

SOP Number #016- CPF

SOP Title Hydro Testing of Equipment

	NAME	TITLE	SIGNATURE	DATE
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SOP no.	Effective Date	Significant Changes	Previous SOP no.
016			

1. PURPOSE

- This procedure is a guideline on the proper way to safely Hydro Test various equipment before commission of said equipment. Employees at BBGCI will use this as a guide to help them perform their duty in a safe and productive manner.
- BBGCI will be in compliance with all government regulations as well as regulations set forth by our clients.

2. INTRODUCTION

- BBGCI understands that all jobs are different. This SOP is set in place as a guideline to help employees understand the proper procedure to follow when performing a Hydro Test on equipment.

3. SCOPE

- This procedure has been set in place for BBGCI Forman and field crew during a Hydro Test of equipment.

4. DEFINITIONS

- Hydrostatic Test- A way in which pressure vessels such as pipelines, tanks, and other various vessels can be tested for strength and leaks. The test involves filling the vessel or pipe system with a liquid, usually water, which may be dyed to aid in visual leak detection, and pressurization of the vessel to the specified test pressure
- Line of Fire- The path of a moving object that can potentially injure or the potential path of an object that may move
- Buffer Zone- The area where operation occurs that is deemed not safe for unauthorized personnel or equipment.
- Torque/torquing – Using torque wrench to tighten flange bolts according to BBGCI Torque Chart.
- BBGCI Torque Chart – Standards for required force and sequence for torquing flanges according to size
- P&ID (Piping and Instrument Diagram)- A diagram which shows the interconnection of process equipment and the instrumentation used to control the process.
- Skillet / Blinds - Temporary spades and blanks installed for testing purposes shall be designed to withstand the test pressure without distortion.
- Jumper Hose – hose temporarily installed between piping to conduct simultaneous hydrostatic test
- Whip Check - Safety cables to help prevent injury if a hose connection separates.
- Bottle Truck - motor vehicle designed to carry liquefied loads.
- High point valve – valve located at highest point of piping system.
- Pressure Vessel- Any vessel designed to hold contents under pressure; these include storage tanks, valves, and various types of pipe.

5. RESPONSIBILITIES

Crew Supervisor

NOTE: Ensure crew supervisor is trained and experienced in Hydro Testing Equipment.

- Obtain proper permits and fill out JSEA and any other forms required by client
- Participate in the tailgate meeting, discuss and have each crew member sign JSEA after they acknowledge they understand the hazards involved with the task.
- Ensure that all supporting employees know that he/she is the lead in the operation.
- Fully understand the scope of work and all the hazards involved in his/her job duty.
- Ensure all employees involved fully understand the sequence of events in pressure testing equipment and that all employees understand the hazards associated with it.
- Inspect vessel to be hydro tested for any non conformities before use. Ensure equipment has been torque properly and proper gaskets are installed and blind flanges or pugs are in place if applicable.
- Ensure certification of gauges and chart recorder before test begins.
- Ensure all quick connect and cam-locks on hoses have whip-checks or other restraints.
- Establish good communication with all effected employees and supporting personnel at all times.
- Ensure barricades are in place with proper labelling if applicable (Danger High Pressure; Hydro-Testing...)
- Ensure persons not involved in the Hydro Testing are away from the buffer zone and a safe distance away from all operations.
- Commence work and maintain safe operations.

BBGCI Employee and/or 3rd Party Subcontractor

- Attend/ participate in tailgate meeting and JSEA.
- Fully understand the scope of work and all the hazards involved in his/her job duty.
- Establish good communication with all supporting personnel and ensure all parties understand the communication method.
- Ensure all unauthorized personnel are away from the buffer zone at all times.
- Ensure the proper equipment is being used for the job.
- Inspect the equipment for deformities prior to operations.

- Use Hydro Testing equipment via manufacturers recommendations

6. SPECIFIC PROCEDURE

Hydro Testing Equipment

(Personnel Involved: Hydro Test crew, QA/QC and Support Personnel)

1. JSEA and tailgate meeting will be conducted with all involved employees prior to any operations.
2. Spotter will assist water truck or forklift with water tank to proper location and secure before pumping water.
3. The crew will attach hoses to vessel and establish a high point bleed and fill said vessel and bleeding off all excess air from vessel.
4. When vessel is water filled, the final plugs will be installed.
5. Chart recorder and gauges should be installed to the test tree.
6. Begin applying pressure until desired pressure is reached.
7. Hold pressure for predetermined amount of time and while checking for leaks and other non-conformities.
8. When test is completed slowly bleed pressure off through needle valve on test tree.
9. Drain water and break lines for prior to installation.

7. JOB RELATED HAZARDS

- ***Slips, trips, and falls while:***
 - Not inspecting equipment
 - Climbing on or over pipe or other equipment
 - Uneven surfaces/rocks
 - Unseen defects in vessels
- ***Pinch Points/ Line of Fire***
 - Rolling trucks
 - Miscommunication between operator/signaller and adjacent work crews
 - Bad hand placement
 - Walking in unauthorized buffer zones
 - Severe injury from ruptured vessels under pressure
 - Congested work area
- ***Fatigue***

- Heat related illness

8. REQUIRED PPE

- Hard hat
- Safety Glasses
- Gloves
- Steel Toe Boots
- Reflective Vest
- Fire Resistant Clothing (FRC's)
- Personal Gas Monitors

9. FORMS/TEMPLATES TO BE USED

- JSEA
- Pressure test check list if applicable
- Equipment Inspection Forms
- Permit Required Forms (if required)

10. INTERNAL AND EXTERNAL REFERENCES

10.1 Internal References

10.2 External References

11. CHANGE HISTORY