

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. 11436  
ORDER NO. R-10541*

**APPLICATION OF ARMSTRONG ENERGY CORPORATION FOR A PRESSURE  
MAINTENANCE PROJECT AND QUALIFICATION FOR THE RECOVERED OIL  
TAX CREDIT PURSUANT TO THE "NEW MEXICO OIL RECOVERY ACT", LEA  
COUNTY, NEW MEXICO.**

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 8:15 a.m. on December 7 and on December 21, 1995 at Santa Fe, New Mexico, before Examiners Michael E. Stogner and David R. Catanach, respectively.

NOW, on this 6<sup>th</sup> day of February, 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.

(2) The applicant, Armstrong Energy Corporation, seeks authority to institute a pressure maintenance project on a portion of its Mobil Lea State Lease (State lease No. LG-2750) underlying the SW/4 of Section 2, Township 20 South, Range 34 East, NMPM, Lea County, New Mexico, by the injection of produced water into the third sand interval of the Cherry Canyon formation of the Delaware Mountain group, which is within the Northeast Lea-Delaware Pool, through the perforated interval from approximately 5,930 feet to 5,970 feet in its proposed Mobil Lea State Well No. 6 to be drilled at a standard location 330 feet from the South line and 990 feet from the West line (Unit M) of said Section 2.

(3) There are currently four producing oil wells that will be initially affected by the proposed injection well, all of which are located in the SW/4 of said Section 2:

Well Name and Number	Footage Location	Unit Letter Designation	API Number
Mobil Lea State Well No. 1	1800' FSL & 1980' FWL	K	30-025-31696
Mobil Lea State Well No. 2	1800' FSL & 990' FWL	L	30-025-31928
Mobil Lea State Well No. 3	990' FSL & 870' FWL	M	30-025-32105
Mobil Lea State Well No. 4	1155' FSL & 1770' FWL (Unorthodox Oil Well Location Approved By Division Order No. R-10015, dated November 9, 1995)	N	30-025-32310

(4) The applicant presented testimony which indicates:

(a) the total primary recovery from this reservoir with the above-described producing oil wells is estimated at 900,000 to 1,000,000 barrels of oil, or 16.5% to 18.3% of the original-oil-in-place;

(b) the estimated total capital cost to implement this project is \$361,175.00; and,

© the estimated incremental production from this pressure maintenance project is expected to yield an additional 306,000 barrels of oil, or 33% of the original-oil-in-place, which results in the recovery of additional oil that would not otherwise be recovered.

(5) The current producing rates for the four aforementioned wells are "non-marginal" in nature; therefore, pursuant to Division General Rule 701.F, the proposed project should be classified as a pressure maintenance project and governed accordingly.

(6) Nearburg Producing Company, an off-set mineral interest owner, appearing through legal counsel at the time of the hearing neither objected nor supported the subject application. No other offset operator or interested party appeared at the hearing in opposition to this application.

(7) The proposed pressure maintenance project, as proposed by the applicant, is in the best interest of conservation, exhibits sound engineering practices, serves to prevent waste, and will not impair correlative rights; therefore, the subject application should be approved and the project should be governed by the provisions of Rules 701

through 708 of the Division Rules and Regulations.

(8) Produced water from the Delaware producing wells within said Section 2 is to be the initial source of injection water into the proposed project.

(9) The area for said project should incorporate that portion of the applicant's Mobil Lea State Lease as described in Finding Paragraph No. (2), above and, at the request of the applicant, should be designated the "*Lea Pressure Maintenance Project*".

(10) The project allowable should be equal to the top unit allowable for the Northeast Lea-Delaware Pool, which is 300 barrels of oil per day (as provided by Division Order No. R-9842, as amended), times the number of developed (production or injection) proration units within the project area.

(11) The transfer of allowable between wells within the project area should be permitted.

(12) The operator should take all steps to ensure that the injected water enters only the proposed injection interval and is not permitted to escape into other formations or onto the surface from injection, production or plugged and abandoned wells.

(13) The applicant submitted data on the proposed injection well, water wells in the area, and all other wells (including plugged wells) which penetrate the zone of interest within the ½-mile "area-of-review" ("AOR") of the proposed injection well. One particular well within this AOR (2,575 feet from the proposed injection well), the Samson Resources Company Federal 11-20-34 Well No. 1 (**API No. 30-025-02426**) located 1,980 feet from the North line and 2,130 feet from the West line (Unit F) of Section 11, Township 20 South, Range 34 East, NMPM, Lea County, New Mexico is currently producing oil from the Lea-Bone Spring Pool from the perforated interval from approximately 9,476 feet to 10,258 feet. The 10 3/4-inch intermediate casing in this well was set at 5,293 feet. Evidence presented indicates that the 7-inch production string (set to 14,360 feet) in this wellbore was cemented from the bottom back up-hole to an approximate depth of 8,680 feet. The corresponding injection interval depths are therefore open. Geologic data presented by the applicant however indicates that the injection interval or "sand" does not extend far enough to the southeast to be present in the Samson well.

**FINDING:** Even though the Samson Resources Company Federal 11-20-34 Well No. 1 is within the AOR, the injected water should not be a factor. **FURTHER,** such evidence indicates that wells in the AOR are cased and plugged so as to protect fresh water and prevent fluid migration from the injection zone, and includes testimony

indicating no evidence of open faults or any other hydrologic connection between the injection zone and the fresh water resources in the area.

(14) Injection into each well should be accomplished through 2 7/8-inch internally lined or coated tubing installed in a packer set no higher than 100 feet above the top of the upper most perforation; the casing-tubing annulus should be filled with an inert fluid; and a pressure gauge or approved leak-detection device should be attached to the annulus in order to determine leaks in the casing, tubing or packer.

(15) The injection well or its pressurization system should be so equipped as to limit injection pressure at the wellhead to no more than 750 psi, again as requested by the applicant, the Division Director however should have the authority to increase said pressure limitation, should circumstances warrant.

(16) Prior to commencing injection operations, the casing in the subject well should be pressure tested throughout the interval, from the surface down to the proposed packer-setting depth, to assure integrity of such casing.

(17) The operator should give advance notice to the supervisor of the Hobbs District Office of the Division of the date and time of the installation of injection equipment and of the mechanical integrity pressure-test in order that the same may be witnessed.

(18) The applicant further requests that the subject pressure maintenance project be approved by the Division as a qualified "Enhanced Oil Recovery Project" pursuant to the "Enhanced Oil Recovery Act" (Laws 1992, Chapter 38, Sections 1 through 5).

(19) The evidence presented indicates that the subject pressure maintenance project meets all the criteria for approval.

(20) The approved "project area" is to be limited to that area described in Finding Paragraph No. (2) above.

(21) To be eligible for the EOR credit, prior to commencing injection operations, the operator must request from the Division a Certificate of Qualification, which certificate will specify the proposed project area as described above.

(22) At such time as a positive production response occurs and within five years from the date of the Certificate of Qualification, the applicant must apply to the Division for certification of positive production response, which application shall identify the area actually benefitting from enhanced recovery operations, and identifying the specific wells

which the operator believes are eligible for the credit. The Division may review the application administratively or set it for hearing. Based upon evidence presented, the Division will certify to the Department of Taxation and Revenue those lands and wells which are eligible for the credit.

(23) The injection authority granted herein for the proposed injection wells should terminate one year after the effective date of this order if the operator has not commenced injection operations into the subject wells, provided however, the Division, upon written request by the operator, may grant an extension thereof for good cause shown.

IT IS THEREFORE ORDERED THAT:

(1) The applicant, Armstrong Energy Corporation, is hereby authorized to institute a pressure maintenance project on a portion of its Mobil Lea State Lease by the injection of produced water into the third sand interval of the Cherry Canyon formation of the Delaware Mountain group in its proposed Mobil Lea State Well No. 6 to be drilled at a standard location 330 feet from the South line and 990 feet from the West line (Unit M) of Section 2, Township 20 South, Range 34 East, NMPM, Northeast Lea-Delaware Pool, Lea County, New Mexico.

(2) The pressure maintenance project, hereby designated the "*Lea Pressure Maintenance Project*", shall be comprised of the following described area in Lea County, New Mexico:

TOWNSHIP 20 SOUTH, RANGE 34 EAST, NMPM  
Section 2: SW/4.

(3) The allowable for the project area shall be any amount up to and including a volume equal to the top unit allowable for the Northeast Lea-Delaware Pool (300 barrels of oil per day) times the number of developed (production or injection) proration units within the project area.

FURTHER: The allowable assigned to the project area may be produced from any well or wells within the project area in any proportion.

(4) Injection into the Mobil Lea State Well No. 6 shall be through 2 7/8-inch internally lined or coated tubing with injection into the perforated interval from approximately 5,930 feet to 5,970 feet.

(5) The tubing string in said well shall be installed in a packer set no higher than 100 feet above the upper most perforation; the casing-tubing annulus shall be filled with an inert fluid; and a pressure gauge shall be attached to the annulus or the annulus shall be equipped with an approved leak-detection device in order to determine leakage in the casing, tubing or packer.

(6) Said injection well or its pressurization system shall be equipped with a pressure-limiting switch or other acceptable device which will limit the wellhead pressure on the injection well to no more than 750 psi.

(7) The Division Director shall have the authority to administratively authorize an increase in the injection pressure limitation placed upon any well upon a proper showing by the operator that such higher pressure will not result in the migration of the injected waters from the third sand interval of the Cherry Canyon formation of the Delaware Mountain group, which is within the Northeast Lea-Delaware Pool.

(8) Prior to commencing injection operations, the casing in the subject well shall be pressure tested to assure the integrity of such casing in a manner that is satisfactory to the supervisor of the Division's Hobbs District Office.

(9) The operator shall notify the supervisor of the Hobbs District Office of the Division in advance of the date and time of the installation of injection equipment and of the mechanical integrity pressure-test in order that the same may be witnessed.

(10) The operator shall immediately notify the supervisor of the Division's Hobbs District Office of the failure of the tubing, casing, or packer in said injection well or the leakage of water or oil from any plugged and abandoned well within the project area and shall take such timely steps as may be necessary or required to correct such failure or leakage.

(11) Should it become necessary, the supervisor of the Hobbs District Office of the Division or the Director may at any time order a decrease of the injection pressure on any injection well within said project.

(12) The operator of the Lea Pressure Maintenance Project shall conduct injection operations in accordance with all applicable Division rules, regulations, and policies, including Division General Rules 701 through 708 and shall submit monthly progress reports in accordance with Division General Rules 706 and 1115.

**IT IS FURTHER ORDERED THAT:**

(13) The subject pressure maintenance project is hereby approved as an "Enhanced Oil Recovery Project" pursuant to the "Enhanced Oil Recovery Act" (Laws 1992, Chapter 38, Sections 1 through 5).

(14) The approved "project area" shall be limited to that area described in Decretory Paragraph No. (2) above.

(15) To be eligible for the EOR credit, prior to commencing injection operations, the operator must request from the Division a Certificate of Qualification, which certificate will specify the proposed project area as described above.

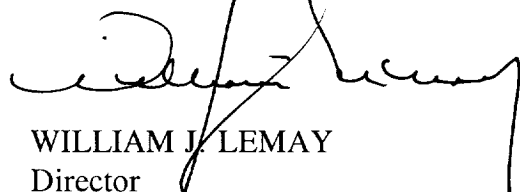
(16) At such time as a positive production response occurs and within five years from the date of the Certificate of Qualification, the applicant must apply to the Division for certification of positive production response, which application shall identify the area actually benefitting from enhanced recovery operations, and identifying the specific wells which the operator believes are eligible for the credit. The Division may review the application administratively or set it for hearing. Based upon evidence presented, the Division will certify to The Department of Taxation and Revenue those lands and wells which are eligible for the credit.

(17) The injection authority granted herein for the proposed injection wells shall terminate one year after the effective date of this order if the operator has not commenced injection operations into the subject wells, provided however, the Division, upon written request by the operator, may grant an extension thereof for good cause shown.

(18) 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

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