

**STATE OF NEW MEXICO
ENERGY, MINERALS, AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION**

**IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
DIVISION FOR THE PURPOSE OF
CONSIDERING:**

**NOMENCLATURE
CASE NOS. 10869 and 10881
Order No. R-10050**

**APPLICATION OF YATES PETROLEUM CORPORATION
FOR AMENDMENT OF THE SPECIAL RULES AND
REGULATIONS FOR THE SOUTH DAGGER DRAW-UPPER
PENNSYLVANIAN ASSOCIATED POOL, (DIVISION
ORDER NO. R-5353), EDDY COUNTY, NEW MEXICO.**

**APPLICATION OF CONOCO INC. TO AMEND RULE NO.
5(B) AND RULE 6 OF THE SPECIAL RULES AND
REGULATIONS FOR THE SOUTH DAGGER DRAW-UPPER
PENNSYLVANIAN ASSOCIATED POOL, (DIVISION
ORDER NO. R-5353), AND POOL EXTENSION, EDDY
COUNTY, NEW MEXICO.**

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 8:15 a.m. on December 2, 1993, at Santa Fe, New Mexico, before Examiner David R. Catanach.

NOW, on this 26th day of January, 1994, the Division Director, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS THAT:

(1) Due public notice having been given as required by law, the Division has jurisdiction of this cause and the subject matter thereof.

(2) Division Case Nos. 10869 and 10881 were consolidated at the time of the hearing for the purpose of testimony, and, inasmuch as both cases concern amending the Special Rules and Regulations for the South Dagger Draw-Upper Pennsylvanian Associated Pool, one order should be entered for both cases.

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(3) By Order No. R-5353, as amended, the Division promulgated and subsequently amended the Special Rules and Regulations for the South Dagger Draw-Upper Pennsylvanian Associated Pool located in all or portions of Sections 9 through 15, 22 through 26, and 34 through 36, Township 20 South, Range 24 East, NMPM, Eddy County, New Mexico. The rules currently in effect for said pool are 320-acre spacing for oil and gas wells (Rule 2 (a)), well location requirements that provide wells be located no nearer than 660 feet to the nearest side or end boundary of the tract, nor closer than 330 feet to any quarter-quarter section line or subdivision inner boundary (Rule 2 (b)), a limiting gas-oil ratio of 10,000 cubic feet of gas per barrel of oil (Rule 6), and a special depth bracket allowable of 1400 barrels of oil per day for a standard proration unit (Rule 22).

(4) In addition, the South Dagger Draw-Upper Pennsylvanian Associated Pool is governed by the General Rules and Regulations for the Associated Oil and Gas Pools of Northwest and Southeast New Mexico as promulgated by Division Order No. R-5353, as amended, which in part provide that the simultaneous dedication of any acreage to an oil well and a gas well is prohibited (Rule 5 (b)).

(5) The applicant in Case No. 10869, Yates Petroleum Corporation, seeks the deletion of Rule No. 5 (b) as it pertains to the South Dagger Draw-Upper Pennsylvanian Associated Pool, as described above, thereby allowing simultaneous dedication of acreage to both oil and gas wells within the same spacing unit.

(6) The applicant in Case No. 10881, Conoco Inc., seeks the deletion of Rule No. 5 (b) as it pertains to the South Dagger Draw-Upper Pennsylvanian Associated Pool, as described above, thereby allowing simultaneous dedication of acreage to both oil and gas wells within the same spacing unit, and to amend Rule No. 6 to reduce the limiting gas-oil ratio to 4,500 cubic feet of gas per barrel of oil. The applicant further seeks to expand the South Dagger Draw-Upper Pennsylvanian Associated Pool to include the E/2 of Section 16, the E/2 of Section 34, all of Section 35, and the S/2 of Section 36, Township 20 South, Range 24 East, and all of Irregular Sections 34 and 35, Township 20 1/2 South, Range 23 East, NMPM, Eddy County, New Mexico.

(7) Marathon Oil Company, an operator in the subject pool, appeared at the hearing and presented evidence and testimony in support of the proposed deletion of Rule No. 5 (b).

(8) Santa Fe Energy Operating Partners, L. P, and Nearburg Producing Company appeared at the hearing through counsel but presented no evidence or testimony in these cases.

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(9) Division records show that the area comprising the E/2 of Section 34, all of Section 35 and the SW/4 of Section 36, Township 20 South, Range 24 East, NMPM, is currently within the South Dagger Draw-Upper Pennsylvanian Associated Pool.

(10) Division records further indicate that there is South Dagger Draw-Upper Pennsylvanian Associated Pool production within the E/2 of Section 16 from the Yates Petroleum Corporation Algerita "AHR" State Well No. 1 located in Unit H, within the S/2 of Section 36 from the Marathon Oil Company Indian Hills State Com Well No. 8 located in Unit M, and within Irregular Section 35, Township 20 1/2 South, Range 23 East, NMPM, from the Yates Petroleum Corporation Mojave "AJY" Com Well No. 1 located in Unit I.

(11) With regards to Irregular Section 34, Division records indicate that the Conoco Inc. Preston Federal Well No. 4 was originally drilled and completed as an Indian Basin-Upper Pennsylvanian Gas Pool well in 1965. The subject well is currently temporarily abandoned, although Conoco has filed an intent to deepen the well. There appears to be some question as to whether this well ever produced, and whether or not this well should be placed within the Indian Basin-Upper Pennsylvanian Gas Pool or the South Dagger Draw-Upper Pennsylvanian Associated Pool.

(12) The South Dagger Draw-Upper Pennsylvanian Associated Pool should be extended to include the E/2 of Section 16, the SE/4 of Section 36, Township 20 South, Range 24 East, NMPM, and Irregular Section 35, Township 20 1/2 South, Range 23 East, NMPM.

(13) Inclusion of Irregular Section 34, Township 20 1/2 South, Range 23 East, NMPM, within the South Dagger Draw-Upper Pennsylvanian Associated Pool should be deferred until such time as certain issues regarding the Conoco Inc. Preston Federal Well No. 4 are resolved.

(14) Extensive geologic and engineering evidence and testimony concerning the North Dagger Draw-Upper Pennsylvanian and South Dagger Draw-Upper Pennsylvanian Associated Pools have been presented to the Division in the immediate and previous cases. The cumulative knowledge gained thus far indicates that:

- a) the South Dagger Draw-Upper Pennsylvanian Associated Pool is located in the middle of a larger northeast to southwest trending dolomite hydrocarbon bearing reservoir;
- b) the southwestern portion of the dolomite reservoir is structurally the highest and is classified as a gas pool designated the Indian Basin-Upper Pennsylvanian Gas Pool;

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- c) the northeastern portion of the dolomite reservoir is structurally the lowest and is classified as an oil pool designated the North Dagger Draw-Upper Pennsylvanian Oil Pool;
- d) the South Dagger Draw-Upper Pennsylvanian Associated Pool represents an extensive transition area between the Indian Basin-Upper Pennsylvanian Gas Pool and the North Dagger Draw-Upper Pennsylvanian Oil Pool. The South Dagger Draw-Upper Pennsylvanian Associated Pool declines structurally from southwest to northeast and contains areas where only the gas cap is present, areas where only the oil column is present, and extensive areas where both an oil column and gas cap are present.

(15) There are several wells within the pool, generally located on the western and southern boundary, which are currently classified as gas wells (defined by Rule 5 (a) of the General Rules and Regulations for the Associated Oil and Gas Pools of Northwest and Southeast New Mexico as those wells which produce at or above a gas-liquid ratio of 30,000 cubic feet of gas per barrel of oil).

(16) According to the evidence presented, there are several proration units within the transition areas of the pool which contain or are capable of containing both oil and gas wells.

(17) These transition areas within the pool have not been fully defined by development.

(18) Precluding the simultaneous dedication of acreage to both oil and gas wells, providing for limiting gas-oil ratios, and setting limits on gas production in associated pools are regulatory conservation methods imposed to minimize gas production from the gas cap in order to avoid the premature abatement of reservoir energy which may result in a reduction in ultimate oil recovery from the pool.

(19) Due to the unique characteristics of the South Dagger Draw-Upper Pennsylvanian Associated Pool, Rule 5 (b) does not serve to protect correlative rights inasmuch as some operators, whose proration units are dedicated as oil producing, cannot effectively compete with offset proration units dedicated as gas producing.

(20) Conoco proposed that in conjunction with the deletion of Rule 5 (b), the Division should reduce the current gas-oil ratio limitation within the subject pool from 10,000:1 to 4,500:1. The net effect would be to reduce the gas allowable per proration unit from 14 MMCF gas per day to 6.3 MMCF gas per day.

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(21) Conoco's proposed gas-oil ratio limitation of 4,500 cubic feet of gas per barrel of oil represents the average producing gas-oil ratio within the subject pool during the first half of 1993.

(22) Conoco's proposal is an attempt to assure that excessive reservoir energy is not depleted from the reservoir due to the drilling of additional gas wells which will likely result from the deletion of Rule 5 (b).

(23) Yates opposes reducing the gas-oil ratio limitation within the subject reservoir and in support of its position presented the results of a reservoir simulation study conducted on the South Dagger Draw-Upper Pennsylvanian Associated Pool designed to investigate the effect of gas cap depletion on down-dip oil production.

(24) The results of the reservoir simulation study indicate that ultimate oil recovery from the subject reservoir remains virtually the same whether or not the gas cap is depleted through production, and is also virtually unaffected by the infill drilling of gas wells at this time.

(25) Conoco contends that since the reservoir simulation was performed with data from wells generally located within the northern portion of the pool, the results of the study cannot be extrapolated to the southern portion of the pool where the reservoir characteristics may vary.

(26) Yates' own engineering witness substantiated Conoco's contention that the study results cannot be extrapolated to the southern portion of the field.

(27) The current gas-oil ratio limitation of 10,000:1 and resulting gas allowable of 14 MMCF gas per day for the subject pool may be unnecessarily high as evidenced from the fact that there is one proration unit which is currently capable of producing approximately 9.0 MMCF of gas per day. The remaining proration units in the pool produce significantly less gas and should be virtually unaffected by a reduction in the current gas-oil ratio.

(28) Yates' reservoir simulation does not conclusively demonstrate that depletion of the gas cap at essentially non-restricted rates will not have an adverse affect on the reservoir and on ultimate oil recovery.

(29) Conoco's proposed gas-oil ratio limitation of 4,500:1, which represents the current average producing gas-oil ratio within the subject pool, does not take into account, as demonstrated by Yates, that the average gas-oil ratio is increasing and should continue to increase.

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(30) Conoco's evidence does not demonstrate that its proposed gas-oil ratio limitation of 4,500:1 will not have the effect of unnecessarily restricting gas production within the pool.

(31) In order to assure that correlative rights are protected and that orderly development of the oil and gas reserves within the subject pool is occurring, Rule 5 (b) of the General Rules and Regulations for the Associated Oil and Gas Pools of Northwest and Southeast New Mexico, as it pertains to the South Dagger Draw-Upper Pennsylvanian Associated Pool, should be deleted.

(32) In conjunction with the deletion of Rule 5 (b), as described above, the gas-oil ratio limitation for the South Dagger Draw-Upper Pennsylvanian Associated Pool should be temporarily reduced in order to assure that the reservoir is not adversely affected, thereby reducing ultimate oil recovery.

(33) The gas-oil ratio limitation established herein should also provide the opportunity for operators to develop the gas reserves within the pool without unnecessarily restricting gas production.

(34) A gas-oil ratio limitation of 7,000 cubic feet of gas per barrel of oil should be established for the South Dagger Draw-Upper Pennsylvanian Associated Pool for a temporary period of eighteen months.

(35) This case should be reopened at an examiner hearing in June, 1995, at which time the operators in the subject pool should be prepared to appear and present evidence and testimony regarding the continuation or the adjustment of the 7,000:1 gas-oil ratio limitation.

IT IS THEREFORE ORDERED THAT:

(1) The application of Conoco Inc. in Case No. 10881 and the application of Yates Petroleum Corporation in Case No. 10869 to delete Rule No. 5 (b) of the General Rules and Regulations for the Associated Oil and Gas Pools of Northwest and Southeast New Mexico as promulgated by Division Order No. R-5353, as amended, as it pertains to the South Dagger Draw-Upper Pennsylvanian Associated Pool, thereby allowing the simultaneous dedication of acreage to both oil and gas wells, is hereby approved.

(2) The gas-oil ratio limitation for the South Dagger Draw-Upper Pennsylvanian Associated Pool, previously established at 10,000 cubic feet of gas per barrel of oil, is hereby amended and reduced to 7,000 cubic feet of gas per barrel of oil. Oil and gas wells on any given proration unit within the pool shall be allowed to produce $(7,000) \times (1400 \text{ BOPD}) = 9.8 \text{ MMCF}$ of gas per day.

(3) The South Dagger Draw-Upper Pennsylvanian Associated Pool is hereby extended to include the E/2 of Section 16 and the SE/4 of Section 36, Township 20 South, Range 24 East, NMPM, and Irregular Section 35, Township 20 1/2 South, Range 23 East, NMPM.

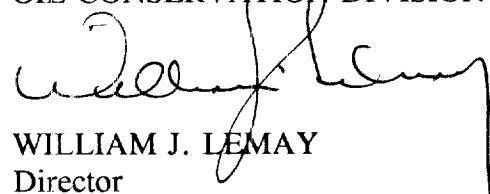
(4) The request of Conoco to extend the South Dagger Draw-Upper Pennsylvanian Associated Pool to include Irregular Section 34, Township 20 1/2 South, Range 23 East, NMPM, is hereby denied pending the resolution of certain issues regarding the Conoco Inc. Preston Federal Well No. 4, located in said Section 34.

(6) This case shall be reopened at an examiner hearing in June, 1995, at which time the operators in the subject pool shall be prepared to appear and present evidence and testimony regarding the continuation or the adjustment of the 7,000:1 gas-oil ratio limitation within the South Dagger Draw-Upper Pennsylvanian Associated Pool.

(7) Jurisdiction of this cause is hereby retained for the entry of such further orders as the Division may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION


WILLIAM J. LEMAY
Director

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