

# Low Level Sump Testing

What is it?



# Method

- low-level hydrostatic test method for testing secondary containment devices (aka sumps)
- Based on PEI Recommended Practice RP1200-17, Section 6.5 “Containment Sump Integrity Testing.”
- Available only from the Petroleum Equipment Institute, and may be ordered from their website at <https://www.pei.org/recommended-practices-exams>.



**B+**

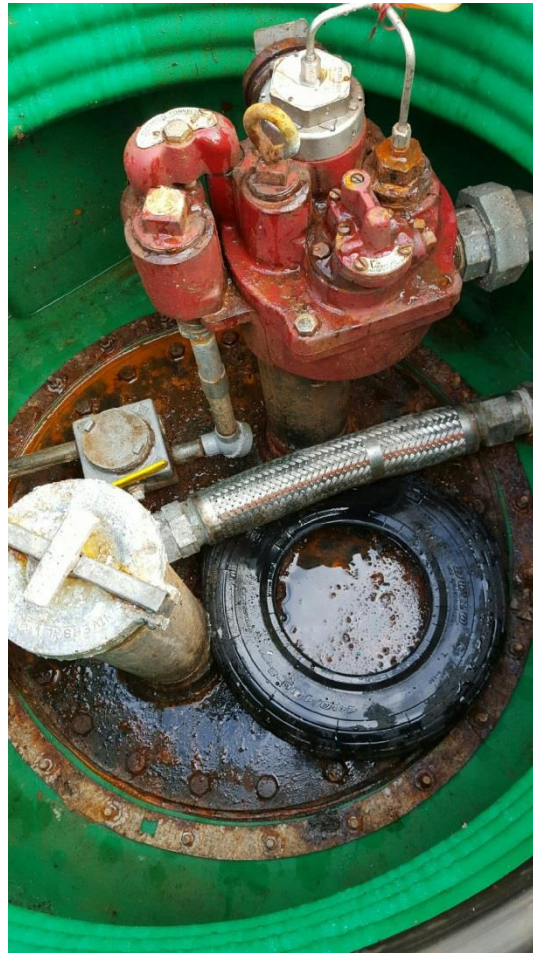
# Positive Shutdown

- Only containment sumps with liquid sensors configured to shut down the submersible turbine pump (STP) upon activation of the sensor can qualify for this testing option.

# MORE



Sumps must be free of debris and incidental moisture prior to testing.







# Terms and Conditions

- Testing of sensor activation will be according to the sensor manufacturer's instructions for testing non-discriminating or discriminating sensors.

- Any one of the following conditions found prior to testing shall disqualify the sump from being tested



- The sump is found with liquid levels high enough to trigger a properly positioned sensor, whether or not sensor is found in alarm.







A sensor is found pulled up or otherwise manipulated to prevent activation.









- Visual inspection shall ensure the sump is free of cracks, holes, and compromised boots (PEI Subsection 6.5.5 “Preparation” Paragraph 3). If any of these are present, the sump immediately fails the test (PEI Subsection 6.5.5 “Preparation” Paragraph 6).

# Positive Shutdown

- When liquid is detected at a sensor it is unknown where the leak is, but the sensor must **stop all possible sources**.
- **Shutting off the STP is the failsafe way to ensure that the issue is addressed.**

- Functional testing is conducted by adding water to activate the sensor, triggering an audible alarm and disabling each STP
- **Both sensor activation and positive shut down of the pump supplying the product line must be verified.**



SETUP MODE  
PRESS <FUNCTION> TO CONT

M



LIQUID SENSOR SETUP  
PRESS <STEP> TO CONTINUE

ALARM  
TEST

MODE

QZ.  
1

ABC  
2

DEF  
3

- Measure and record the water level at the sensor alarm position within the sump, at the start and end of 1 hour
- ‘pass’ or ‘fail’ result for each sensor based on whether the water level has dropped less than or more than 1/8” (inch) since the start of the test.

# NJ Procedures

- 1) Place a measuring stick in the sump at the lowest level of the sump (PEI Subsection 6.5.6 “Test Procedure” Paragraph 2).
- 2) Add water to the sump until the liquid sensor is activated and shuts off the submersible pump.  
NOTE: If the sensor does not alarm prior to the water level reaching the lowest entry boot then the sensor is not functional.



- 3) A sensor may be removed during the one-hour hydrostatic containment test, to allow for testing of other sumps and sensors.
- 4) Due to the potential for sump deflection, wait 5 minutes before beginning the test. Document the water level above the bottom of the sump and the test start time on the NJDEP testing form.
- 5) Avoid disturbing the water in the sump during the test (PEI Subsection 6.5.6 “Test Procedure” Paragraph 3).
- 6) After completion of the one-hour test, document the test end time and the water level above the bottom of the sump on the NJDEP test form (PEI Subsection 6.5.6 “Test Procedure” Paragraph 4).

- 7) Document any drop in water level, accurate to 1/16th of an inch, on the NJDEP test form (PEI Subsection 6.5.6 “Test Procedure” Paragraph 2).
- 8) Indicate passing or failing results on the NJDEP test form (PEI Subsection 6.5.7 “Pass/Fail Criteria”):
  - **Pass** - level drops less than 1/8th inch
  - **Fail** - level drops 1/8th inch or more

# Results

## Submersible Turbine Pump (STP) Sumps

| Number | Product | Sump condition       |   |   |   | Sump Walls   |   | Entry boots          |   |   |
|--------|---------|----------------------|---|---|---|--------------|---|----------------------|---|---|
|        |         | Clean/Dry/Water/Fuel |   |   |   | Good/Cracked |   | Good/Cracked/Missing |   |   |
| STP1   |         | C                    | D | W | F | G            | C | G                    | C | M |
| STP2   |         | C                    | D | W | F | G            | C | G                    | C | M |
| STP3   |         | C                    | D | W | F | G            | C | G                    | C | M |
| STP4   |         | C                    | D | W | F | G            | C | G                    | C | M |
| STP5   |         | C                    | D | W | F | G            | C | G                    | C | M |
| STP6   |         | C                    | D | W | F | G            | C | G                    | C | M |
| STP7   |         | C                    | D | W | F | G            | C | G                    | C | M |
| STP8   |         | C                    | D | W | F | G            | C | G                    | C | M |

### Dispenser Sumps / UDC

Other types of sumps (transition sumps, valve sumps) can be listed here too.

| Number | Fuel<br>point IDs | Fuel<br>Products | Condition |   |   |   | Walls |   | Entry boots<br>Good/Cracked/Missing |   |   | Secondary<br>Isolated/Open |   |
|--------|-------------------|------------------|-----------|---|---|---|-------|---|-------------------------------------|---|---|----------------------------|---|
|        |                   |                  | C         | D | W | F | G     | C | G                                   | C | M | I                          | O |
| Disp1  |                   |                  | C         | D | W | F | G     | C | G                                   | C | M | I                          | O |
| Disp2  |                   |                  | C         | D | W | F | G     | C | G                                   | C | M | I                          | O |
| Disp3  |                   |                  | C         | D | W | F | G     | C | G                                   | C | M | I                          | O |
| Disp4  |                   |                  | C         | D | W | F | G     | C | G                                   | C | M | I                          | O |
| Disp5  |                   |                  | C         | D | W | F | G     | C | G                                   | C | M | I                          | O |

### Sensors

| Sensor Number | Location (STP# or Disp#) | Visual Condition Of Sensor |         |          | Audible Alarm |    | Shutdown all STPs in group |    | Hydrostatic Containment Test<br>- water level must be at or above sensor threshold<br>- 1-hour test, minimum |                   |          |                 |                         |      |
|---------------|--------------------------|----------------------------|---------|----------|---------------|----|----------------------------|----|--|-------------------|----------|-----------------|-------------------------|------|
|               |                          | Good                       | Damaged | Corroded | Yes           | No | YES                        | NO | Start Time   | Start Water Level | End Time | End Water Level | Pass<1/8"<br>Fail >1/8" |      |
|               |                          |                            |         |          |               |    |                            |    |  |                   |          |                 | PASS                    | FAIL |
| Sensor1       |                          | G                          | D       | C        | Y             | N  | Y                          | N  |  |                   |          |                 | P                       | F    |
| Sensor2       |                          | G                          | D       | C        | Y             | N  | Y                          | N  |  |                   |          |                 | P                       | F    |
| Sensor3       |                          | G                          | D       | C        | Y             | N  | Y                          | N  |  |                   |          |                 | P                       | F    |
| Sensor4       |                          | G                          | D       | C        | Y             | N  | Y                          | N  |  |                   |          |                 | P                       | F    |

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