

**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 OF NEW MEXICO FOR  
THE PURPOSE OF CONSIDERING:**

**CASES NOS. 10446 and 10447  
(DE NOVO)  
Order Nos. R-9650-A and R-9651-A**

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

**INTERIM ORDER OF THE COMMISSION**

**BY THE COMMISSION:**

This cause came on for hearing at 9 o'clock a.m. on October 31, 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 23rd day of August, 1993, the Commission, a quorum being present, having considered the record and being fully advised in the premises,

**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. 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.
4. 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.

5. New Mexico Oil Conservation Commission ("NMOCC") Order No. R-111-P prohibits drilling operations within a Life of Mine Reserve ("LMR") or its attendant buffer zone unless the oil and gas operator and the mine operator mutually agree to permit drilling or the Commission grants an exception to NMOCC Order No. R-111-P upon a showing that commercial potash will not be wasted unduly as a result of the drilling of the well.

**LIFE OF MINE RESERVES (LMR)**

6. *Life of mine reserves ("LMR") has been defined in 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 LMR designation maps annually with the New Mexico State Land Office ("SLO") and with the U. S. Bureau of Land Management ("BLM") as required under this order. NM Potash had filed for and the BLM had established LMR designation for Section 35, Township 21 South, Range 31 East which LMR covers Federal minerals under BLM jurisdiction and had claimed LMR designation for Section 2 which is totally under jurisdiction of the SLO. The north half of Section 2 would be designated as either a SLO created LMR or as a BLM created buffer zone to the LMR designation established in Section 35. The south half of Section 2 would be outside the buffer zone created by the LMR in Section 35 by the BLM but would be within the SLO created LMR covering Section 2.*

*Yates challenges NM Potash's designation of Section 2 as part of its LMR or buffer zone thereto, 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 Oil Conservation 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 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.*

FINDING: An LMR is not established on state land until designated as such by the State Land Office. Furthermore, an LMR designation by itself cannot act retroactively to prohibit the drilling of wells for which an application to drill has previously been filed. At the time that the Applications to Drill the Graham No. 1 and No. 2 wells were filed, the proposed locations were not within the boundaries of a designated LMR. They were, however, within the buffer zone of the designated LMR for Section 35.

If an LMR designation and associated buffer zone prevents an oil and gas operator from developing his reserves, there should be a process for challenging that LMR designation or granting exceptions to allow drilling.

7. *Data used to create LMRs such as core hole data is considered confidential information to be viewed and evaluated by the Potash operator, the BLM and SLO. Unless the BLM or SLO question the LMR designation, the designation becomes effective without review of the supporting information. Oil companies are not privy to the boundaries of the LMR filed in the supporting information. This puts them at a competitive disadvantage in trying to challenge LMR designations or show that exceptions should be granted.*

FINDING: When the designation of an LMR by a Potash operator may prevent an oil and gas operator from accessing its property, the oil and gas operator must be given the opportunity to review the geologic basis for the designation, with appropriate restrictions to protect the confidentiality of the data, in order to make a meaningful challenge.

8. *NM Potash failed to use valuable information such as radioactivity logs to help define mineralized and barren zones. They used carnallite in combination with sylvite to arrive at their determination of commercial potash ore in core hole F-65 located 100 feet from the South and West lines of Section 34, Township 21 South, Range 31 East even though carnallite must be blended to obtain commercial ore, and they did not incorporate in their interpretation available data in core hole ERDA-6 in the SE/4 of Section 35, Township 21 South, Range 31 East. Their contention that commercial potash ore is present throughout Section 2 is based upon the results of the one core hole (K-162) drilled in Section 2 which did encounter commercial potash mineralization.*

FINDING: NM Potash did not prove the existence of commercial potash under Section 2.

9. *Maps showing inferred potash reserves in Section 35 were submitted by both Yates and N.M. Potash. Yates showed only the northwest quarter to contain potash reserves while N.M. Potash showed potash reserves underlying all of Section 35. Under the current NMOCC R-111-P Order the BLM has the authority to designate LMRs on federal lands and the BLM did include all of Section 35 in their LMR designation which would include a 1/2 mile buffer zone extending South to include the north half of Section 2, which would effectively deny drilling of the Graham "AKB" State Wells No. 3 and 4 because of their location in this buffer zone. The critical question, which was not adequately addressed at the hearing, is whether one mineral estate, federal lands in Section 35, can prevent resource development under a different mineral estate, state lands in Section 2, by virtue of the fact that it was designated by the federal estate to*

*bear the burden of providing a measure of safety to the development of resources on its land.*

FINDING: The application to drill the Graham No. 3 and Graham No. 4 in the north half of Section 2 should be temporarily denied because these wells are located within the Section 35 buffer zone of an LMR established under BLM jurisdiction. Yates does have the right to access these reserves however and the method of access should be an issue for future consideration by the Commission. Denying Yates the opportunity to access for the purpose of recovering oil and gas under their state oil and gas lease in order to provide a buffer for the development of potash on an adjacent federal tract would be confiscation of both Yates' and the State's oil and gas rights without compensation.

### **WASTE**

*10. NM Potash contended that if wells are drilled in Section 2 the potash cannot be recovered and that drilling wells and producing oil under Section 2 could be delayed until the potash ore is completely mined which timeframe was projected to be 30 to 50 years in the future. Such delay would render the present value of oil and gas reserves under Section 2 worthless. Yates testified that there ought to be areas of potash ore reserve that are protected from oil and gas drilling but Section 2 did not constitute one of those areas.*

*State law charges the Commission with preventing waste and "Waste" is defined to include "drilling or producing operations for oil and gas within any area containing commercial deposits of potash where such operations would have the effect unduly to 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 is also charged with preventing waste of oil and gas and protecting the correlative rights of owners of oil and gas.*

FINDING: Waste occurs if oil and gas operations prevent NM Potash from safely mining commercial potash reserves and waste occurs and Yates' correlative rights are violated if Yates is prevented from developing their oil and gas reserves under the north half of Section 2.

*11. 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. Neither side examined the concept of mutual cooperation in development of oil and gas and potash.*

FINDING: 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.

#### SAFETY

12. 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 the three (3) dry holes within the present NM Potash mine workings.

FINDING: 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 and especially measurements and studies of the three dry holes within the NM Potash mine workings.

13. 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.

FINDING: To adequately address the extent of buffer zones and the effective radius of pillars around wells, there is a need for compiling and evaluating field data both within and over existing potash mine workings.

14. 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.

**FINDING:** There is a need for additional methane monitoring measures which should be implemented adjacent to producing oil and gas wells to determine the presence or absence of methane in the salt section.

**TECHNICAL COMMITTEE FORMATION**

15. The application of Yates to drill their Graham No. 3 and Graham No. 4 should be temporarily denied but their right to access their oil and gas reserves under the north half of Section 2 should be acknowledged and should be governed by an operating plan to be produced by a joint technical committee composed of scientists and operating personnel from NM Potash and Yates. The purpose of this committee should be to gather and analyze data and to cooperate in designing a joint operating plan for both oil and gas and potash development. It should also serve to establish a procedure for future joint resource development in other areas.

Toward that end, the committee should examine the following issues specific to these applications:

- (1) Explore the economics of directional drilling with 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 the three wells within the mine workings as they relate to safety concerns.
- (4) Explore avenues of oil/potash cooperation in developing additional ore body information such as coring the 4th and/or 10th ore zone while drilling to the Delaware or running sensitive radioactivity logs through the salt section on oil wells or side wall coring ore zones after running radioactivity logs which would define the mineralized zones.
- (5) Measure subsidence over potash mines and its effect on the integrity of well casing.

- (6) Develop mining plans which incorporate oil and gas drilling and involve commitments by both parties. Mining plans were defined as a "snapshot in time" which change due to a variety of factors such as the grade of ore encountered and the utilization of available equipment. Mining plans are therefore little more than a "guess" of future activity and should not be relied upon until they incorporate oil and gas activity and firm development commitments by both NM Potash and Yates.
- (7) Define scientific standards which can establish an LMR which would be off limits to drilling and explore procedures for oil and gas input into that LMR determination.
- (8) Explore scientific measurements which can define a buffer zone and be adjusted on a site specific basis.
- (9) Drill pilot holes through the salt around a producing Delaware Sand well and measure any methane in the salt. Consider other monitoring projects which would supply "hard data".
- (10) Research alternative cementing practices in plugging procedures which could safely allow mining operations to be conducted closer to plugged and abandoned wells.
- (11) Form a safety subcommittee to address mine safety issues as they relate to methane monitoring and methane migration. The committee should help foster a better understanding of each industry and how it operates.
- (12) Examine the "confidentiality issues" and find a way to promote cooperation in the use of this information in the LMR designation process.
- (13) Explore mediation and conflict resolution as tools in resolving some of the tougher issues.
- (14) Produce a plan which will allow both companies to develop their respective reserves.
- (15) As a means of providing insight into specific issues 5, 6, 7, 8, 10, 11, 12, 13, and 14, listed above, a historical review should be made of the Wills Weaver and Eddy Potash Inc. mining operations in Township 20 South, Ranges 29 and 30 East.

**IT IS THEREFORE ORDERED THAT:**

1. The application of Yates Petroleum Corporation to drill their Graham No. 3 and Graham No. 4 in the north half of Section 2 is temporarily denied pending the submission of recommendations from the Technical Committee herein created. This committee shall consist of not more than 6 persons with technical and operational expertise, 3 from Yates, and 3 from NM Potash. The Technical Committee will address issues defined in Finding 15 and will report back to this Commission by August 1, 1994 with their recommended plan for oil and gas development under the north half of Section 2, Township 22 South, Range 31 East, NMPM, Eddy County, New Mexico which will not unduly waste commercial deposits of potash.

2. 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.

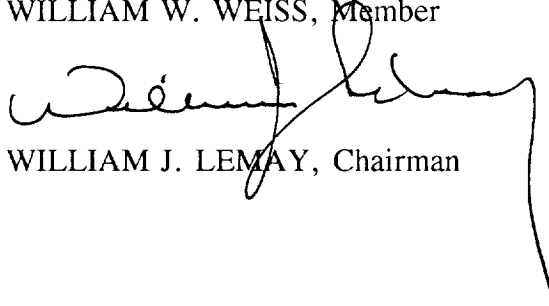
STATE OF NEW MEXICO  
OIL CONSERVATION COMMISSION



GARY CARLSON, Member



WILLIAM W. WEISS, Member



WILLIAM J. LEMAY, Chairman

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