

**THE APPLICATION OF KINDER MORGAN PRODUCTION CO LLC TO CONSIDER
UNITIZATION AND CO2 INJECTION AUTHORITY AND ENTITY FOR DENSITY
AUTHORITY FOR THE KATZ (STRAWN) UNIT, KATZ (STRAWN) FIELD, HASKELL,
KING, KNOX AND STONEWALL COUNTIES, TEXAS**

HEARD BY: Richard D. Atkins, P.E. - Technical Examiner
Mark J. Helmueller - Legal Examiner

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RECORD CLOSED: April 6, 2010

EXAMINERS' REPORT ISSUED: April 7, 2010

APPEARANCES:

For Applicant Kinder Morgan Production Co LLC:

Brian R. Sullivan
Paul Nunley
Michael Goode
David J. Smith

EXAMINERS' REPORT AND RECOMMENDATION

STATEMENT OF THE CASE

Kinder Morgan Production Co LLC ("Kinder Morgan") requests Commission authority for unitization of the Katz (Strawn) Unit and approval of CO2 injection operations on the Unit. Kinder Morgan also requests that the Katz (Strawn) Unit be approved as an entity for density purposes.

After the hearing, the record was left open so that Kinder Morgan could submit additional exhibits, including the unit approval from the School Land Board. The application was unopposed and the examiners recommend approval.

DISCUSSION OF THE EVIDENCE

The original Katz Field was discovered in January 1951 at an average depth of 4,900 feet. The Katz (Strawn) Field was created in November 2009 when the Katz, Katz (Day) and Katz (5100) Fields were consolidated. The field operates under 150'-0' well

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spacing, 40 acre density and allocation based on 75% acres and 25% per well. The top allowable is 102 BOPD with a casinghead gas limit of 204 MCFGPD. Cumulative production from the proposed unit through June 2009 is 60.0 MMBO and 20.4 BCFG.

Waterflooding was initiated in the Katz and Katz (5100) Fields in 1984 and several units were approved in the fields. Kinder Morgan became the operator of the Southwest River Unit, the East River Unit and the C. B. Long Unit in 2006. Kinder Morgan has 33 active and 36 inactive oil wells and 25 active and 5 inactive injection wells carried on the proration schedule. These wells currently produce 367 BOPD, 99 MCFGPD and 28,900 BOPD, which is over a 98% water cut. Apache Corporation is the only other operator in the field and their leases are north of Kinder Morgan's acreage. Apache opted against participating in the proposed Katz (Strawn) Unit

Kinder Morgan has successful CO₂ floods in other fields and plans to initiate a CO₂ injection project in the Katz (Strawn) Field. Kinder Morgan is requesting a "Super Unit" which consists of its three existing waterflood Units combined with additional acreage that it believes is productive. Kinder Morgan cited approval of a similar consolidated unit in *Oil & Gas Docket No. 09-0224077: Application of Venoco, Inc. for Unitization and Secondary Recovery Authority in the Big Mineral Creek (Consolidated) Field, Grayson County, Texas* (Final Order entered April 25, 2000) by the Commission as support for the consolidation requested for the proposed Katz (Strawn) Unit. The CO₂ will be delivered to the Katz (Strawn) Field via a newly constructed 91 mile 10 inch pipeline from the Kelly Snyder Field area.

The unitized formation is the subsurface portion of the Unit Area commonly known as the Strawn Formation between the subsurface depths of 4,963 feet and 5,691 feet as shown on the log of the Sid Katz - H. T. Lorentzen "C" Lease, Well No. 11, W. Cordova Survey, A-63, Stonewall County, Texas. This interval includes the entire Strawn Formation from the base of the Cisco/Canyon Formation to the top of the Caddo Formation and contains the 1st, 2nd and 3rd Strawn Sands.

The proposed Katz (Strawn) Unit consists of seven tracts which contain 7,193.75 acres. The proposed unit contains all of the productive portions of the Strawn Sands, as demonstrated by cross sections provided by Kinder Morgan. The productive interval has an average porosity of 17%, an average water saturation of 28% and an average net pay thickness of 135 feet.

Kinder Morgan calculated the original oil in place to be 200.4 MMBO. Primary recovery from the field was estimated to be 30.1 MMBO or 15% of the original oil in place. Secondary recovery was estimated to be 40.1 MMBO or 20% of the original oil in place. Kinder Morgan estimates that the CO₂ injection project will result in the recovery of an additional 23.8 MMBO or 12% of the original oil in place, resulting in an ultimate recovery for the field of approximately 50% of the original oil in place. Kinder Morgan plans to drill 88 new wells and workover 50 of the existing wells. The total cost to implement and operate the CO₂ injection project is expected to be \$145 million. The estimated net present

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value over the life of the project after all costs are recovered is expected to be \$389 million. This estimate is based on an oil price of \$60 per barrel.

The participation formula for each tract in the Unit is based on 100% of the original oil in place underlying each tract. At the time of the hearing, 99.98% of the working interest ownership and 77.9% of the royalty interest ownership had signed the unit agreement. Tract No. 1 includes state lands. On April 6, 2010, the School Land Board approved joining the state lands into the proposed Katz (Strawn) Unit. Kinder Morgan estimates that including the state lands into the unit raises the royalty interest ownership participation to 85% overall.

Kinder Morgan proposes to leave in place the original waterflood units which were approved by the Commission for the Southwest River Unit, the East River Unit and the C. B. Long Unit. Each waterflood unit will join the unit as it currently exists, instead of joining on a tract by tract basis. The unit agreements will not be terminated after the requested unit is approved. Each of the existing waterflood units has a separate participation formula which is also distinct from the participation formula for the proposed Katz (Strawn) Unit. While the unit agreements for the waterflood units will not be terminated, the tankage for each waterflood unit will be removed. Production from the wells on the proposed unit will be into a central battery. Kinder Morgan will conduct monthly well tests to allocate production to wells on tracts for which 100% sign-up was not achieved.

Sign up for the proposed unit for royalty owners currently participating in the three existing waterflood units was broken down as follows: Southwest River Unit, 85.38%; the East River Unit, 73.11%; and, the C. B. Long Unit 61.74%. Royalty interest owners who consented to the original waterflood unit agreements will participate under the formula in the original waterflood unit agreement, not the participation formula for the proposed Katz (Strawn) Unit.

Kinder Morgan requests that the Katz (Strawn) Unit be designated as an entity for density purposes. This will allow Kinder Morgan to put additional wells, if necessary, in optimum locations on the unit and would comply with the no between well spacing rule.

EXAMINERS' REPORT

Kinder Morgan's proposed Katz (Strawn) Unit presents three unique legal issues with respect to the requested unitization authority for CO₂ injection. First, the consolidation of existing units goes beyond the *Vennoco* case which combined four waterflood units for continuing joint secondary recover operations, without adding acreage to the new unit. Second, approval of the proposed Katz (Strawn) Unit will not result in the termination of the three Commission approved waterflood units. Third, while the waterflood units will continue to exist as legal entities, all tankage will be removed and production allocated to the waterflood units based on monthly individual well tests for any nonparticipating interest owners.

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The examiners do not see any of the three issues as impediments to approval of Kinder Morgan's proposed Katz (Strawn) Unit. The consolidation and continuation of the existing Southwest River Unit, East River Unit and C. B. Long Unit waterflood units were issues which were clearly contemplated in the Notice of Hearing which was sent to all interest owners in the proposed Katz (Strawn) Unit. No interested party appeared at the hearing to protest the proposed Katz (Strawn) Unit. Therefore, it does not appear that either the consolidation or continuation issues present a roadblock to potential approval.

With respect to the continued existence of the three previously approved waterflood units, Kinder Morgan intends to obtain a new oil lease identification number for the proposed Katz (Strawn) Unit. All wells in the existing Southwest River Unit, East River Unit and C. B. Long Unit will be transferred to the new Katz (Strawn) Unit. Production will not be reported under the Southwest River Unit, the East River Unit and the C. B. Long Unit. As long as the three existing waterflood units do not have 100% royalty interest participation, Kinder Morgan will conduct monthly individual well tests for each producing well on the waterflood unit with nonparticipating interest owners. The monthly individual well tests will be reported on Commission Form W-10 (Oil Well Status Report)

The examiners note that review of the unit agreements for the Southwest River Unit, the East River Unit and the C. B. Long Unit indicates that none of those three agreements authorize production allocation on the basis of monthly individual well tests. Additionally, the Final Orders in which the Commission approved unitization for each of the waterfloods, do not all include language authorizing production to be allocated on the basis of monthly individual well tests. However, because all of the wells will be transferred to the new Katz (Strawn) Unit, and monthly well tests will be filed with the Commission, any nonparticipating interest owners in the Southwest River Unit, the East River Unit and the C. B. Long Unit will be able to review the monthly well tests to confirm the proper allocation of any production. The examiners therefore conclude that the continued existence of the underlying units for legal purposes is not an impediment to approval of Kinder Morgan's proposed Katz (Strawn) Unit.

FINDINGS OF FACT

1. Notice of this hearing was sent to all operators and royalty interest owners within the proposed unit. Notice was published in the *Haskell Free Press*, a newspaper of general circulation in Haskell County, for four consecutive weeks beginning February 4, 2010. Notice was published in the *Paducah Post*, a newspaper of general circulation in King County, for four consecutive weeks beginning February 2, 2010. Notice was published in *The Munday Courier*, a newspaper of general circulation in Knox County, for four consecutive weeks beginning February 3, 2010. Notice was published in the *Stonewall County Courier*, a newspaper of general circulation in Stonewall County, for four consecutive weeks beginning February 4, 2010.

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2. The proposed Katz (Strawn) Unit consists of seven tracts which contain 7,193.75 acres.
3. The unitized formation is the subsurface portion of the Unit Area commonly known as the Strawn Formation between the subsurface depths of 4,963 feet and 5,691 feet as shown on the log of the Sid Katz - H. T. Lorentzen "C" Lease, Well No. 11, W. Cordova Survey, A-63, Stonewall County, Texas.
4. The productive interval includes the entire Strawn Formation from the base of the Cisco/Canyon Formation to the top of the Caddo Formation and contains the 1st, 2nd and 3rd Strawn Sands.
5. At the time of the hearing, 99.98% of the working interest ownership and 77.9% of the royalty interest ownership had signed the unit agreement.
6. CO₂ injection will result in the recovery of an additional 23.8 MMBO which would otherwise go unrecovered.
7. Kinder Morgan plans to drill 88 new wells and workover 50 of the existing wells. The total cost to implement and operate the CO₂ injection project is expected to be \$145 million. The estimated net present value over the life of the project after all costs are recovered is expected to be \$389 million. The cost does not exceed the value of additional reserves to be recovered.
8. The participation formula for each individual tract in the Unit and for the three Commission approved waterflood units to be incorporated into the Unit, the Southwest River Unit, the East River Unit and the C. B. Long Unit is based on 100% of the original oil in place underlying each tract.
9. Royalty interest owners who consented to the original waterflood unit agreements will participate under the formula approved by the Commission in the original waterflood unit agreement.
10. The CO₂ injection project will not be successful unless the area is unitized.
11. The CO₂ will be delivered to the Katz (Strawn) Field via a newly constructed 91 mile 10 inch pipeline from the Kelly Snyder Field area.

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12. 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.
13. 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.
14. 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.
15. The unitization agreement is necessary to accomplish the purposes of establishing a unit to effect secondary recovery operations for water injection and to operate cooperative facilities necessary thereto. Other available or existing methods or facilities for secondary recovery operations are inadequate for the purpose of secondary recovery.
16. 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.
17. The unit agreement is subject to all valid orders, rules and regulations of the Railroad Commission.
18. 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.
19. The unit agreement is a voluntary agreement entered into for the purpose of conducting secondary recovery operations.
20. The unit agreement does not provide for the location of wells.
21. The State of Texas owns lands in Tract 1 which are located within the proposed Katz (Strawn) Unit. The School Land Board has approved joining these state lands into the proposed Katz (Strawn) Unit.
22. The unit agreement is in the interest of public welfare as being reasonably

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necessary to prevent waste and to promote conservation.

23. The reservoir described in the unit agreement is identified as a single reservoir for Commission purposes and is a suitable reservoir for a CO₂ injection recovery operation.
24. The unit agreement contains only the acreage reasonably necessary to accomplish the proposed CO₂ injection recovery project.
25. Monthly well tests will be conducted to allocate production to wells on tracts for which 100% sign-up was not achieved. Monthly well tests will also be conducted for wells in the Southwest River Unit, the East River Unit and the C. B. Long Unit for which 100% sign-up was not achieved.
26. Designation of the unit as an entity for density purposes will allow for the drilling of new wells in optimum locations on the unit and would comply with the no between well spacing rule, provided the density is not exceeded.

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.
4. Approval of the proposed unit agreement for CO₂ injection recovery operations and entity for density 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 Katz (Strawn) Unit and the CO₂ injection recovery operations project as set out in the attached order. It is further recommended that the Katz (Strawn) Unit be approved as an entity for density purposes.

Respectfully submitted,

Richard D. Atkins, P.E.
Technical Examiner

Mark J. Helmueller
Legal Examiner