

**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. 13898  
ORDER NO. R-12792**

**APPLICATION OF COG OPERATING, L.L.C FOR A PRESSURE MAINTENANCE  
WATER INJECTION PROJECT, EDDY COUNTY, NEW MEXICO**

**ORDER OF THE DIVISION**

**BY THE DIVISION:**

This case came on for hearing at 8: 15 a.m. on April 12, 2007, at Santa Fe, New Mexico, before Examiner Richard L. Ezeanyim.

NOW, on this 30<sup>th</sup> day of July, 2007, the Division Director, having considered the testimony, the record and the recommendations of the Examiner,

**FINDS THAT:**

(1) Due public notice has been given, and the Division has jurisdiction of this case and its subject matter.

(2) The applicant, COG Operating, L.L.C. (" COG" or "Applicant"), seeks authority to institute a pressure maintenance project on the Federal lease underlying the NW/4 of Section 20, Township 17 South, Range 30 East, NMPM, Eddy County, New Mexico, by the injection of water into the Paddock formation of the Loco Hills-Glorieta-Yeso Pool (96718) through the following eight existing producing oil wells to be converted to water injection wells:

<b>Well Name and (API Number)</b>	<b>Footage Location (all NW/4 of 20-17S-30E)</b>	<b>Unit Letter</b>	<b>Perforated injection interval (feet)</b>
Jenkins B Federal Well No.1 (30-015-04214)	1650' FNL & 330' FWL	C	4282 - 4737
Jenkins B Federal Well No. 4 (30-015-04231)	1650' FNL & 1650' FWL	F	4286 -4637
Jenkins B Federal Well No. 10 (30-015-30668)	850' FNL & 2310' FWL	C	4418-4667

Jenkins B Federal Well No. 12 (30-015-31559)	2310' FNL & 2310' FWL	F	4321-4748
Jenkins B Federal Well No. 13 (30-015-31560)	2310' FNL & 880' FWL	E	4312-4715
Jenkins B Federal Well No. 14 (30-015-32257)	745' FNL & 990' FWL	D	4250-4639
Jenkins B Federal Well No. 17R (30-015-34138)	330' FNL & 1525' FWL	C	4268-4653
Jenkins B Federal Well No. 18 (30-0150-34474)	330' FNL & 430' FWL	D	4260-4630

(3) Notice of this application was given to the Bureau of Land Management (BLM) and to all the working interest owners surrounding the project area. No party appeared at the hearing in opposition to this application.

(4) The following testimony was presented by the applicant at the hearing:

(a) The NW/4 of Section 20, Township 17 South, Range 30 East, consists of a single federal lease operated by COG.

(b) There are currently sixteen (16) producing wells in the lease out of which eight wells as listed above would be converted to water injection wells.

(c) The disposal intervals in the injection wells would be the existing perforated intervals in the Paddock formation. Eighty (80%) percent of the produced water from the Paddock formation will be re-injected into the Paddock formation through a closed system. The applicant is expecting to inject 500 barrels of water per day in each injection well which for eight wells would be 4,000 barrels of water per day.

(d) The water analyses ran on the produced water and the formation water indicate that no compatibility problems exist between the injection water and the formation water.

(e) The Paddock formation is continuous across the NW/4 of Section 20.

(f) The initial pressure of the reservoir was 1800 pounds per square inch, while the current pressure is approximately 800 pounds per square inch.

(g) The current production levels from the sixteen producing wells are not in an advanced state of depletion, and therefore cannot be classified as "stripper wells". The applicant has decided to implement a pressure maintenance project to maintain or increase the reservoir pressure.

(h) The cumulative oil recovery to date is one million barrels with an additional 0.5 million barrels expected by primary recovery. Another 639,000 barrels of secondary oil is expected to be recovered by the implementation of this pressure

maintenance project. Estimated ultimate primary plus secondary is 2.2 million barrels of oil.

(i) The total project cost associated with the implementation of this project would be approximately \$2.49 million and the total net incremental value of the project would be approximately \$23.41 million.

(j) There are no water wells and no underground sources of drinking water within a two mile radius of the NW/4 of Section 20. There are no geologic faults in this area which would connect the injection zone with any source of drinking water.

(k) The submitted data on all plugged or active wells within the ½ mile area(s) of review (AOR) which penetrate the zone of interest indicates that these wells are cased and plugged so as to protect fresh water and prevent fluid migration from the injection zone.

(5) Pursuant to General Rule 701.F, the proposed project should be classified as a pressure maintenance project.

(6) The acreage within the NW/4 of Section 20, Township 17 South, Range 30 East, NMPM, Eddy County, New Mexico, should be considered a "project area" for secondary recovery operations within the Paddock formation and should be called the "Jenkins B Federal Lease Paddock Pressure Maintenance Project".

(7) The proposed lease pressure maintenance project should result in the recovery of otherwise unrecoverable oil thereby preventing waste, and should not impair correlative rights. Accordingly, this proposed injection project should be approved and COG should be designated as operator.

(8) As per request of the applicant, the project should not at this time be qualified as an enhanced oil recovery ("EOR") project eligible for the recovered oil tax rate.

(9) Before commencing injection operations, all perforations in any of the eight approved injection wells, other than those perforations into the Paddock formation, shall be abandoned with Division approved and witnessed plug-back or squeeze operations.

(10) Approval and permitting of future additional or alternative water injection wells within the Paddock formation and within the "project area" should be enabled through the administrative process.

**IT IS THEREFORE ORDERED THAT:**

(1) The applicant, COG Operating LLC ("COG"), is hereby authorized to institute a pressure maintenance project on the federal lease underlying the NW/4 of Section 20, Township 17 South, Range 30 East, NMPM, Eddy County, New Mexico, by the injection of water into the Paddock formation of the Loco Hills-Glorieta-Yeso Pool (96718) through the following eight

existing wells, which will be converted from producing oil wells to water-injection wells.

Well Name and (API Number)	Footage Location (all NW/4 of 20-17S-30E)	Unit Letter	Perforated injection interval (feet)
Jenkins B Federal Well No.1 (30-015-04214)	1650' FNL & 330' FWL	C	4282 - 4737
Jenkins B Federal Well No. 4 (30-015-04231)	1650' FNL & 1650' FWL	F	4286 -4637
Jenkins B Federal Well No. 10 (30-015-30668)	850' FNL & 2310' FWL	C	4418-4667
Jenkins B Federal Well No. 12 (30-015-31559)	2310' FNL & 2310' FWL	F	4321-4748
Jenkins B Federal Well No. 13 (30-015-31560)	2310' FNL & 880' FWL	E	4312-4715
Jenkins B Federal Well No. 14 (30-015-32257)	745' FNL & 990' FWL	D	4250-4639
Jenkins B Federal Well No. 17R (30-015-34138)	330' FNL & 1525' FWL	C	4268-4653
Jenkins B Federal Well No. 18 (30-0150-34474)	330' FNL & 430' FWL	D	4260-4630

(2) The acreage within the NW/4 of Section 20, Township 17 South, Range 30 East, NMPM, Eddy County, New Mexico, is hereby considered a "project area" for secondary recovery operations within the Paddock formation and shall hereafter be called the "Jenkins B Federal Lease Paddock Pressure Maintenance Project".

(3) COG Operating, L.L.C. (OGRD 229137) is hereby designated the operator of this project.

(4) The following three injection wells shall be repaired as follows prior to commencing injection operations into those wells:

(a) The San Andres perforations from 3,106 feet to 3,402 feet in the Jenkins B Federal Well No. 13 shall be squeezed.

(b) The San Andres perforations from 3,018 feet to 4,044 feet in the Jenkins B Federal Well No. 17R shall be squeezed.

(c) The Blinberry perforations from 5,082 feet to 6,181 feet within the Jenkins B Federal Well No. 18 shall be squeezed and then isolated with a cast iron bridge plug (CIBP) set at 4,730 feet and capped with 20 feet of cement.

**The operator shall provide written verification to the Engineering Bureau in the Santa Fe Office of the Division of the completion of this required remedial cementing work.**

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

(6) The allowable for the project area shall be the top unit allowable for the Loco Hills-Glorieta-Yeso Pool times the number of proration units within the project area.

(7) The allowable assigned to the project area may be produced from any well or wells in any proportion.

(8) Injection into each of the wells except the Jenkins B Federal Well No. 1 shall be accomplished through 2-7/8-inch plastic-lined tubing installed in a packer set no higher than 100 feet above the uppermost perforation. Injection into the Jenkins B Federal Well No. 1 shall be accomplished through 2-3/8-inch plastic-lined tubing installed in a packer set no higher than 100 feet above the uppermost perforation.

(9) The casing-tubing annulus in each injection well shall be filled with an inert, corrosion inhibited 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.

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

(11) Each injection well or pressurization system for each well shall be equipped with a pressure-limiting switch or other acceptable device which will limit the wellhead pressure on the injection wells to **no more than 880 pounds per square inch (psi)**.

(12) Any increase in the injection pressure on any of the said injection wells shall be permitted through the administrative process after the operator has demonstrated the proposed injection pressure will remain below formation fracturing pressure or otherwise after notice and hearing.

(13) The operator shall notify the supervisor of the Artesia 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.

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

(15) The operator shall provide written notice of the date of commencement of

injection operations into each well to the Artesia District Office of the Division.

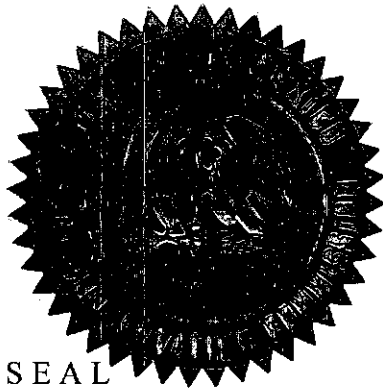
(16) The Jenkins B Federal Lease Paddock Pressure Maintenance Project shall be governed by Division Rules No. 701 through 708. The operator shall submit monthly reports of these injection and production operations on Division Form C-115, in accordance with Rule No. 706 and Rule No. 1115 of the Division Rules and Regulations.

(17) In accordance with Rule No 705.C, the injection authority granted herein for each of the eight injection wells shall terminate one year after the effective date of this order if the operator has not commenced injection operations into that well, and will terminate *ipso facto*, one year after injection operations into that well have ceased; provided, however, the Division, upon written request by the operator, may grant an extension for good cause.

(18) Approval and permitting of future additional or alternative water injection wells within the Paddock formation and within the "project area" shall be through the administrative process. All other substantive revisions shall be through notice and hearing.

(19) Jurisdiction is retained by the Division for the entry of such further orders as may be necessary for the prevention of waste and/or protection of correlative rights or upon failure of the operator to conduct operations (i) to protect fresh water or (ii) in a manner consistent with the requirements in this order, whereupon the Division may, after notice and hearing, terminate the injection authority granted herein.

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



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STATE OF NEW MEXICO  
OIL CONSERVATION DIVISION

A handwritten signature in dark ink, appearing to read "Mark E. Fesmire", written over a horizontal line.

MARK E. FESMIRE, P.E.  
Director