



Hydrotesting Guidelines

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Preface

The Australian pipeline industry agrees that the integrity of a pipeline must be determined by a hydrotest. The energy content of high-pressure air or water or a mixture of both has the potential to do massive damage.

Successful hydrotesting requires a commitment from owner, constructor, operator and engineering organisations to manage the hazards and reduce the risks.

There must be an approach that identifies the hazards and sets standards for safe procedures on all projects.

Safe work practices should be developed and used to manage the hazards and risks involved during hydrotesting. The following guidelines should be considered in the project planning, preparation and execution of the hydrotest.

1 Use the right Standard

The industry agrees to use the Australian Standard AS 2885 and, in particular, Part 5 of this Standard.

2 Use the right people

Completion of a successful hydrotest requires a team with competency and experience:

- Allow appropriate funds for hydrotesting within the project budget.
- Use specialist organisations (NATA certification should be mandatory).
- Organisation selection criteria must ensure that safety performance is met, even if this results in higher costs than would otherwise be the case.
- Use only experienced key personnel.
- Ensure adequate resources are available (inadequate resource allocation will compromise safety).
- Provide hydrotest training in addition to job specific inductions.

3 Manage the site

The hydrotest is usually far removed from the main workforce and one of the last construction activities:

- The hydrotesting crew is not self-sufficient. Management support is essential.
Consider:
 - accommodation
 - communication
 - site access and layout
 - support labour (e.g. welding crews)
 - lifting aids (e.g. lifting lugs, Hiabs).
- Schedule adequate time for the hydrotest and allow for contingencies.
- Use the APGA Vehicle Safety Guidelines to manage transport issues.
- Manage third party involvement:
 - inform relevant authorities and local stakeholders
 - control access by unauthorised personnel using barricades, etc
 - cease other construction activity in the area during testing
 - use signage to control the site
 - use remote sensing and data logging devices to minimise travel
 - limit access to pressurised components.

4 Plan the work

The hydrotest requires the same level of procedures and control as any other construction activity (for example, welding):

- Establish roles and responsibilities.
- Manage procedure creation and change.
- Consider all code, statutory and specification requirements.
- Refer to APGA Code of Environmental Practice.

- Allocate adequate resources (particularly for twenty-four hour per day activities)
- Use hazard management techniques including identification, assessment and mitigation (e.g. job safety analysis).
- Identify possible contingency events and plan for them.
- Establish appropriate quality assurance/control and audit implementation.
- Dispose of water in accordance with environmental requirements.

5 Use the right materials and equipment

The equipment used is subjected to the same conditions as the pipeline being tested and needs the same, if not more, control:

- Use material and equipment identification and traceability procedures (including calibration and material certificates, storage requirements, etc.).
- Use equipment that is adequate for the job – not at capacity limits.
- Ensure material, fitting and equipment designs are consistent with the pipeline specifications (e.g. non-destructive tests, pressure ratings, etc).
- Use manual handling assistance such as lifting lugs, slinging points, etc.
- Ensure correct transport, storage, handling and disposal of chemicals and hazardous products, e.g. inhibitors if used.

6 Control the conditions

There must be respect for, and management of, the very high forces established during hydrotesting:

- Understand the hazards, particularly the effect of air and water mixtures.
- Special precautions will be necessary if testing with gas.
- Engineer all components to withstand the pressures.
- Minimise use of flexible fittings and connections.
- Position test equipment and people in safe areas.
- Control the conditions to prevent additional, transient pressures.
- Do not make adjustments to equipment under pressure.
- Design for release of the high pressure on test completion.
- Considered restraint for flexible and open-ended components.

7 Prepare for leaks

Leak detection is a very specialist process and requires precise procedures for both detection of the leak and protection of people and equipment:

Consider leak detection, isolation and repair methods

Train personnel in these methods

Apply the same safe work practices as for the hydrotest itself

Maintain support services during leak detection and repair