

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

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

**DE NOVO  
CASE NOS. 10446 and 10447  
Order No. R-9650-B/R-9651-B**

**APPLICATION OF YATES PETROLEUM  
CORPORATION FOR AUTHORIZATION TO  
DRILL, EDDY COUNTY, NEW MEXICO.**

*See Also Order Nos.  
R-9650  
R-9650-A (8-23-93)  
R-9650-A (9-20-93)*

**INTERIM ORDER OF THE COMMISSION**

**BY THE COMMISSION:**

This cause came on for hearing at 9 o'clock a.m. on September 9, 1992, October 21, 1992 and December 1, 1992 at Santa Fe, New Mexico, before the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission".

NOW, on this 10th day of February, 1994, the Commission, a quorum being present, having considered the record and being fully advised in the premises withdraws Order No. R-9650-A and Order No. R-9651-A and,

**FINDS THAT:**

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

(2) Commission Case Nos. 10446, 10447, 10448, and 10449 were consolidated at the time of the hearing for the purpose of receiving testimony.

(3) On August 23, 1993, the Commission issued Orders No. R-9650-A and R-9651-A.

(4) Upon application by New Mexico Potash Corporation, a rehearing was held at 9 o'clock a.m. on November 10, 1993 at Santa Fe, New Mexico, before the Commission.

(5) The Applicant in this matter, Yates Petroleum Corporation ("Yates"), seeks approval to drill its Graham "AKB" State Wells No. 3 and No. 4 located within the Designated Potash Area pursuant to all applicable rules and procedures governing said area, as promulgated by Division Order No. R-111-P. The proposed wells are to be located at standard oil well locations comprising Units B and G of Section 2, Township 22 South, Range 31 East, NMPM, Eddy County, New Mexico, with each well scheduled to test the Delaware formation at an approximate depth of 8,500'. Standard 40-acre oil spacing and proration units for the Undesignated Lost Tank-Delaware Pool or Undesignated Livingston Ridge-Delaware Pool are dedicated to each well.

(6) New Mexico Potash Corporation ("NM Potash"), owner of the state potash lease underlying all of Section 2 appeared at the hearing in opposition to the applications.

**LIFE OF MINE RESERVES (LMR)**

(7) "Life of mine reserves" ("LMR") has been defined in New Mexico Oil Conservation Commission ("NMOCC") Order No. R-111-P as those potash deposits within the potash area reasonably believed by the potash lessee to contain potash ore in sufficient thickness and grade to be mineable using current day mining methods, equipment and technology. Mine operators file any revisions to their LMR's annually with the New Mexico State Land Office ("SLO") and with the U.S. Bureau of Land Management ("BLM") as required under that order.

(8) NMOCC Order No. R-111-P requires that a well operator notify each potash operator within one mile of a proposed well before commencing drilling operations. That order also requires the Oil Conservation Division to ascertain if a proposed well is within an LMR area. The order provides that any drilling application within an LMR or its buffer zone may be approved only with the agreement of the potash operator. Any drilling application outside an LMR and its buffer zone may be approved provided there is no protest from the potash operator within twenty days of his notice. Exceptions from NMOCC Order No. R-111-P will only be granted if an oil and gas operator can show that a well within an LMR or its buffer zone will not waste potash or a potash operator can show that a well outside an LMR and its buffer zone will waste potash.

(9) NM Potash has previously designated an LMR in Section 35, Township 21 South, Range 31 East (directly North of Section 2) which designation has not been challenged in these cases. Upon receiving notification on or about November 22, 1991 that Yates intended to drill oil and gas wells within Section 2, NM Potash caused a core hole to be drilled in the SE/4 of Section 2 in order to ascertain whether or not potash reserves were present. After determining that the core hole results showed the presence of commercial potash ore, NM Potash submitted a revision of its LMR designation to the SLO on or about January 14, 1992. The revised LMR included all of Section 2.

(10) The Graham "AKB" State Wells No. 3 and No. 4 would be outside the LMR previously established for Section 35 but would be within its buffer zone. Also, the proposed wells would be included in any LMR established for Section 2.

(11) Yates challenges NM Potash's designation of Section 2 as part of its LMR, argues that an LMR is not established on state land until designated by the SLO nor does it have retroactive effect once designated and contends notwithstanding an LMR designation that the Commission is obligated to grant exceptions to Order No. R-111-P unless commercial potash will be unduly wasted as a result of drilling the subject wells. NM Potash argues that the filing of an LMR designation effectively creates an area off limits to oil and gas drilling and that there should be no forum for oil and gas operators to challenge its LMR boundaries.

(12) The intent of the notification requirement in NMOCC Order No. R-111-P is to determine if a proposed drill site for an oil and gas well is within a designated LMR or its buffer zone. It is not intended to give a potash lessee information concerning where oil and gas drilling will occur so that the potash operator may immediately revise its LMR to preclude the proposed drilling. Any revision of LMRs should be in the normal course of mining business as reserves are delineated and mining plans updated; it should not be in response to planned drilling activity for oil and gas. Therefore, NM Potash should be precluded from revising its LMR to encompass Section 2 since it did so only after receiving notice that Yates intended to drill for oil and gas within Section 2.

(13) For purposes of drilling the Graham "AKB" State Wells No. 3 and No. 4, no valid LMR is established for Section 2. Therefore, the proposed wells are outside any LMR and its buffer zone for Section 2. However, the proposed wells are within the buffer zone for the LMR previously established in Section 35 and the applications to drill should be denied unless the drilling and production of the wells will not waste potash.

### **WASTE**

(14) State law charges the Commission with preventing waste and "waste" is defined to include "drilling or producing operations for oil or gas within any area containing commercial deposits of potash where such operations would have the effect to unduly reduce the total quantity of such commercial deposits of potash which may reasonably be recovered in commercial quantities". "Unduly" is defined as "excessively" or "immoderately". The Commission also is charged with preventing waste of oil and gas and protecting the correlative rights of owners of oil and gas.

(15) Waste occurs if oil and gas operations prevent NM Potash from safely mining commercial potash reserves and waste occurs if Yates is prevented from developing their oil and gas reserves under the north half of Section 2.

(16) Both sides presented extensive testimony relating to the economics of potash development in Southeast New Mexico. Economic arguments revolved around the relative value of each resource with each side trying to prove that the development of their resource at the exclusion of the other would provide the highest value to the State. Such arguments were highly speculative and did not address the total economic picture. Neither side examined the concept of mutual cooperation in development of oil and gas and potash.

(17) There should be a plan of operation which prevents waste, protects correlative rights, assures maximum conservation of oil, gas and potash resources in New Mexico and permits the economic recovery of oil, gas and potash ore if present commercially. Such a plan should not favor one resource over the other. The question is not whether oil wells should be drilled or potash ore mined, but how can ore be mined and oil and gas wells drilled and produced enabling each industry to recover their resource while ensuring the safety of all participants.

(18) NM Potash argued that potash ore could not be mined if oil wells were drilled first in areas to be mined. Yates argued that potash has already been mined around 25 producing wellbores in oil pools producing from the Yates formation without incident. Testimony centered on safety issues such as the possibility of methane migration from oil and gas wells into the salt and eventually into potash mines. There was conjecture on what could go wrong with current cementing practices but no methane measurements were taken on any of the 1,000 plus wells drilled to date within the potash area or dry holes within present mine workings.

(19) If oil and gas operations make potash mining unsafe, then potash will not be mined and may be wasted. This was not proved however and there is a need for direct surface measurements of methane gas in and around existing wells within the potash area.

(20) Additional safety issues such as subsidence were argued from a theoretical perspective by both sides but there were no direct surface field measurements in areas where potash mining has already caused some subsidence. Subsidence is a primary factor in defining buffer zones.

(21) To adequately address the extent of buffer zones and the effective radius of pillars around wells, there is a need for examining new information and exploring new technologies relating to subsidence.

(22) Although there have been no documented cases of oil and/or gas migration into New Mexico potash mines due to oil and gas operations, mine safety is a paramount issue because methane in a mine can cause a reclassification of that mine to "gassy" requiring use of special procedures and equipment the cost of which would render future mining uneconomic resulting in waste of potash.

(23) There is a need to investigate methane monitoring which could be implemented adjacent to or within producing oil and gas wells to evaluate the potential for methane migration from the producing wellbore into adjacent rock formations.

**TECHNICAL STUDY**

(24) The Oil Conservation Division should contract with the New Mexico Bureau of Mines and Mineral Resources ("Bureau") or such other entity as approved by the Director of the Oil Conservation Division. The contract should provide that:

- (1) the Bureau seek technical assistance from Yates Petroleum Corporation and other producers of oil and gas within the potash enclave, New Mexico Potash Corporation and other potash producers, the New Mexico Petroleum Recovery Research Center, the Petroleum and Natural Gas Engineering Department of the New Mexico Institute of Mining and Technology, the Mineral and Environmental Engineering Department of the New Mexico Institute of Mining and Technology, the New Mexico State Land Office, the United States Department of Energy and the United States Bureau of Land Management; and
- (2) the Bureau and its subcontractors develop and provide to the Commission technical and economic information from which the Commission may design a joint operating plan for both oil and gas and potash development. The Commission plan should also serve to establish a procedure for future joint resource development in other areas.

(25) In developing the technical and economic information, the Bureau should:

- (1) explore the economics of directional drilling incorporating such possible incentive factors as: a) increased allowables, b) wider well spacing units such as 80 acres; c) decreased royalty rates on directionally drilled Delaware wells; d) unitization and its effect on field development, spacing patterns and field drainage;
- (2) measure methane (if present) at the surface casing of plugged wells within the potash area which have produced or encountered shows of oil and gas;
- (3) measure methane (if present) and evaluate wells within potash mine workings as they relate to safety concerns;

- (4) explore avenues of oil/potash cooperation in developing additional ore body information;
- (5) quantify the subsidence potential over potash mines and its effect on the integrity of well casing;
- (6) examine the role of mining plans in scheduling of potash and petroleum extraction;
- (7) explore new technology which can help define LMRs and the buffer zone;
- (8) evaluate old and new cementing practices and recommend appropriate operating practices;
- (9) examine the "confidentiality issues" and find a way to promote cooperation in the use of this information in the LMR designation process;
- (10) examine wells which have been drilled near potash mine workings within the potash enclave and their effect upon potash mining;
- (11) confer periodically with the Director of the Oil Conservation Division as to the progress of the above investigations. If additional studies are needed they will be negotiated as supplementary contracts.

(26) The application of Yates to drill their Graham No. 3 and Graham No. 4 wells should be temporarily denied until the Commission designs the joint operating plan based upon the information received from the Bureau.

**IT IS THEREFORE ORDERED THAT:**

(1) The Oil Conservation Division shall contract with the Bureau of Mines and Mineral Resources to develop the technical and economic information as outlined in Finding No. 24 and No. 25.

(2) The application of Yates Petroleum Corporation to drill their Graham No. 3 and Graham No. 4 wells in the N/2 of Section 2 is temporarily denied pending action by the Commission on the information developed by the Bureau.

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

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

STATE OF NEW MEXICO  
OIL CONSERVATION COMMISSION



*Gary Carlson*

GARY CARLSON, Member

*Bill Weiss*

WILLIAM W. WEISS, Member

*William J. Lemay*

WILLIAM J. LEMAY, Chairman

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