RAILROAD COMMISSION OF TEXAS

HEARINGS DIVISION

OIL & GAS DOCKET NO. 03-0289288

THE APPLICATION OF PHILLIPS 66 PIPELINE LLC FOR AUTHORITY PURSUANT TO STATEWIDE RULE 95 FOR A PERMIT TO CREATE, OPERATE AND MAINTAIN AN UNDERGROUND LIQUID OR LIQUEFIED HYDROCARBON STORAGE FACILITY ON THE CLEMENS SALT DOME LEASE, CLEMENS, NE (FRIO B) FIELD, BRAZORIA COUNTY, TEXAS

HEARD BY: Paul Dubois – Technical Examiner
Marshall Enquist – Hearings Examiner

HEARING DATE: June 20, 2014

APPEARANCES:	**REPRESENTING:**
David E. Jackson	Phillips 66 Pipeline LLC
Heath DePriest	
Dr. Joe L. Ratigan	
Larry Bynum	
Jeff Brennan	

EXAMINERS' REPORT AND RECOMMENDATION
STATEMENT OF THE CASE

Phillips 66 Pipeline LLC ("Phillips 66") seeks a permit to create, operate and maintain an underground liquid or liquefied hydrocarbon storage facility in the Clemens Salt Dome on the Clemens Salt Dome Lease, Clemens, NE (Frio B) Field, Brazoria County, Texas. The application is filed pursuant to Statewide Rule 95.

Notice of the application and hearing were provided to each person and entity entitled to notice. Notice of the application was also published in the The Facts, a newspaper of general circulation in Brazoria County, for three consecutive weeks: May 2, 2014, May 9, 2014, and May 16, 2014. The application is unprotested and the examiners recommend approval of the underground liquid or liquefied hydrocarbon storage facility, as requested by Phillips 66.

DISCUSSION OF THE EVIDENCE

The proposed underground liquid or liquefied hydrocarbon storage facility is located atop the Clemens Salt Dome in Brazoria County. Phillips 66 requests authority to create, operate and maintain eight (8) storage caverns for the storage of liquid or liquefied hydrocarbons. The proposed Phillips 66 facility consists of approximately 75 acres located approximately 4.8 miles south of Brazoria, Texas. The property is owned by Phillips 66 Company, the parent company of the applicant.

Phillips 66 has mapped the Clemens Dome using 3-D seismic and well control. The Clemens Dome is a shallow piercement dome (diaper) that is an offshoot of a deep (at least 20,000 feet), more extensive, raised mass of the Louann source salt. The salt body within the Clemens Dome consists of a cylinder approximately one mile wide and two miles high, slightly bent northwestern in its upper half. The Clemens Dome salt body exhibits a similar geomorphology to many Gulf Coast salt domes. The top of the salt body is found at approximately -1,370 feet (subsea depth), and has a relatively flat surface. The salt is overlain by caprock that is up to 800 feet thick, and the top of which is found at a depth of approximately -600 feet (subsea depth).

The Clemens Dome is typical of other Gulf Coast domal salt formations and is suitable for underground storage of hydrocarbons. The salt rock to be encountered by the wells and caverns at the proposed facility is an impermeable salt formation that will confine stored liquids, prevent waste of the stored hydrocarbons, prevent uncontrolled escape of hydrocarbons, and protect usable-quality water from pollution by stored hydrocarbons.

Through a search of public records, Phillips 66 identified all wells within the area of review of the proposed storage facility. The application identifies each such well and provides well records and plugging records, if applicable. None of the wells within the area of review affect the integrity of the proposed caverns and storage facility.

Phillips 66 plans to create and operate eight (8) storage caverns at the proposed facility. Each of the wells is spaced approximately 500 feet apart in order to allow appropriate between-cavern spacing upon completion of storage cavern development. The top of each proposed cavern will be at a depth of approximately 2,150 feet and the bottom of each proposed cavern will be at a depth of approximately 3,500 feet.

The Commission Groundwater Advisory Unit recommends that usable-quality ground water is to be protected to a depth of 625 feet. Each well will be completed with multiple strings of casing: 48" conductor pipe, 36" surface casing set to a depth of 800 feet and cemented to the surface; 30" intermediate casing set to a depth of 1,500 feet and cemented to the surface; 24" production casing set to a depth of 2,000 feet and cemented to the surface; 16" outer hanging string; and 10-3/4" inner hanging string.

Each of the storage caverns will be created by solution mining. After a well is drilled and completed at total depth, fresh water will be injected under controlled conditions to dissolve the salt and create the cavern space, and brine fluid will be removed. A blanket liquid (diesel) will be used to control and limit dissolution. Brine density will be monitored periodically as fluid is removed. Sonar caliper surveys will be performed periodically to monitor cavern development.

Each proposed cavern will have a capacity of 4.0 million barrels when fully leached. The anticipated cavern radius when fully leached will be approximately 160 feet. The maximum injection rate for each cavern will be 270,000 barrels per day. The maximum injection rate for each cavern will be 1,292 psig.

The proposed storage facility is in the public interest in that it will provide liquid hydrocarbon storage capacity in an area and market with growing need. The proposed facility is located in close proximity to natural gas liquids supply pipelines. It is also located near downstream markets for natural gas liquids, including petrochemical facilities and export terminals on the Gulf Coast.

The Commission's Technical Permitting staff has reviewed the application. On May 21, 2014, Technical Permitting determined that the application is administratively and technically complete.

Phillips 66 has complied with all of the requirements set forth in Statewide Rule 95 for approval of the requested permit. The Phillips 66 facility, wells and caverns will be subject to the rules and safety standards adopted by the Commission pursuant to Statewide Rule 95.

FINDINGS OF FACT

1. Notice of the application and hearing were provided to each person and entity entitled to notice.

   a. Notice of the application was published in the The Facts, a newspaper of general circulation in Brazoria County, for three consecutive weeks: May 2, 2014, May 9, 2014, and May 16, 2014.

   b. On April 30, 2014, Phillips 66 mailed a copy of the application to those persons entitled to receive notice of the application.

   c. On May 27, 2014, the Commission mailed a copy of the Notice of Hearing to those persons entitled to receive notice of the hearing.

2. The application is unprotested.

3. The proposed Phillips 66 storage facility will be located atop the Clemens Salt Dome, on approximately 75 acres located approximately 4.8 miles south of Brazoria, Texas. The property on which the proposed facility is located is owned by Phillips 66 Company, the parent company of the applicant.

4. Phillips 66 has mapped the Clemens Dome using 3-D seismic and well control.

   a. The Clemens Dome is a shallow piercement dome (diaper) that is an offshoot of a deep (at least 20,000 feet), more extensive, raised mass of the Louann source salt.

   b. The salt body within the Clemens Dome consists of a cylinder approximately one mile wide and two miles high, slightly bent northwestern in its upper half.

   c. The Clemens Dome salt body exhibits a similar geomorphology to many Gulf Coast salt domes. The top of the salt body is found at approximately -1,370 feet (subsea depth), and has a relatively flat surface.

   d. The salt is overlain by caprock that is up to 800 feet thick, and the top of which is found at a depth of approximately -600 feet (subsea depth).

5. The Clemens Dome is typical of other Gulf Coast domal salt formations and is suitable for underground storage of hydrocarbons. The salt rock to be encountered by the wells and caverns at the proposed facility is an impermeable salt formation that will confine stored liquids, prevent waste of the stored hydrocarbons, prevent uncontrolled escape of hydrocarbons, and protect usable-quality water from pollution by stored hydrocarbons.

6. Through a search of public records, Phillips 66 identified all wells within the area of review of the proposed storage facility. The application identifies each such well and provides well records and plugging records, if applicable. None of the wells within the area of review affect the integrity of the proposed caverns and storage facility.

7. Phillips 66 plans to create and operate eight (8) storage caverns at the proposed facility. Each of the wells is spaced approximately 500 feet apart in order to allow appropriate between-cavern spacing upon completion of storage cavern development. The top of each proposed cavern will be at a depth of approximately 2,150 feet and the bottom of

each proposed cavern will be at a depth of approximately 3,500 feet.

8. Usable-quality ground water is to be protected to a depth of 625 feet. Each well will be completed with multiple strings of casing: 48" conductor pipe, 36" surface casing set to a depth of 800 feet and cemented to the surface; 30" intermediate casing set to a depth of 1,500 feet and cemented to the surface; 24" production casing set to a depth of 2,000 feet and cemented to the surface; 16" outer hanging string; and 10-3/4" inner hanging string.

9. Each of the storage caverns will be created by solution mining. After a well is drilled and completed at total depth, fresh water will be injected under controlled conditions to dissolve the salt and create the cavern space, and brine fluid will be removed. A blanket liquid (diesel) will be used to control and limit dissolution. Brine density will be monitored periodically as fluid is removed. Sonar caliper surveys will be performed periodically to monitor cavern development.

10. Each proposed cavern will have a capacity of 4.0 million barrels when fully leached. The anticipated cavern radius when fully leached will be approximately 160 feet. The maximum injection rate for each cavern will be 270,000 barrels per day. The maximum injection rate for each cavern will be 1,292 psig.

11. The proposed storage facility is in the public interest in that it will provide liquid hydrocarbon storage capacity in an area and market with growing need. The proposed facility is located in close proximity to natural gas liquids supply pipelines. It is also located near downstream markets for natural gas liquids, including petrochemical facilities and export terminals on the Gulf Coast.

12. The Commission's Technical Permitting staff has reviewed the application. On May 21, 2014, Technical Permitting determined that the application is administratively and technically complete.

13. Phillips 66 has complied with all of the requirements set forth in Statewide Rule 95 for approval of the requested permit.

14. The Phillips 66 facility, wells and caverns will be subject to the rules and safety standards adopted by the Commission pursuant to Statewide Rule 95.

CONCLUSIONS OF LAW

1. Proper notice was timely given to all parties entitled to notice pursuant to applicable statutes and rules.

2. All things have occurred and have been accomplished to give the Commission jurisdiction in this case.

3. The use of the proposed caverns to store liquid or liquefied hydrocarbons will not endanger oil, gas, or geothermal resources or cause the pollution of surface water or fresh water strata.

4. The facility is in the public interest, as its use will provide natural gas liquids storage capacity in an area with a growing need for such a facility.

5. The applicant has complied with the requirements for approval, as set forth in Statewide Rule 95.

EXAMINERS' RECOMMENDATION

Based on the above findings of fact and conclusions of law, the examiners recommend that the Commission approve the underground liquid or liquefied hydrocarbon storage facility, as requested by Phillips 66 Pipeline LLC. Technical Permitting is directed to issue the appropriate permit with the usual conditions, restrictions and limitations, as required by the Commission.

Respectfully Submitted,

Paul Dubois
Technical Examiner

Marshall Enquist
Hearings Examiner