

OIL AND GAS DOCKET NO. 08-0261134

THE APPLICATION OF ATLANTIC OPERATING, INC. TO INJECT FLUID INTO A RESERVOIR PRODUCTIVE OF OIL AND GAS, GHORMLEY LEASE WELL NO. 1, SCOTT (DELAWARE) FIELD, REEVES COUNTY, TEXAS

Heard By: Andres J. Trevino, Technical Examiner
James M. Dorherty, Hearings Examiner

Appearances:

Matt Sjoberg
Mark Mladenka
Lynn Charuk

Greg Pitts

Representing:

Atlantic Operating, Inc.

Pitts Energy Company

Procedural History of Case:

Application Filed:	February 27, 2009
Request for Hearing:	February 20, 2009
Notice of Hearing:	May 1, 2009
Hearing Held:	May 14, 2009
Proposal for Decision Issued:	December 7, 2009

EXAMINERS' REPORT AND PROPOSAL FOR DECISION

STATEMENT OF THE CASE

Atlantic Operating, Inc. ("Atlantic") requests authority pursuant to Statewide Rule 46 to inject salt water into the Delaware reservoir in its Ghormley Lease Well No. 1 in the Scott (Delaware) Field in Reeves County.

This application is protested by Pitts Energy Company ("Pitts"), the operator of a tract adjacent to the tract on which the proposed injection well is located.

DISCUSSION OF THE EVIDENCEApplicant's Evidence

Atlantic wishes to dispose of produced saltwater from their Ghormley Lease wells into the Ghormley Lease Well No. 1 in the Scott (Delaware) Field. Atlantic will pipe produced saltwater to the proposed disposal well in order to reduce saltwater disposal costs.

The Ghormley Well No. 1 has a total depth of 6,347 feet. The well has 431 feet of 13 5/8" surface casing cemented to surface, an intermediate string of 8 5/8" casing set at 2,028 feet cemented to the surface and 6,347 feet of 5 1/2" casing with the top of cement at 4,970 feet as indicated by a cement bond log on file with the Commission. The well was perforated at 4,950 feet and was squeezed with an additional 895 sacks of cement. A temperature survey conducted after the squeeze was performed indicates the top of cement is at 1,343 feet, which is above the casing shoe of the intermediate string set at 2,028 feet. The Texas Commission on Environmental Quality recommends that usable-quality ground water be protected to a depth of 800 feet and the Rustler which is estimated to occur from 1,400 to 1,900 feet should also be protected. (See attached wellbore diagram)

The proposed injection will be through tubing with a packer set at 4,840 feet. The proposed injection interval is the Delaware Sandstone between 4,854 feet and 5,210 feet. The maximum rate of injection requested is 1,500 barrels of salt water per day. The daily average injection is estimated at 1,400 barrels of salt water per day. The maximum requested injection pressure is 1,500 psi.

The water to be injected is produced salt water from Atlantic Operating's own lease wells. Atlantic plans to pipe in the saltwater to the disposal well. Atlantic's South Beach No. 1 currently produces 10 BOPD and 100 BWPD. Atlantic is currently having to haul by truck produced saltwater to an offsite disposal facility. By disposing of its produced saltwater via a pipe to its proposed disposal well, Atlantic will eliminate disposal truck traffic to the lease and will minimize disposal costs. Atlantic currently pays \$5 per barrel to dispose of saltwater into an offsite disposal facility. Atlantic estimates it will recover additional oil from its wells because the reduction of saltwater disposal costs will extend the economic life of this well. Atlantic stated it needed the proposed disposal well to justify drilling additional wells on the lease.

There are two wellbores within a 1/4 mile radius of the Ghormley Well No. 1 which penetrated the proposed injection interval. One of the wellbores is plugged and abandoned. The other well is an active oil well operated by Atlantic and is completed in the Scott (Delaware) Field. These wellbores are plugged or cased in a manner which will not provide a conduit for migration of injected water from the injection interval into other oil, gas or mineral bearing formations or useable quality water zones.

Atlantic presented four examples of wells through which saltwater is currently injected into the Delaware formation with no apparent detrimental effect on nearby wells producing

from the Delaware formation. The Boyd & McWilliams Perkins No. 2 began injection into the Delaware on March 15, 2001 and the decline curve for the Perkins lease, which includes the nearby Southwest Royalties Perkins No. 1, does not show any detrimental effect caused by saltwater injection. The two wells are both completed in the same productive interval and are approximately 1,200 feet from each other. Saltwater injection operations into the Delaware formation began in January 1983 for the Southwest Royalties, Inc. (formerly Clayton Williams, Jr.), B.M. Williams No. 3. The nearby producing well, the Southwest Royalties, Inc. (formerly Clayton Williams, Jr.), Ona L. Scott No. 1 has been producing oil without any indication of interference from saltwater injection in the No. 3 well since injection operations began on that well in 1983. These two wells are both completed in the same productive interval and are approximately 2,500 feet from each other. The Chaparral (Atapco) lease has been producing oil from the Delaware formation since 1979 without demonstrating any damage as a result of saltwater injection into the Delaware formation in the nearby Chaparral Scott (Barstow UT No. 7) No. 1 Well which began injection in January 1983. These two wells are completed in slightly different intervals within the Delaware Sandstone (within 150 feet of each other) and are approximately 1,050 feet from each other. Finally, the Pitts Energy Company Lee No. 1 has been injecting produced saltwater into a large 3,300 foot interval throughout the Delaware formation adjacent to its own oil wells with no apparent ill effects on production.

The Delaware section is a thick, intermittent sand and shale section that includes the Bell Canyon, Cherry Canyon and the Brushy Canyon sands, however only small intervals with sufficient porosity and permeability development are productive. Cross section evidence provided by Atlantic demonstrates the variability of productive intervals from well to well.

Notice of the subject application was published in *The Pecos Enterprise*, a newspaper of general circulation in Reeves County, on November 11, 2008. A copy of the application was sent on January 19, 2009 to the Reeves County Clerk's Office. Also on January 19, 2009, a copy of the application was sent to offset surface owners and offset operators.

Atlantic has an active P-5 on file with the Commission, with \$50,000 financial assurance.

Protestant's Evidence

Greg Pitts, Vice President of Pitts Energy Company, is the operator of a lease adjacent to the lease on which the Ghormley Well No. 1 is located. Mr. Pitts is concerned Atlantic's proposed injection well will water out the productive interval in its offsetting D. E. Perkins Lease Well No. 2. He is concerned that the proposed injection well might adversely affect his oil production. Mr Pitts presented a structural map of the top of the Lamar limestone that shows the Ghormley Well No. 1 is 22 feet higher than Pitts Energy's D. E. Perkins Well No. 2. Mr Pitts also presented a cross section of his wells and the proposed Ghormley Well No. 1. The cross section demonstrates that his productive interval lies within the proposed injection interval.

EXAMINERS' OPINION

The examiners recommend that the application be approved. The proposed injection well is completed in a manner which will protect usable quality water resources and will confine the injected fluids to the injection interval. Surface casing is set above the current base of usable quality water. The surface casing is cemented to the surface. The intermediate string is set below the base of the usable quality water and is cemented to surface. Use of the well for disposal will result in the recovery of additional oil as disposal costs are reduced. A typical well completed in the Delaware Sandstone will produce with a high water cut. Atlantic's South Beach No. 1 produces 10 BOPD and 100 BWPD or a 91% water cut. Without an economic means dispose of the produced saltwater, the well becomes uneconomic. It is common practice for operators to have disposal wells injecting back into the Delaware sands to dispose of produced water from the producing, high water cut wells.

The Delaware sandstones are deposits from a slope/basin channel system. The productive sands vary from well to well and as with other stacked, lenticular channel sand deposits they pinch out over relatively short distances. One productive sand may not exist in the adjacent well. This is evident in the Ghormley Well No. 1 which is not commercially productive in the upper Delaware sand while that same interval is commercially productive in the adjacent Pitts Energy's D. E. Perkins Well No. 2. Atlantic showed that in four similar cases, injection of produced water into a well adjacent to a producing well did not adversely affect oil production. For these reasons its unlikely the Ghormely Well No. 1 will adversely affect production from the Pitts Energy's D. E. Perkins Well No. 2

Approval of the requested permit is in the public interest to efficiently produce existing oil reserves in the area and reduce truck traffic. The decreased cost to dispose of produced saltwater will extend the economic life of the producing well. Extending the economic life of the well will allow the well to produce more hydrocarbons. The evidence indicates that the operation of the subject injection well will not adversely impact any surface or subsurface useable quality water or offsetting oil production.

FINDINGS OF FACT

1. Notice of this application and hearing was provided to all persons entitled to notice at least ten (10) days prior to the date of the hearing.
2. Notice of this application was published in *The Pecos Enterprise*, a newspaper of general circulation in Reeves County, on November 11, 2008.
3. The proposed injection into the Ghormley Lease Well No. 1 will not endanger useable quality water.
 - a. The Texas Commission on Environmental Quality recommends protection of useable quality water resources to a depth of 1,900 feet the area of these wells.

- b. The well has 431 feet of 13 5/8" surface casing cemented to surface an intermediate string of 8 5/8" casing set at a depth of 2028 feet, cemented to surface and 6,347 feet of 5 1/2" casing cemented to 4,970 feet. A cement squeeze was performed at 4,950 feet with the top of cement indicated at 1,343 feet per temperature survey.
4. Fluids injected into the Ghormley Lease Well No. 1 will be confined to the injection interval.
 - a. The proposed disposal interval is the Delaware Sandstone between 4,854 feet to 5,210 feet.
 - b. The proposed injection will be through 2 7/8" tubing set on a packer at 4,840 feet.
 - c. There are two wellbores within 1/4 mile of the subject well which penetrate the injection interval. These wellbores are plugged or cased in a manner which will not provide a conduit for migration of injected water from the injection interval into other oil, gas or mineral bearing formations or useable quality water zones.
5. Wells producing from the Scott (Delaware) Field produce with water cuts as high as 91% water.
6. The Delaware section is a thick, intermittent sand and shale section with only small sections with sufficient porosity and permeability development that are productive. The productive intervals vary from well to well.
7. Atlantic demonstrated that in four similar cases injection of produced water into a well adjacent to a producing well did not adversely affect oil production in the Scott (Delaware) Field.
8. Use of the Ghormley Lease Well No. 1 to dispose of produced water from Atlantic Operating's leasehold is in the public interest to provide an economical means of disposal and extend the life of the producing well operated by Atlantic Operating, thereby preventing the waste of oil.
9. Atlantic Operating, Inc. has an active P-5 on file with the Commission, with \$50,000 financial assurance.

CONCLUSIONS OF LAW

1. Proper notice was issued in accordance with the applicable statutory and regulatory requirements.
2. All things have occurred to give the Railroad Commission jurisdiction to

consider this matter.

3. Approval of the application will not harm useable quality water resources and will not present a hazard to other mineral bearing formations.
4. The use or installation of the proposed injection well is in the public interest as it will extend the life of producing wells and prevent the waste of oil.
5. Atlantic Operating, Inc. has met its burden of proof and satisfied the requirements of Chapter 27.051 of the Texas Water Code and the Railroad Commission's Statewide Rule 46.
6. Atlantic Operating, Inc. has made a satisfactory showing of financial responsibility to the extent required by Chapter 27.073 of the Texas Water Code.

EXAMINERS' RECOMMENDATION

Based on the above findings and conclusions, the examiners recommend that the application of Atlantic Operating, Inc. for authority to inject salt water into its Ghormley Well No. 1 be approved as set out in the attached Final Order.

Respectfully submitted,

Andres J. Trevino, P.E.
Technical Examiner

James M. Doherty
Hearings Examiner