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:

APPLICATION OF CONOCOPHILLIPS COMPANY, INC. FOR AMENDMENT OF DIVISION ORDER NO. R-5897 AND SPECIAL RULES FOR THE EAST VACUUM GRAYBURG-SAN ANDRES UNIT PRESSURE MAINTENANCE PROJECT AREA, LEA COUNTY, NEW MEXICO

CASE NO. 14775
ORDER NO. R-5897-A

ORDER OF THE DIVISION

BY THE DIVISION:

This case came on for hearing at 8:15 a.m. on March 29, 2012, at Santa Fe, New Mexico, before Examiner William V. Jones.

NOW, on this 30th day of May, 2012, the Division Director, having considered the testimony, the record and the recommendations of the Examiner,

FINDS THAT:

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

(2) ConocoPhillips Company, Inc. ("Applicant") seeks amendment of Order No. R-5897, inasmuch as that order limited the injection packer setting depths to 100 feet above the injection perforations.

(3) Order No. R-5897 issued in Case No. 6367 on January 16, 1979, authorized injection of water into the San Andres formation of the East Vacuum Grayburg-San Andres Unit Area for purposes of pressure maintenance. Said order also established Special Rules for that Pressure Maintenance Project area including Rule No. 11 which limited injection packer setting depths to a maximum of 100 feet above the uppermost perforation.

(4) Applicant requests in this case that the packer setting depth restriction be changed for all existing and future injection wells to allow packers to be set as close as

reasonably possible to the uppermost perforation as long as that packer remains within the unitized interval.

(5) Applicant had also applied for an increase in the unit wide injection pressure limit, but at the hearing asked that this portion of its case be dismissed.

(6) The East Vacuum Grayburg-San Andres Unit was approved by the Commission for statutory unitization by Order No. R-5871 issued in Case No. 6366 on November 27, 1978. Ordering Paragraph No. 3 of that order relayed the Unit Agreement's definition of the vertically unitized interval. The top of the unitized interval is defined as an equivalent depth of 4050 feet within the New Mexico State K Well No. 19 (API: 30-025-20710), located within Unit P of Section 28, Township 17 South, Range 35 East, NMPM, Lea County, New Mexico.

(7) At the hearing, the applicant presented testimony and exhibits showing the following:

a. The top of the Grayburg formation is essentially the top of the Unitized Interval which is roughly 250 feet above the top perforation within wells being used for injection.

b. The Grayburg, being just above the San Andres pay interval, is tight and nonproductive, especially higher up-hole. If corrosion holes develop in the casing below the packers due to injection across exposed casing, the Grayburg formation would not be permeable enough to take injected fluids.

c. Above the Grayburg, the Yates formation is marginally productive. No other formations besides the Yates formation have produced in this area.

d. All operators within one half mile of the unit boundary were notified of this application.

e. The East Vacuum Grayburg-San Andres Unit has 116 injection wells; 17 of which are currently injecting with the injection packers set 100 feet or more above the injection interval. Another 10 injection wells were shut-in within the past couple of years after well workovers in which the new injection packers were unable to be set within the prescribed 100 foot interval. In addition, there are 34 injection wells that are close to the 100 foot limit and may need the requested relief soon.

f. About half of the injection wells in this unit were conversions of older producing wells, some of which were drilled in the 1930's. The other injection wells were drilled in the 1980's specifically for the purpose of injection.

g. Due to corrosion and wear on the casing in these old wells, it is often necessary, when re-setting the packer, to move up-hole in order to secure a reliable packer seat.

h. Within this tertiary recovery project, bradenhead testing is done on every well once per year and MIT's on injection wells are done every five years. Failed wells are worked on methodically to repair the failure. Applicant runs Cement Bond Logs and Casing Inspection Logs as needed and has an active Corrosion Treating and Monitoring Program.

i. Approximately 75 percent of the injection wells are part of the Water-Alternating- CO2 Gas Injection ("WAG") tertiary project. Produced gas is stripped of NGL's and re-injected as a mixture of CO2, Methane, and H2S. Tubing for injection wells is internally coated which has helped retard tubing failure.

j. Applicant is installing automation on the injection system and wells which will continuously monitor tubing pressure, casing pressure, and injection rates.

k. Applicant has squeezed numerous wells with casing leaks and has never cemented tubing in the hole.

The Division concludes that:

(8) Setting packers in which the injection tubing is installed in this unit more than 100 feet above the uppermost injection perforation or casing shoe will not cause waste, impair correlative rights or endanger public health or the environment so long as the packer in each well is set below the top of the Unitized Formation. Accordingly, this Application should be granted to allow packers to be set within these parameters both as to existing wells that are presently in violation, and as to wells in which a need may subsequently arise to raise the packer-setting depth.

IT IS THEREFORE ORDERED THAT:

(1) ConocoPhillips Company, Inc.'s application in this case seeking to modify the injection packer setting depths within injection wells in the East Vacuum Grayburg-San Andres Pressure Maintenance Project is hereby approved.

Rule 11 of the Special Rules for this project and as contained in Ordering Paragraph (4) of Order No. R-5897 is hereby wholly changed to read as follows:

> RULE 11. Injection into any injection well shall be accomplished through internally coated tubing installed in a packer set as close as practically possible to the uppermost injection perforations or casing shoe (of an open hole completion); so long as the packer set point remains within the Unitized Formation, as defined in the Unit Agreement, or as the

same may be subsequently modified. The casing-tubing annulus shall be filled with an inert fluid and a gauge or approved leak detection device shall be attached to the annulus in order to determine leakage in the casing, tubing or packer. Prior to setting any injection packer at a shallower depth than it was just previously set, the operator shall secure approval of the Division's Hobbs District Office.

(2) The portion of this application seeking a Unit wide increase in the wellhead injection pressure limit is dismissed without prejudice.

(3) Except as specifically modified hereby, Order No. R-5897 shall continue in effect to the same extent as immediately prior to the issuance of this Order.

(4) Jurisdiction of this case 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

JAMI BAILEY
Director

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