

*I'm not concerned with  
the overproduced gas. The GOR  
increase to 4000 will  
result in an allowable  
of 1,780 MCFGPD.  
The well should be  
back in balance  
by November, 2000*

**STATE OF NEW MEXICO  
NATURAL RESOURCES DEPARTMENT  
CONSERVATION DIVISION**

**ORDERING  
CONSERVATION  
E OF**

*DJH/2/00*

*WJH 8/25/00*

*LW 8/30/00*

**CASE NO. 12374  
CASE NO. 12401**

**Orders No. R-9722-E & R-10448-C**

**PETROLEUM CORPORATION FOR  
SPECIAL RULES AND REGULATIONS FOR THE  
SOUTH BIG DOG-STRAWN POOL, LEA COUNTY, NEW MEXICO.**

**ENERGY RESOURCES, INC. FOR POOL  
SPECIAL RULES, POOL CONTRACTION, AND  
PRODUCTION, LEA COUNTY, NEW MEXICO.**

**DIRECTOR OF THE DIVISION**

**BY THE DIVISION:**

These cases came on for hearing at 8:15 a.m. on May 4, 2000, at Santa Fe, New Mexico, before Examiner David R. Catanach.

NOW, on this \_\_\_\_\_ day of August, 2000, the Division Director, having considered the testimony, the record, and the recommendations of the Examiner,

**FINDS THAT:**

(1) *they* Due public notice has been given and the Division has jurisdiction of these cases and ~~its~~ subject matter.

(2) Division Cases No. 12374 and 12401 were consolidated at the time of the hearing for the purpose of testimony *and* since both applications seek amendments to the "Special Rules and Regulations for the South Big Dog-Strawn Pool", one order should be entered for both cases. ✓

(3) The applicant in Case No. 12374, Yates Petroleum Corporation ("Yates"),

seeks to amend the "*Special Rules and Regulations for the South Big Dog-Strawn Pool*"<sup>en</sup> ✓  
Lea County, New Mexico, to adopt a limiting gas-oil ratio of 6,000 cubic feet of gas per  
barrel of oil.

(4) The applicant in Case No. 12401, Ocean Energy Resources, Inc.  
("Ocean"), seeks:

- (a) to contract the horizontal limits of the South Big Dog-Strawn Pool by deleting the S/2 SE/4 of Irregular Section 2, and the NE/4 of Section 11, both in Township 16 South, Range 35 East, NMPM;
- (b) the creation of a new pool for the production of oil from the Strawn formation comprising the acreage deleted from the South Big Dog-Strawn Pool, this pool to be designated the East Townsend-Strawn Pool;
- (c) to establish special pool rules for the new Strawn pool including provisions for standard 80-acre spacing and proration units and designated well location requirements;
- (d) to establish a special depth bracket allowable for the new Strawn pool of 750 barrels of oil per day and a limiting gas-oil ratio of 6,000 cubic feet of gas per barrel of oil; and
- (e) the cancellation of overproduction incurred on wells within the proposed East Townsend-Strawn Pool.

(5) David Petroleum Corporation, McMillan Production Company, Inc. and Permian Exploration Corporation all appeared at the hearing through legal counsel.

(6) At the hearing, Ocean requested that the portion of its application seeking to: (i) contract the horizontal limits of the South Big Dog-Strawn Pool; (ii) create a new pool for the production of oil from the Strawn formation, this pool to be designated the East Townsend-Strawn Pool; (iii) establish special pool rules for the proposed East Townsend-Strawn Pool; and ~~(iv)~~ establish a special depth bracket allowable and limiting gas-oil ratio of 750 barrels of oil per day and 6,000 cubic feet of gas per barrel of oil, respectively, for the proposed East Townsend-Strawn Pool, be dismissed.

(7) Ocean's request to dismiss these portions of its application should be granted.

(8) Ocean now seeks:

- (a) to amend the "*Special Rules and Regulations for the South Big Dog-Strawn Pool*" to adopt a limiting gas-oil ratio of 6,000 cubic feet of gas per barrel of oil; and
- (b) the cancellation of overproduction in its Townsend State No. 5 (API No. 30-025-34500) located 330 feet from the South line and 1520 feet from the East line (Unit W) of Irregular Section 2, **or in the alternative**, authority to make up overproduction from this well at a lesser rate and produce the well at a rate higher than the 150 BOPD ~~rate~~ currently allowed by the Division's Hobbs District Office.

(9) The South Big Dog-Strawn Pool was created on February 26, 1997, by Division Orders No. R-9722-C and R-10448-A and was subsequently expanded to include the following described acreage in Lea County, New Mexico: ✓

**TOWNSHIP 15 SOUTH, RANGE 35 EAST, NMPM**

Section 32: W/2 SE/4

**TOWNSHIP 16 SOUTH, RANGE 35 EAST, NMPM**

Section 1: Lots 11, 12, 13 and 14  
Section 2: Lots 2 through 16, SE/4  
Section 3: Lots 9, 10, 15 and 16, SE/4  
Section 11: NE/4  
Section 12: NW/4

(10) The South Big Dog-Strawn Pool is currently governed by special pool rules established by Division Orders No. R-9722-C and R-10448-A which require: (i) standard 80-acre spacing and proration units with wells to be located no closer than 330 feet to any quarter-quarter section line or subdivision inner boundary nor closer than 1,020 feet to the nearest well drilling to or capable of producing from the same pool; and, (ii) a depth bracket allowable of 445 barrels of oil per day. In addition, the South Big Dog-Strawn Pool is subject to a limiting gas-oil ratio of 2,000 cubic feet of gas per barrel of oil as provided by Division Rule 506.

(11) Both Yates and Ocean are in agreement that the South Big Dog-Strawn Pool should be subject to a limiting gas-oil ratio of 6,000 cubic feet of gas per barrel of oil.

(12) Yates is opposed to Ocean's request for cancellation of overproduction from the Townsend State No. 5 and is also opposed to allowing Ocean to produce the well at a relatively high rate during the overproduction make-up period.

(13) The South Big Dog-Strawn Pool is offset to the west by the Townsend-Strawn Pool, to the southwest by the Northwest Shoe Bar-Strawn Pool, to the southeast by the North Shoe Bar-Strawn Pool, and to the northeast by the West Lovington-Strawn Pool. The North Shoe Bar-Strawn Pool is subject to a 4,000:1 ~~GOR~~ limitation (as established by Division Order No. R-4658-A dated February 21, 1974), and the remaining Strawn pools are subject to a 2,000:1 ~~GOR~~ limitation.

(14) In companion Case No. 12400 also heard by the Division on May 4, 2000, Yates seeks to increase the gas-oil ratio limitation for the Northwest Shoe Bar-Strawn Pool to 6,000 cubic feet of gas per barrel of oil.

(15) The geologic and engineering evidence presented by Yates in support of the proposed increased gas-oil ratio limitation generally demonstrates that:

- (a) typical of the Strawn formation in this area, the South Big Dog-Strawn Pool likely encompasses numerous algal mound type facies that, due to selective porosity distribution, may or may not be in communication;
- (b) the South Big Dog-Strawn Pool is a solution gas drive reservoir;
- (c) a PVT analysis has been conducted on the Yates Runnels "ASP" Well No. 3, a South Big Dog-Strawn Pool producing well located at a bottomhole location in Unit A of Section 11, Township 16 South, Range 35 East;
- (d) the PVT analysis conducted on the Runnels "ASP" Well No. 3 demonstrates that:
  - (i) oil produced from this Strawn reservoir is a volatile oil; and
  - (ii) the initial solution gas-oil ratio of the reservoir fluid is 2779 standard cubic feet of gas per barrel of oil; and

- (e) in terms of gravity and components, the oil produced from the various Strawn pools and porosity pods in this area is nearly identical.

(16) Volatile oil reservoirs are typically characterized by higher initial solution gas-oil ratios than those encountered in normal black oil reservoirs. Volatile oil reservoirs also develop free gas saturations in the reservoir more rapidly than normal black oil reservoirs as pressure declines below the bubble point.

(17) Yates further testified that:

- (a) the South Big Dog-Strawn Pool is not rate sensitive;
- (b) there are wells within the South Big Dog-Strawn Pool that are capable of producing the oil allowable, but are restricted due to the casinghead gas allowable; and
- (c) producing this pool at a gas-oil ratio limitation of 6,000 cubic feet of gas per barrel of oil should not reduce the ultimate recovery of oil from this reservoir.

(18) The evidence presented demonstrates that there are currently four wells within the South Big Dog-Strawn Pool that are capable of producing at or near the top oil or casinghead gas allowable for the pool. These wells are the Yates Runnels "ASP" No. 3, the Yates Shell Lusk "ANB" No. 2, the Chesapeake Operating Inc. Kala "12" No. 1, and the Ocean Townsend State No. 5. The remaining wells in the pool produce at substantially lower rates.

(19) Of the four non-marginal wells, two are producing at a ~~GOR~~ <sup>gas-oil ratio</sup> of approximately 2,800:1, and as a result, their oil production is being curtailed due to excessive casinghead gas production. These wells are the Yates Shell Lusk "ANB" No. 2 and the Ocean Townsend State No. 5. The other two non-marginal wells, the Yates Runnels "ASP" No. 3, and the Chesapeake Operating Inc. Kala "12" No. 1, are currently producing at ~~GOR's~~ <sup>gas-oil ratios</sup> of approximately 1,800 and 1,500 cubic feet of gas per barrel of oil, respectively. Oil production from these wells is not being curtailed due to excessive casinghead gas production.

(20) The geologic and engineering evidence presented demonstrates that it is reasonable and appropriate to increase the gas-oil ratio limitation for the South Big Dog-Strawn Pool, however, the data presented further demonstrates that a gas-oil ratio limitation of 6,000 cubic feet of gas per barrel of oil may be somewhat excessive at this point in the development of the reservoir.

(21) The evidence presented demonstrates that a gas-oil ratio limitation of 4,000 cubic feet of gas per barrel of oil will enable the operators in the pool to efficiently produce the hydrocarbons within this reservoir.

(22) Division records and testimony presented demonstrate that the Townsend State No. 5 began producing from the South Big Dog-Strawn Pool on November 10, 1998. The well IP'd at a rate of 535 BOPD and 991 MCFGPD. During the period from November 10, 1998 through February 28, 1999, the Townsend State No. 5 cumulatively overproduced 17,312 barrels of oil. During the period from March 1, 1999 through May 31, 1999, the well was produced at a reduced rate and made ~~up~~ 13,349 barrels of oil. During the period from June 1, 1999 through February 29, 2000, the well was again overproduced and its status as of February 29, 2000, was 48,139 barrels of oil and 98,693 MCF of casinghead gas overproduced. During the period from March 1, 2000 through May 31, 2000, the well was produced at a reduced rate and consequently made up 23,855 barrels of overproduced oil and 15,918 MCF of overproduced casinghead gas. *OK is*

(23) Production data obtained subsequent to the hearing demonstrates that the Townsend State No. 5, through August 13, 2000, remains overproduced in the South Big Dog-Strawn Pool in the amount of 12,626 barrels of oil and 78,768 MCF of casinghead gas.

(24) Testimony presented further demonstrates that by letter dated March 13, 2000, the Division's Hobbs District Office ordered Ocean to shut-in the Townsend State No. 5 until such time as the well is brought back into compliance with the allowable for the South Big Dog-Strawn Pool. Subsequent to that date, the Division's Hobbs District Office allowed Ocean to produce the Townsend State No. 5 at a reduced rate of approximately 150 barrels of oil per day.

(25) Additional testimony with regards to the status of the overproduction from the Townsend State No. 5 was presented in Case No. 12450 (Application of Ocean Energy Resources, Inc. for a non-standard oil spacing and proration unit) heard by the Division on July 27, 2000. This additional testimony demonstrates that during May, 2000, Ocean requested and was granted permission by the Division's Hobbs District Office to conduct a production test on the Townsend State No. 5 in order to determine an efficient rate of production during the overproduction make-up period. As a result of this test, the Division's Hobbs District Office, on or about July 19, 2000, authorized Ocean to produce the Townsend State No. 5 at a rate between 250 ~~and~~ 300 barrels of oil per day. *250 and 300*

(26) Current production data (June-August, 2000) demonstrates that the Townsend State No. 5 is being produced at a rate of approximately 285 BOPD and 857 MCFGPD.

(27) In support of its request for the cancellation of overproduction from the

Townsend State No. 5 or, in the alternative, authority to produce the well at a reasonable or more efficient rate during the overproduction make-up period of 300 barrels of oil per day, Ocean presented geologic and engineering evidence that demonstrates:

- (a) through its well control and seismic data, Ocean has determined the size, shape and extent of the algal mound or porosity pod from which the Townsend State No. 5 is producing. It has further determined that this porosity pod is effectively isolated from other producing pods within the South Big Dog-Strawn Pool by intermound tight facies;
- (b) by virtue of the Townsend State No. 5 being located within its own porosity pod, producing the well in excess of the oil and casinghead gas allowable did not adversely affect other operators in the pool, nor did it harm the reservoir; and
- (c) production data from the Townsend State No. 5 demonstrates that:
  - (i) the well is difficult to bring back on production after periods of being shut-in; and
  - (ii) producing the well at low oil rates results in a higher producing ~~GOR~~ *gas-oil ratio*.

(28) In support of its position, Yates presented geologic and engineering evidence ~~that demonstrates~~ *that* ~~to~~:

- (a) calculated revoverable oil reserves from the porosity pod in which the Townsend State No. 5 is completed, based upon Ocean's geologic interpretation of the size, shape and extent of this pod, are significantly lower than the cumulative production to date from the Townsend State No. 5. This data suggests that the porosity pod in which the Townsend State No. 5 is completed is substantially larger than mapped by Ocean;
- (b) the porosity pod in which the Townsend State No. 5 is completed extends to the southwest and encompasses acreage on which its Shell Lusk

"ANB" No. 2 and Schenck "ATP" No. 1 are located; and

- (c) pressure data from the Townsend State No. 5 and the Shell Lusk "ANB" No. 2 confirm ~~X~~ communication between these wells.

(29) The engineering evidence presented by Yates is not sufficient to demonstrate that the Townsend State No. 5 is located within the same producing pod as its Shell Lusk "ANB" No. 2 and Schenck "ATP" No. 1.

(30) The geologic and engineering evidence presented generally demonstrates, although not conclusively, that the Townsend State No. 5 is located within a porosity pod, ~~which is~~ effectively isolated from other porosity pods within the South Big Dog-Strawn Pool.

(31) While it appears that the cancellation of overproduction from the Townsend State No. 5 may not directly affect other operators in the pool ~~by virtue of competing for reserves~~, it would nonetheless reward Ocean for not abiding by Division rules and would not be fair to the other operators in the pool that produce their wells in accordance with Division-established pool allowables.

(32) Ocean did not have a reasonable explanation for overproducing the Townsend State No. 5. In addition, Ocean's actions to overproduce the well a second time after the well ~~was initially overproduced and brought back into compliance~~ demonstrates a willful and intentional disregard for Division rules. *time was partially made up*

(33) Ocean's request to cancel the overproduction from the Townsend State No. 5 should be denied.

(34) The alternative relief sought by Ocean in this case, authority to produce the Townsend State No. 5 at a rate of approximately 300 barrels per day, was granted by the Division's Hobbs District Office on or about July 10, 2000.

(35) At its current rate of production, it is projected that the oil overproduction from the Townsend State No. 5 will be made up on or about October 31, 2000.

(36) The engineering evidence presented by Ocean demonstrates that a producing rate of 250-300 barrels of oil per day is an efficient rate in which to produce the Townsend State No. 5.

(37) Ocean should be authorized to continue producing the Townsend State No. 5 at a rate not to exceed 250-300 barrels of oil per day until such time as its oil overproduction is made up.

*... not to exceed 300 barrels.... ?*

*what about the overproduced casinghead gas?*



(38) Future disregard for Division rules by Ocean should subject this operator to formal enforcement action, including but not limited to fines, ~~penalties, etc.~~

**IT IS THEREFORE ORDERED THAT:**

(1) This order is hereby entered in Cases No. 12374 and 12401.

(2) The portion of Ocean's application in Case No. 12401 seeking to: (i) contract the horizontal limits of the South Big Dog-Strawn Pool by deleting the S/2 SE/4 of Irregular Section 2 and the NE/4 of Section 11, both in Township 16 South, Range 35 East, NMPM; (ii) create a new pool for the production of oil from the Strawn formation, this pool to be designated the East Townsend-Strawn Pool with horizontal limits comprising the acreage deleted from the South Big Dog-Strawn Pool; (iii) establish special pool rules for the proposed East Townsend-Strawn Pool including 80-acre spacing and proration units; and (iv) establish a special depth bracket allowable and limiting gas-oil ratio of 750 barrels of oil per day and 6,000 cubic feet of gas per barrel of oil, respectively, for the proposed East Townsend-Strawn Pool, ~~is~~ hereby dismissed. ✓

(3) The portion of Ocean's application to cancel any and all overproduction from its Townsend State No. 5 (API No. 30-025-34500) located 330 feet from the South line and 1520 feet from the East line (Unit W) of Irregular Section 2, Township 16 South, Range 35 East, NMPM, in the South Big Dog-Strawn Pool is hereby denied.

(4) Ocean is hereby authorized to continue producing its Townsend State No. 5 from the South Big Dog-Strawn Pool at a rate not to exceed ~~250-300~~ barrels of oil per day until such time as its remaining oil overproduction is entirely made up. ✓

(5) Ocean shall regularly advise the Division's Hobbs District Office of the production rates and status of the remaining overproduction for the Townsend State No. 5.

(6) The application of Yates to increase the gas-oil ratio limitation for the South Big Dog-Strawn Pool, which currently comprises all or portions of Section 32, Township 15 South, Range 35 East, and Sections 1, 2, 3, 11 and 12, Township 16 South, Range 35 East, NMPM, Lea County, New Mexico, is hereby denied. ✓

(7) Pursuant to the application of Yates, the "Special Rules and Regulations for the South Big Dog-Strawn Pool" Lea County, New Mexico, are hereby amended by the addition of Rule No. (8), effective September 1, 2000, as follows: ✓

**RULE 8:** The South Big Dog-Strawn Pool shall be produced at a limiting gas-oil ratio of 4,000 cubic feet of gas per barrel of oil (1,780 MCFGPD casinghead gas limit).

***CASES NO. 12374 & 12401***

***Orders No. R-9722-E & R-10448-C***

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(8) Jurisdiction 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

LORI WROTENBERY  
Director

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