

قطر للبتروول
Qatar Petroleum



DEVELOPMENT PLANNING & ENGINEERING

Development Engineering Section

**Guidelines for Submitting
Pneumatic Test Packages to QP-DC**

QGL-CE-008



**Guidelines for submitting Pneumatic Test
Packages to QP-DC**


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1.0 OBJECTIVES

The objective of this document is to establish and maintain documented Guidelines to all End-Users/Contractors for preparing pneumatic test packages for submission to QP-DC for review and approval.

2.0 SCOPE

This guideline covers the general requirements for preparing pneumatic test packages by End-Users/Contractors for submission to QP-DC. All End-Users, before testing any pipeline or facility in any of the RLIC/MIC common areas, are required to submit all the necessary technical details of the proposed testing to QP-DC for Review and Approval. In this context the ‘common area’/ ‘off-plot area’ is defined as any area that is outside the battery limits of End-User’s plant.

The submission shall be done in accordance with the procedures given in the “Guidelines for End User Technical Submissions to QP-DC”, QGL-CE-002 Rev.2.

End-Users/Contractors shall ensure submission of the test package and method statement well in advance of the pneumatic testing operations to allow QP-DC involved discipline engineers to review the package and discuss it with the relevant End-User/Contractor, if necessary. QP-DC approval for pressure testing activities carried out at the off-plot areas by End-Users/Contractors is mandatory for proper coordination and safety of equipment and personnel. The approval letter from QP-DC is necessary for End-User/Contractor to initiate the e-CPW.


Any changes to the approved test packages shall be subject to prior approval of QP-DC.

3.0 DEFINITIONS AND ABBREVIATIONS

This section contains definitions/acronyms which must be clearly understood by the End-Users/Contractors.

3.1 DEFINITIONS


Definition	Description
Approval	Agreement to proceed with specified activities.
Contractor	A party engaged by QP, QP-DC, Tenant, Investor or End User to perform work and/or services under a Contract or Service Order.

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End User	A Company or firm that uses services, facilities and occupies QP-DC land for the purpose of manufacturing a product or providing a service to QP-DC or other tenants within QP-DC.
Guideline	Similar to a procedure but less prescriptive in nature. Contains general instructions / guidance to carry out a series of actions.
Shall	A mandatory action
Should	A preferred course of action or activity
Will	An action to be followed

3.2 ABBREVIATIONS

Abbreviation	Definition
QP-DC	QP Industrial Cities directorate
RLIC	Ras Laffan Industrial City
MIC	Mesaieed Industrial City
e-CPW	Electronic Consolidated Permit to Work.
HSE	Health, Safety and Environment
FEED	Front End Engineering Design
EPC	Engineering, Procurement and Construction

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4.0 PROCEDURE FOR PNEUMATIC TEST APPROVAL

Pneumatic strength testing may be considered as an alternate, only when hydrostatic testing is not technically feasible. In such cases, End-User shall seek QP-DC approval as follows:


4.1 FEED Stage

End-User shall submit a request for pneumatic testing of pipeline supported with a report demonstrating the technical reasons as to why hydrostatic testing is considered not feasible.

After evaluating the request from End-User for pneumatic testing, QP-DC may give an in-principle agreement for the pneumatic testing of the pipeline, if found acceptable.

4.2 EPC Stage

After receiving an in-principle agreement for the pneumatic testing of the pipeline from QP-DC during FEED stage, End-User/Contractor shall prepare test package for pneumatic testing which shall contain, as a minimum, the following information. End-Users/Contractors shall review all such test packages before submitting it to QP-DC for review and Final Approval.


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5.0 TEST PACKAGE PREPARATION

End-User/Contractor shall prepare a pressure test diagram, a mark-up of the Piping and Instrument Diagrams (P&IDs)/Process Flow Diagrams (PFDs) showing the extent of the pipe work to be included in each test.

5.1 Minimum Information to be included in Test packages

- 5.1.1 A copy of the in-principle agreement letter obtained during the FEED stage from QP-DC for the pneumatic testing of the pipeline.
- 5.1.2 A colour marked-up plot plan showing the location of pipelines proposed for pneumatic test. It should be depicted on relevant QP-DC corridor drawing so that the exact location, battery limits and interfacing with other pipelines in the corridors will be easily identified.
- 5.1.3 A colour marked-up P&ID defining the pipeline segments for the pneumatic test.
- 5.1.4 Approved Line designation table containing all the lines included in the pneumatic test.
- 5.1.5 Purpose of test: pneumatic strength test/leak test etc.
- 5.1.6 Source of test medium and estimated volume of test medium.
- 5.1.7 Mode of sourcing the test medium with details (if other than air).
- 5.1.8 Test procedure, test pressure, holding time (Pressure test chart), schedule and duration of leak test/pneumatic pressure test. The basis for test pressures shall be as per the requirements of applicable international codes.
- 5.1.9 Procedure for detection, reporting and repair of leaks, Emergency plan for dealing with potential failures/leaks.
- 5.1.10 Procedure for depressurization.
- 5.1.11 List and location of all equipment used for testing purposes. End-User/Contractor shall ensure that Instruments and test equipment used for measurement of pressure, volume and temperature shall be certified for accuracy, repeatability and sensitivity.
- 5.1.12 Location and type of pressure relief protection devices
- 5.1.13 End-User's certificate stating that all required Non-Destructive Tests (NDT) have been completed and cleared for pneumatic testing.
Exclusion zone mark-up (the area around the system under test shall be cleared of all personnel other than those directly involved in the testing and warning notices shall be posted during the time the pipeline system is pressurized for the test). Volume of stored energy, exclusion zone calculations, access restrictions, and safety signage to be produced.
- 5.1.14 List and details of live plant areas and equipment in the exclusion zone. The list shall include all equipment and instruments such as tanks, instrument boxes, valve

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actuators etc. which are likely to be damaged in the event of a major failure of the line being tested.

- 5.1.15 Concurrence from asset owners who are affected during the test. Refer to 6.1.13 and 6.1.14.
- 5.1.16 Quantitative Risk Assessment (QRA) conducted for each line by an independent third party and Job Safety Analysis.
- 5.1.17 A check list of compliance stating that all the requirements for carrying out the pneumatic testing have been complied with.

6.0 RISK ASSESSMENT AND SAFETY


To ensure safety of equipment and personnel during the test period End-User / Contractor shall take the following safety precautions.

- 6.1.1 Quantitative Risk Assessment report shall clearly demonstrate that all reasonable measures to identify the associated risks for this particular pneumatic test and all the necessary mitigation measures to reduce the risk as low as reasonably practical are taken.
- 6.1.2 The risk assessment mitigation measures shall stipulate a clear and concise requirement of site evacuation of all non-essential persons/equipment prior to conducting the test and evacuation procedures in the event of an incident.
- 6.1.3 A statement that the above mentioned risk reduction/mitigation measures shall be fully implemented and documented during the duration of these tests.
- 6.1.4 Consent for pneumatic testing shall also be obtained from all parties impacted by the consequences of potential failure and they shall further be notified of the date, time and duration during which the pneumatic test will be performed.
- 6.1.5 All personnel involved in the test shall be well trained in the procedure to be implemented and familiar with the hazards associated with the test.
- 6.1.6 No traffic or personnel other than those directly involved in the testing shall be allowed within the indicated exclusion area. This area shall be roped off and signposted "DANGER-KEEP OUT-HIGH PRESSURE TESTING".
- 6.1.7 Test timing shall be carefully decided to ensure minimum traffic and presence of personnel in the surrounding plant facilities.

7.0 RELATED DOCUMENTS

1. **QGL-CE-002**- Guidelines for End-User Technical Submissions to QP-DC
2. **QP-PHL-S-001** - QP Corporate Philosophy for Fire & Safety

It is incumbent on the End-Users / Contractors to confirm that the latest revision of the Document / Regulation /Guidelines / Drawing is employed.

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8.0 RESPONSIBILITIES

8.1 End-Users

- 8.1.1 Submit request for pneumatic testing during FEED stage of the project substantiating with a report as to why pneumatic testing is required, for obtaining in-principle agreement from QP-DC.
- 8.1.2 The preparation, review and submission of pressure test packages as per QP-DC guidelines.
- 8.1.3 Apply for CPW after receiving Final Approval for the test package from QP-DC and get concurrence from asset owners who are affected during test.
- 8.1.4 Ensure that the Exclusion zone is properly barricaded and no personnel other than those directly involved in the testing shall be allowed within the indicated exclusion area.
- 8.1.5 Perform pneumatic test as per approved procedures and QP-DC requirements.
- 8.1.6 Remove all temporary facilities, testing equipment and re-instatement of the affected areas to the original condition.
- 8.1.7 Adhere to these guidelines and any other stipulations which may be imposed by a regulation, guideline or procedure from time to time by QP-DC.

8.2 QP-DC

- 8.2.1 Review and evaluate the request for pneumatic test from End- User/Contractor during FEED stage and accord in-principle agreement if found acceptable.
- 8.2.2 Review test packages and issue Approval Letter/ comments for pneumatic test packages submitted by End-Users/Contractors.
- 8.2.3 Perform site inspections prior to and during pneumatic test.
- 8.2.4 Update information included in this document.
- 8.2.5 Provide upon written request, up-to-date documents and drawings as referred to in Section 3.0.