

KELLAHIN AND KELLAHIN

ATTORNEYS AT LAW

EL PATIO BUILDING

117 NORTH GUADALUPE

POST OFFICE BOX 2265

SANTA FE, NEW MEXICO 87504-2265

W. THOMAS KELLAHIN*

*NEW MEXICO BOARD OF LEGAL SPECIALIZATION
RECOGNIZED SPECIALIST IN THE AREA OF
NATURAL RESOURCES-OIL AND GAS LAW

TELEPHONE (505) 982-4285

TELEFAX (505) 982-2047

JASON KELLAHIN (RETIRED 1991)

May 1, 1996

HAND DELIVERED

Mr. David R. Catanach
Hearing Examiner
Oil Conservation Division
2040 South Pacheco
Santa Fe, New Mexico 87505

Re: NMOCD Case 11481
Application of Nearburg Exploration Company
an Unorthodox Well location
Eddy County, New Mexico.

Dear Mr. Catanach:

At the hearing held on April 18, 1996, you directed counsel for Nearburg and counsel for Read & Stevens to submit proposed orders within ten days.

Please find enclosed our proposed order submitted on behalf of Nearburg Exploration Company.

Very truly yours.



W. Thomas Kellahin

cc: Nearburg Exploration Company
Attn: Mike Gray
cc: Mallon Oil Company
Attn: Ray Jones
cc: Ernest L. Padilla, Esq.
Attorney for Read & Stevens, Inc.

**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:**

**CASE NO. 11481
Order No. R-_____**

**APPLICATION OF NEARBURG EXPLORATION COMPANY
FOR AN UNORTHODOX GAS WELL LOCATION,
EDDY COUNTY, NEW MEXICO.**

**NEARBURG EXPLORATION COMPANY'S
PROPOSED
ORDER OF THE DIVISION**

BY THE DIVISION:

This cause came on for hearing at 8:15 a.m. on April 18, 1996, at Santa Fe, New Mexico before Examiner David R. Catanach.

NOW, on this ____ day of May, 1996, 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.

CASE NO. 11481

Order No. R-

Page -2-

(2) The applicant, Nearburg Exploration Company ("Nearburg"), seeks authorization to drill its proposed Black River "10" Federal Com Well No. 1 ("Black River Well") at an unorthodox oil location 1330 feet from the North line and 990 feet from the West line (Unit E) of Section 10, Township 24 South, Range 26 East, in the South Carlsbad-Morrow Gas Pool to be dedicated to a standard 320-acre gas spacing and proration unit consisting of the W/2 of said Section 10.

(3) Nearburg's requested unorthodox gas well location encroaches 320 feet directly north towards interest owners in the SW/4 of Section 3 who do not object to the encroachment.

(4) While Nearburg's requested location is standard to its western boundary, by moving north, it would be a distance of 1658 feet or a distance of 119 feet closer to its northwestern diagonal corner than the closest standard location of 1777 feet (being the diagonal dimension of a right angle triangle the two sides of which are 6660 feet and 1650 feet).

(5) Nearburg's requested unorthodox gas well location encroaches diagonally towards an offsetting 320-acre spacing unit originally consisting of the S/2 but then amended and re-oriented to E/2 of Section 4, T24S, R26E, operated by Read & Stevens, Inc. ("Read & Stevens") and currently dedicated to South Carlsbad Morrow Gas Pool production.

(6) Read & Stevens is the current operator of the Crystal Federal No. 1 Well ("Crystal Well") originally drilled by BTA Oil Producers, pursuant to Division Order R-9637 issued in Case 10419 dated February 12, 1992, at an unorthodox gas well location 1150 feet from the South line and 1650 feet from the East line (Unit O) of Section 4, T24S, R26E, NMPM.

(7) Read & Stevens appeared at the hearing in opposition to the applicant and sought to have the requested location denied contending that Nearburg should be required to drill at a standard well location in the W/2 of said Section 10.

(8) Nearburg's geologic expert testified that he subdivided the Middle Morrow into four separate reservoirs but has concentrated on the two center reservoirs identified as:

(a) Late Middle Morrow, being the shallower of the two and identified on Nearburg Exhibit 6 by the yellow coloring, and identified on Read & Stevens' Exhibit 3 as the "B" sand; and

(b) Early Middle Morrow, being the deeper of the two and identified on Nearburg Exhibit 6 by the orange coloring and identified on Read & Stevens' Exhibit 4 as the "C" sand.

(9) Read & Stevens agrees with Nearburg's geologic subdivisions of the Middle Morrow into four separate reservoirs but identifies the shallowest Middle Morrow Reservoir as "A" and in sequence so that the deepest is identified as "D".

(10) Nearburg seeks approval of the unorthodox location based upon the following arguments and geologic evidence:

(a) while Nearburg has identified some eight (8) potentially productive Morrow sands to be penetrated by the Nearburg Well, two different Morrow reservoirs in the "Middle Morrow" have the best potential and each needs to be penetrated by a single wellbore at a location which in combination allows each Middle Morrow reservoir to be encountered with sufficient structural position and net sand thickness to be productive.

(b) denial of the application will likely result in no well being drilled in the W/2 of Section 10.

(11) Read & Stevens seeks denial of the unorthodox location based upon its contention that Nearburg has standard locations which are better than the unorthodox well location

EARLY MIDDLE MORROW

(12) Nearburg contends that in order to afford it a reasonable opportunity in the Early Middle Morrow, it is necessary to locate the Black River Well at its proposed unorthodox well location because:

(i) the Early Middle Morrow is a typical narrow Morrow sand channel oriented northwest to southeast across Section 10 with the Nearburg location on the western edge of this channel;

(ii) there is a significant structural component affecting production in this reservoir with the highest elevation of the axis of the structural nose oriented northeast to southwest with the Nearburg location on the eastern side;

(ii) there is a significant risk of water production in this reservoir such that both Read & Stevens' Crystal Well in Unit O of Section 4 and the Mallon O'Neil Well No. 1 in Unit J of Section 10 are down structure, wet and therefore non-productive;

(iii) at the unorthodox location the Black River is projected to be farther up structure in the Early Middle Morrow than either the Crystal Well or the O'Neil Well and thus should encounter production which no existing well can produce thereby preventing waste;

(iv) the unorthodox location has both a structural and a thickness advantage over the closest standard location in this spacing unit. While Nearburg estimates that it gains 20 feet of structure and 10 feet of combined net thickness, small gains in this reservoir are critical.

(v) Nearburg is very concerned that the western boundary of this channel is located between the O'Neil Well and the C&K Petroleum Pennzoil Federal Well No. 2 ("Pennzoil Well") (Unit L) of Section 10 which was drill stem tested as non-productive in this interval by C&K who failed to establish commercial production and who abandoned the well as a dry hole.

(vi) by moving both north and east of a standard location, Nearburg hopes to move away from the Pennzoil Well and into this channel at a better structural position with greater thickness.

(13) Read & Stevens presented geologic arguments and interpretations of the Early Middle Morrow contending that:

(i) the channel is oriented north-south and not north-west to south-east as interpreted by Nearburg and that Nearburg's location will be on the east side of the channel and not the west side;

(ii) the Pennzoil Well has 21 net feet of pay instead the "0" feet of net pay shown by Nearburg;

(iii) Nearburg should move towards the Pennzoil Well because that well should have been productive despite its poor Drill Stem Test results;

(iv) contrary to Nearburg's structural interpretation, the axis of the structural nose is oriented northwest to southeast and the Nearburg location should be down structure to the Pennzoil Well instead of up structure as Nearburg contends.

(v) despite the fact that its Crystal Well was wet and cannot produce in this reservoir. Read & Stevens argues it still has potential pay in this reservoir which might be affected by the Nearburg well;

(vi) structure is significant to production as evidenced by the fact that prior to the drilling of the Crystal Well, its expert geologist had projected that well to be some 260 feet higher than actually resulted.

(14) Nearburg contends that in order to afford it a reasonable opportunity in the Late Middle Morrow, it is necessary to locate the Black River Well at its proposed unorthodox well location because:

(i) the Late Middle Morrow is an elongated reservoir oriented east to west with poor quality and low permeability with its thickest portion north of the Nearburg location and with the Nearburg location located south of the thickest portion of the reservoir along the southeast edge;

(ii) by moving north, Nearburg's unorthodox location will gain reservoir thickness over the closest standard location to the south;

(iii) this location is necessary in order to have a reasonable opportunity to compete with the Crystal Well which is also producing at an unorthodox well location;

(iv) based upon correlations with the Pennzoil Well and the O'Neil Well, Nearburg is concerned that by moving south it would reduce the effective pay available in its wellbore

precluding it from an opportunity to recover gas in its spacing unit which will then be produced by the Crystal Well;

(v) the unorthodox location has both a structural and a thickness advantage over the closest standard location in this spacing unit. While Nearburg estimates that it gains 20 feet of structure and 5 feet of net thickness, such small gains are critical in this reservoir; and

(vi) by moving both north and east of a standard location, Nearburg hopes to move away from the Pennzoil Well and into this channel at a better structural position with greater thickness.

(16) Read & Stevens presented geologic arguments and interpretations as to the Early Middle Morrow contending that:

(i) the Late Middle Morrow is an elongated reservoir oriented east west with its thickest portion west of the Nearburg location;

(ii) that, contrary to Nearburg's interpretation, by moving south, Nearburg's location will gain reservoir thickness;

(iii) Nearburg should move towards the Pennzoil Well because despite the fact that C & K abandoned that well as non-productive based upon the poor Drill Stem Test results; and

(x) Read & Stevens is concerned about potential drainage despite the fact that the Crystal Well was producing only 569 MCFPD until Read & Stevens added perforations in the Upper Morrow and increased production to 1.6 MMCFPD.

(17) Both Nearburg and Read & Stevens agree that it is not possible to accurately estimate productive acreage for any of the spacing in this area because the production has been commingled among these various reservoirs such that it is impossible to determine what volume of gas should be attributable to each reservoir. In addition, while it may be possible to estimate ultimate recovery, it is not possible to determine the size and shape of the area drained by any existing well or future well.

DIVISION'S DECISION

(18) There is a substantial geological disagreement as to:

- (a) the depositional environment of both Middle Morrow Reservoirs;
- (b) what porosity cut off percentages to utilize when constructing net isopachs of both reservoirs;
- (c) whether to use density porosity or cross plot porosity in mapping the Late Middle Morrow reservoir;
- (d) the orientation and location of the structure;
- (e) the orientation and location of both the Early and Late Middle Morrow reservoirs;
- (f) the potential limits of both reservoirs in relation to the proposed well location;
- (g) the interpretation of the drill stem test of the Pennzoil Well; and
- (h) the distribution of reservoir volumes for both the Read & Stevens spacing unit and the Nearburg spacing unit in both reservoirs.

(19) Due to the highly subjective nature of both geologic interpretations and due to the limited petroleum engineering data in this area, it is impossible to correctly ascertain at this time the amount of gas reserves underlying either the Read & Stevens spacing unit or the Nearburg spacing unit.

(20) Both geologic interpretations indicate that the NW/4 of Section 10 is likely to contain commercial quantities of gas within the Middle Morrow formation.

(21) Although the presence, extent, structural position and sand trends of the same reservoirs within the Middle Morrow formation underlying the W/2 of Section 10 are highly subject to interpretation as demonstrated by both parties geologic presentations, the evidence in this case favors the applicant's geologic interpretation.

(22) The Crystal Well is non-productive in the Early Middle Morrow and therefore the Black River Well location presents no reasonable probability of drainage of the Read & Stevens spacing unit. Accordingly, no penalty should be assessed against the Black River Well's production from the Early Middle Morrow reservoir.

(23) Although the Crystal Well is marginally productive in the Late Middle Morrow and while there is little probability that its spacing unit will be at an unfair advantage if the Black River Well location is approved, it is reasonable to assess a production penalty against the Black River Well's production from the Late Middle Morrow reservoir.

(24) Approval of the subject application will better enable the applicant to produce the gas underlying the spacing unit and will protect correlative rights provided that a production penalty be imposed on the subject well.

(25) In the absence of any special rules and regulations for the proration of production from the Morrow formation in which the subject well will be completed, the aforesaid production limitation factor should be applied against said well's ability to produce into the pipeline as determined by back pressure test and data conducted according to Division rules and regulations.

(26) The Commission in Order R-9050-C, issued December 31, 1990 has established a precedent for resolving such disputes so that Read & Stevens is afforded the protection of its correlative rights while affording Nearburg the opportunity to produce its just and equitable share of the gas in the affected pool without suffering the economic consequence of drilling an unnecessary well nor being required to drill a location contrary to its own geologic interpretation and to otherwise prevent waste and protect correlative rights.

(27) In addition, Commission Order R-9050-C established a precedent for assessing a production penalty when the parties owning the diagonal offsetting spacing unit objected.

(28) That a productive acreage factor of a location penalty cannot be utilized in this case because of the lack of data from which to establish an accurate factor or to correctly ascertain the amount of gas reserves underlying either the Read & Stevens spacing unit or the Nearburg spacing unit.

(29) A production penalty based upon the distance the subject well encroaches towards the corner point of Sections 3,4,9, and 10 is reasonable and equitable and should be utilized in this case.

(30) The calculated distance from the above described corner point to a standard well location in Section 10 is 1777 feet. The calculated distance from the above described corner point to the actual well location is 1658 feet.

CASE NO. 11481

Order No. R-

Page -11-

(31) In order to protect correlative rights a penalty should be assigned to the applicant's spacing unit which will reflect the proportionate distance the proposed location is moved towards the aforementioned corner point.

(32) When ratio penalties are applied in diagonal objection cases, mathematical computation shows that the approximately 50% less acreage is affected in these cases.

(33) Correlative rights should be protected by assigning a penalty against the allowable production from the Late Middle Morrow reservoir at the proposed location based upon the formula: $(0.5) (1-1658/1777)$ or 3.58% penalty.

IT IS THEREFORE ORDERED THAT:

(1) The applicant, Nearburg Exploration Company, is hereby authorized to drill its proposed Black River "10" Federal Com Well No. 1 ("Black River Well") at an unorthodox oil location 1330 feet from the North line and 990 feet from the West line (Unit E) of Section 10, Township 24 South, Range 26 East, in the South Carlsbad-Morrow Gas Pool to be dedicated to a standard 320-acre gas spacing and proration unit consisting of the W/2 of said Section 10.

(2) The subject well is hereby assigned a production limitation factor of 0.9642 for Morrow gas production from the Late Middle Morrow reservoir of the South Carlsbad Morrow Gas Pool.

(3) In the absence of any special rules and regulations prorating gas production in the subject Morrow Pool, the wells production from the Late Middle Morrow interval each day of the first year's production shall be limited to 96.42% of the CAOF established by test as required by Rule 401 of the General Rules and Regulations, or to 500 MCF per day, whichever is greater.

CASE NO. 11481

Order No. R-

Page -12-

(4) Before October 1st each year following the well's completion, the shut-in pressure shall be measured and reported as required by General Rule 402, a new CAOF shall be calculated based on the revised shut-in pressure so as to establish a revised maximum flow rate as described in Ordering Paragraph No. (3) above until such penalized flow rate becomes less than 500 MCFPD. The revised penalized flow rate shall become effective November 1st. In the event of failure to establish a satisfactory slope of the 4-point test required in Ordering Paragraph (3) above, a slope of 0.730 shall be used in calculating CAOF

(5) Production during any month at a rate less than the limitation described above shall not be carried forward as under production into succeeding months, but over production of such limitation during any month shall be made up in the next succeeding month or months by shut-in or reduced rates as required by the District Supervisor of the Division.

(6) In the event, the subject well is completed in another formation and/or pool developed on 320-acre spacing the Director of the Division shall have the authority to reopen this case to determine an appropriate production penalty for said formation.

(7) Jurisdiction of this cause is 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