

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

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

**APPLICATION OF TARGA MIDSTREAM SERVICES,
LIMITED PARTNERSHIP TO AMEND ORDER NO.
R-13052, LEA COUNTY, NEW MEXICO.**

**Case No. 14161
Order No. R-13052-A**

ORDER OF THE DIVISION

(Proposed by Apache Corporation and Momentum Operating Co., Inc.)

BY THE COMMISSION:

This case came on for hearing on September 22, 2011 at 9:00 a.m. at Santa Fe, New Mexico, before the Oil Conservation Commission.

NOW, on this 20th day of October, 2011, the Commission, having considered the testimony and the record,

FINDS THAT:

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

(2) Division Order No. R-13052, entered on November 18, 2008, authorized Targa Midstream Services, L.P. ("Targa") to inject gas processing waste from its Monument gas plant into the Devonian and Fusselman formations in an open hole interval at depths of 8350-9200 feet subsurface in its proposed Monument AGI Well No. 1, to be located 662 feet from the south line and 2513 feet from the east line of Section 36, Township 19 South, Range 36 East, NMPM, Lea County, New Mexico.

(3) Ordering Paragraph (2) of Order No. R-13052 required Targa, before injection commenced into the Monument AGI Well No. 1, to re-enter the NMGSAU Well No. 285 (API No. 30-25-12481) to 9755 feet subsurface and re-plug the well, due to the lack of existing cement plugs immediately above and below the equivalent Devonian/Fusselman injection interval. The NMGSAU Well No. 285, operated by Apache Corporation ("Apache"), is located in Unit F of Section 36 and produces from the unitized Grayburg-San Andres interval.

(4) Targa has applied for an order amending Order No. R-13052 to (i) delete the requirement to re-enter and re-plug NMGSAU Well No. 285, and (ii) retain the Graham State NCT-F Well No. 7 (API No. 30-025-12482) as an active saltwater disposal well in the San Andres formation pursuant to Division Administrative Order Nos. SWD-561 and SWD-561-A.

(5) Apache entered an appearance in the case in opposition to Targa's application.

(6) Momentum Operating Co., Inc. ("Momentum"), an offset operator, entered an appearance in the case in opposition to Targa's application.

Evidence:

(7) Targa presented the following evidence:

(a) The original plugs in the NMGSAU Well No. 285 were never tagged and their exact locations are not certain.

(b) The re-plugging operations on the NMGSAU Well No. 285 were conducted by Apache under an agreement with Targa.

(c) Operations to re-plug the NMGSAU Well No. 285 were commenced on February 24, 2011. On March 17, 2011, after drilling to 4100 feet, the work string twisted off. Additional problems were subsequently encountered with the re-plugging operations until the rig was released on May 19, 2011 without the required re-plugging being successful.

(d) On March 21, 2011, after the initial problems had been encountered with the re-plugging of the NMGSAU Well No. 285, Targa commenced drilling the Monument AGI Well No. 1. The well reached total depth in May 2011 but has not been completed.

(e) Targa obtained extensions of the injection commencement deadline in Order No. R-13052 in both 2009 and 2010.

(f) Targa presented Rose Diagrams which showed that some of the fractures in the near-wellbore portion of the injection formations were oriented in a northeast-southwest direction, and Targa contended that the injection plume would be oriented in those directions.

(g) Targa assumed a homogeneous reservoir thickness (net pay) of 318 feet and radial flow in calculating the injection plume's volume and radius.

(h) Under Targa's assumptions the injection plume's radius would be 1654 feet at an injection rate of 3500 barrels/day, and 1981 feet at an injection rate of 5000 barrels/day, and the plume would probably not reach the NMGSAU Well No. 285.

(8) Apache and Momentum presented the following evidence:

(a) The NMGSAU Well No. 285 is located 2850 feet north-northwest of the Monument AGI Well No. 1.

(b) The NMGSAU Well No. 285 has not been re-plugged according to the plugging procedure in the Sundry Notice approved by the Division's Hobbs District Office, and Apache does not consider the well to be plugged as required by Order No. R-13052, thus preventing a path for migration of acid gas from the injection zones into other formations productive, or potentially productive, of oil or gas.

(c) The decision to cease re-plugging operations on the NMGSAU Well No. 285 was made by Targa.

(d) Rose Diagrams, obtained from dipmeter logs, measure what is happening only in the immediate wellbore area (a few inches to a few feet from the wellbore), and do not accurately represent regional or areal fracture trends.

(e) Apache's and Momentum's geological studies in this area indicate a northwest-southeast regional fracture trend. The trend would generally match the northwest-southeast faults located to the west of the Monument AGI Well No. 1.

(f) There is significant shallow production in the area of the Monument AGI Well No. 1, including from the Grayburg-San Andres and Abo formations. There is additional future development potential in these and other shallower zones.

(g) The Devonian and Fusselman formations in the area to the north and west of the Monument AGI Well No. 1 have not been thoroughly evaluated using modern drilling and completion techniques.

(h) The injection zone is highly fractured and heterogeneous, and the injectate will follow paths with higher porosity and permeability. The log for the Monument AGI Well No. 1 shows only 34 feet of porous interval with porosity above 6% (compared to 318 feet used by Targa). Additionally, the interval between 8477-8532 feet exhibits significantly higher porosity than the rest of the proposed injection interval, which would likely be the dominant interval in taking the injection fluids.

(i) Using more accurate and reasonable reservoir thicknesses of 34 feet results in an injection plume with a radius of well over 4000 feet, using the volumetric calculation.

(j) Targa did not include the volume of the actual acid gas injection stream with the water disposal stream. The additional acid gas volume would likely be in excess of 1000 barrels/day. Including the additional injection volume of the acid gas injection stream would increase the radius of the injection plume.

(k) If the acid gas plume reaches the NMGSAU Well No. 285 it would likely migrate to shallower formations, resulting in loss of confinement of the injectate in the disposal zone.

(l) In addition, the deep wells in this area were drilled 50-60 years ago, cement plug tops were estimated by calculation instead of by tagging, and Apache and Momentum are concerned about the casing and cementing integrity of those wells.

(m) It is uncertain if the acid gas would remain in the dense gas phase if it migrates to another formation. If it does not, the adversely affected area would be much greater than calculated by any of the parties to this case.

Conclusions:

(9) The Commission concludes as follows:

(a) The existing cement plugs in the NMGSAU Well No. 285 are not adequate to contain injected fluids from the Monument AGI Well No. 1 in the target disposal formations, and the Division was correct in requiring the re-entry and re-plugging of the NMGSAU Well No. 285 in Order No. R-13052.

(b) Targa has the burden of proof to show that injection operations in the Monument AGI Well No. 1, without re-plugging the NMGSAU Well No. 285, will not cause waste or impair correlative rights.

(c) The NMGSAU Well No. 285 has not yet been properly re-plugged as required by Order No. R-13052.

(d) There is a reasonable possibility that injectate from the Monument AGI Well No. 1 will reach the NMGSAU Well No. 285. If it does so, the injectate could migrate to productive and potentially productive zones, resulting in a loss of containment in the permitted formation, causing waste and impairment of correlative rights.

(e) Targa has failed to meet its burden of proof to demonstrate that its requested amendment of Order No. R-13052 will not cause waste or impair correlative rights.

(10) Targa's application to amend Order No. to delete the requirement to re-enter and re-plug the NMGSAU Well No. 285 should be denied unless and until the NMGSAU Well No. 285 is re-plugged in accordance with Order No. R-13052.

IT IS THEREFORE ORDERED THAT:

(1) The application of Targa Midstream Services, L.P. ("Targa") to amend Division Order No. R-13052 to delete the requirement to re-enter and re-plug NMGSAU Well No. 285 (API No. 30-25-12481) is hereby denied unless and until the NMGSAU Well No. 285 is properly re-plugged as provided in Ordering Paragraph (2) of Order No. R-13052 subsequent to the entry of this order.

(2) The application of Targa to retain the Graham State NCT-F Well No. 7 (API No. 30-025-12482) as an active saltwater disposal well into the San Andres formation pursuant to Division Administrative Order Nos. SWD-561 and SWD-561-A is hereby approved.

(3) Jurisdiction of this case is 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

JAMI BAILEY
Commissioner/Chair

SCOTT A. DAWSON
Commissioner

ROBERT S. BALCH
Commissioner

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