PRE-OPERATIONAL TESTING PROGRAM
40 CFR 146.82(a)
BAYOU BEND EAST SL20220050 (BBE)

TABLE OF CONTENTS

LIST OF TABLES

Claimed as PBI

6 PRE-OPERATIONAL TESTING PROGRAM
40 CFR 146.82(a)
BAYOU BEND EAST SL20220050 (BBE)

6.1 Facility Information

Facility Mame: BAYOU BEND EAST SL20220050 - PHASE 1 (BBE-P1)
SL20220050 W1, SL20220050 W2, SL20220050 W3, SL20220050 W4, SL20220050 W5, SL20220050 W6

Facility Contact: Claimed as PBI
1500 LOUISIANA STREET, 11TH FLOOR
HOUSTON, TEXAS 77002
Claimed as PBI
Claimed as PBI

Site location: GULF OF MEXICO, TEXAS STATE WATERS
HIGH ISLAND BLOCK
JEFFERSON COUNTY, TEXAS
Claimed as PBI

6.2 Introduction

The logging and testing activities at the six proposed injection wells Claimed as PBI Claimed as PBI Claimed as PBI are described in this plan and are restricted to the pre-injection period. Claimed as PBI Claimed as PBI

Testing and monitoring activities during the operation phase and post-injection period are described in the Testing and Monitoring Plan and the Post-Injection Site Care, respectively.

6.3 Pre-Injection Testing Plan Injection Well(s)

The following tests and logs will be conducted during drilling, casing installation and after casing installation in accordance with the testing required under 40 CFR 146.87(a), (b), (c), and (d). The tests and procedures are described below and in the proposed Injection Well Construction Information section of the permit application.

6.3.1 Deviation Checks

Claimed as PBI Claimed as PBI in accordance with Texas Administrative Code §331.82 and 40 CFR 146.87(a)(1).

Claimed as PBI

Claimed as PBI in accordance with Texas Administrative Code §331.82 and 40 CFR 146.87(a)(1). If more than 200 ft of surface casing has been run, the Operator may begin the directional survey immediately below the surface casing depth.

6.3.2 Tests and Logs

The following describes tests and logs to be performed during the drilling phase, prior to running casing. The basic logging suite will be run prior to each string of casing. The advanced logging suite and pressures, samples, and stress test will be run prior to running the surface casing, the long string casing and liner.

To be performed during drilling

Tests to be performed during drilling are listed in **Table 6-1**.

Claimed as PBI

Claimed as PBI

1

To be performed during and after casing installation

Tests to be performed during and after casing installation are listed in **Table 6-2**.

Demonstration of mechanical integrity

During well construction, the well will establish mechanical integrity test (MIT) and baseline requirements of the Testing and Monitoring Plan.

For internal mechanical integrity testing, pressure testing of the tubing and casing will be conducted. For external mechanical testing, temperature logs will be run to provide baseline data for comparison to future logging activities. These logs will be conducted while static and geothermal conditions exist before injection occurs. **Table 6-3** is a summary of the MITs and injectivity tests to be performed prior to injection.

Table 6-3: Pre-Operational Testing Schedule.

Class VI Rule Citation	Rule Description	Test Description	Program Period
40 CFR 146.89(a)(1)	MIT – Internal	Standard Annulus Pressure Test	Prior to Operation
40 CFR 146.89(c)(2)	MIT – External	Temperature Log	Prior to Operation
40 CFR 146.87(e)(1)	Reservoir Test	Pressure Fall-Off Test	Prior to Operation
40 CFR 146.87(e)(3)	Reservoir Test	Injectivity Test	Prior to Operation

Bayou Bend CCS LLC (Operator) will notify EPA at least 30 days prior to conducting the test and provide a detailed description of the testing procedure. Notice and the opportunity to witness these tests/logs will be provided to EPA at least 48 hours in advance of a given test/log.

6.4 Pre-Injection Testing Plan – Monitoring Wells SL20220050 M1

The monitoring well will be designed for the capability to deliver the Testing and Monitoring Plan requirements over the duration of the injection and monitoring life. The pressure integrity will be confirmed during and after the installation of casing and tubing strings. The pre-operation logging evaluations will confirm external mechanical integrity and establish baseline parameters for comparison against future logs in the Testing and Monitoring Plan.

6.4.1 Tests and Logs

Performed during drilling

Claimed as PBI

To be performed during drilling and after casing installation

Tests to be performed during drilling and after casing installation of the monitoring well are listed in **Table 6-5**.

Demonstration of mechanical integrity

Claimed as PBI

For internal mechanical integrity testing, pressure testing of the tubing and casing will be conducted following **Table 6-6**. For external mechanical testing, temperature logs will be run to provide baseline data for comparison to future logging activities. These logs will be conducted while static and geothermal conditions exist before injection occurs.

Table 6-6: MIT and the time when the test will be performed, e.g., prior to operation.

Class VI Rule Citation	Monitoring Location(s)	Rule Description	Test Description	Program Period
40 CFR 146.87(a)(4)(i), 40 CFR 146.89(a)(1)	SL20220050 M1	MIT - Internal	Standard Tubing & Casing Test	Prior to Operation
40 CFR 146.87(e)(1)	SL20220050 M1	MIT - External	External Temperature Log	Prior to Operation

Operator will notify EPA at least 30 days prior to conducting the test and provide a detailed description of the testing procedure. Notice and the opportunity to witness these tests/logs will be provided to EPA at least 48 hours in advance of a given test/log.

6.5 Annulus Pressure Test Procedures for Proposed Injection Wells W1 through W6

An initial casing pressure test will be conducted during the drilling phase utilizing a drilling fluid once the long string and liner are set and cemented in place. After the tubing string and packer are installed, the annulus will be tested with brine to a maximum expected injection pressure plus a safety factor, but not to exceed the design rating of the systems.

Annual Testing Procedure:

1. Shut in injection well to allow annulus to stabilize for 24 hours.
2. The tubing/casing annulus will be filled with fluid, as necessary, and allowed to stabilize.
3. Annular pressure will be increased to the maximum surface injection pressure plus a safety factor. Once pressurized, the annular will be isolated from the pressure source by a closed valve.
4. The annular system will remain isolated for a testing period of 30 minutes. Pressure test measurements will be recorded continuously.
5. Upon a successful test, the pressure will be relieved and the well put back into service.
6. The results will be submitted to the underground injection control (UIC) Program Director.

6.6 Annulus Pressure Test Procedures for Monitoring Well SL20220050 M1

An initial casing pressure test will be conducted during the drilling phase utilizing a drilling fluid once the long string is set and cemented in place. After the tubing string and packer are installed, the annulus will be tested with brine to a maximum expected pressure plus a safety factor, but not to exceed the design rating of the systems.

Annual Testing Procedure:

1. Shut in monitoring well to allow annulus to stabilize for 24 hours.
2. The tubing/casing annulus will be filled with fluid, as necessary, and allowed to stabilize.
3. Annular pressure will be increased to a surface pressure plus a safety factor not to exceed the system integrity. Once pressurized, the annular system will be isolated from the pressure source by a closed valve.
4. The annular system will remain isolated for a testing period of 30 minutes. Pressure test measurements will be recorded continuously.
5. Upon a successful test, the pressure will be relieved and the well put back into service.
6. The results will be submitted to the UIC Program Director.

6.7 Pressure Fall-Off Test Procedures for Proposed Injection Wells W1 through W6

Pressure fall-off and injection tests will be completed on each injection well after construction but prior to carbon dioxide (CO_2) injection. Test results will be submitted to the UIC Program Director electronically within 30 days of the test.

Procedure:

1. Well will be filled with fluid compatible with the injection zone.
2. The fluid will be pumped at various injection rates to establish injectivity performance and reservoir parameters using surface and downhole gauges measuring pressure and temperature. Maximum operating pressure will not be exceeded.
3. The injection rate will then be held constant while maintaining stable operating conditions prior to the fall-off test shut in period.
4. Injection will be stopped and shut in at the wellhead. Any other offset injectors will be held at constant injection rates which will be continuously recorded during the test.
5. Downhole gauges will measure pressure and temperature continuously during the duration of the test until pressure dissipates to initial reservoir conditions.
6. After the test is complete, the well will remain shut in.

6.8 Additional Information

6.8.1 Acronyms

BBE	Bayou Bend East SL20220050
BBE-P1	Bayou Bend East SL20220050 – Phase 1
CCS	carbon transport and sequestration
CO_2	carbon dioxide
MIT	Mechanical Integrity Test
UIC	Underground Injection Control