experience in similar fields indicates that the horizontal Edwards wells do not interfere with the horizontal Edwards production and if there were between-well spacing limits the horizontal wells probably could not be drilled between the old vertical wells.
8. The unrecovered reserves are remaining along the crest of the Edwards structure and the flexibility of 50' lease line spacing will allow horizontal wells to be located as close to the crest as possible.
9. Large amounts of water must be produced to keep the remaining oil production ahead of the aquifer influx and horizontal wells should be allowed to produce at capacity for as long as a year before having to make-up overproduction.
10. The Joe G. Gibson F. Gray Estate Well No. 1 contains a complete section of the Edwards from 2925 to 3440' in the log of this well.
11. The following wells are completed in the Edwards Formation and should be transferred to the Salt Flat (Edwards) Field:

LSKL Oil Co.	H. Meriwether Well No. 37
LSKL Oil Co.	H. Meriwether Well No. 39
LSKL Oil Co.	H. Meriwether Well No. 40
LSKL Oil Co.	H. Meriwether Well No. 41

B.J.P. Operating	Northcutt Well No. 3
Ogo Refining	Willie Moses "A" Well No. 2
Ogo Refining	Willie Moses "A" Well No. 3
Hawk Oil Co.	J.M. Hanson Well No. 1

CONCLUSIONS OF LAW

1. Proper notice was issued as required by all applicable codes and regulatory statutes.
2. All things have occurred and been accomplished to give the Commission jurisdiction in this matter.
3. Granting the requested field separation and proposed rules on a temporary basis will prevent waste, promote conservation and promote an orderly development of the reservoir.

EXAMINER'S RECOMMENDATION

Based on the above findings and conclusions, the examiner recommends that the Salt Flat (Edwards) Field be separated from the Salt Flat Field and the wells listed in Finding of Fact No. 11 be transferred to the new field. The requested field rules should be adopted for a period of 18 months.

Respectfully submitted,

Margaret Allen
Technical Hearings Examiner

Date of Commission Action _____