

قطر للبتروول
Qatar Petroleum



**DEVELOPMENT PLANNING & ENGINEERING DEPARTMENT
TECHNICAL SUPPORT DIVISION**

**Guidelines for Submission of Pneumatic Test Packages to
QP Industrial Cities**

QGDL-VI-019

Document Reviews History

Date	Draft No.	Reviewed By	Description	Section No.
30.06.2016	D1	LET/11, LET/12	Reviewed and updated document	
25.07.2016	D2		Draft document sent to LO, LH, LE, LP, ME, MH, MP, MO, KO, KH, KE, DCA for 10 day review.	
26.07.2016	D3	MHS/1	Reviewed and advised changes	1, 5.2
28.07.2016	D3	LH	Reviewed and advised changes	
31.07.2016	D3	MPR, A/MPO	Reviewed and advised changes	
03.08.2016	D3	A/LEE	Reviewed and advised changes	
03.08.2016	D3	KH	Reviewed and advised changes	
04.08.2016	D3	MEE	Reviewed and advised changes	
04.08.2016	D3	KO	Advised "No comments"	
08.08.2016	D3	MOC	Advised "No comments"	
08.08.2016	D3	LOP	Advised "No comments"	
09.08.2016	D3	LOM	Advised "No comments"	
15.08.2016	D4	LES	Reviewed and advised changes Document issued for signature	
04.06.2017	D5		Changes advised by IHR(L), IHS(M) and IMC(M)	1.0, 5.2, 6.0
11.06.2017	D6		Reference indicators updated	
02.07.2017	D6		Changes circulated to stakeholders	
02.07.2017	D6	IEE(D)	Advised no comments	
03.07.2017	D6	IHS(M)	Advised no comments	
04.07.2017	D6	IMC(M)	Advised no comments	
04.07.2017	D6	IEE(M)	Advised no comments	
05.07.2017	D6	A/IEE(L)	Advised no comments	
10.07.2017	D6		Re-issued for signature	

Document Change History

Doc. Code	Rev. No.	Draft No.	Date	Revision Description	Page No.	Approved By
QGL-RID-008	00		20.07.2006			RI
QGL-CE-008	01	Final	01.07.2014	Document Number QGL-RID-008 changed to QGL-CE-008. Updated to reflect new DC Structure.		CE
QGDL-DC-019	02		14.06.2016	Document Number QGL-CE-008 changed to QGDL-DC-019. Updated to reflect new DC Structure.		DC
QGDL-DC-019	02	Final	28.08.2016	Issued for approval		DC
QGDL-VI-019	02		11.06.2017	Updated to reflect new VI reference indicators and changes advised by stakeholders. Document number updated as QGDL-VI-019		VI
QGDL-VI-019	02	Final	10.07.2017	Re-Issued for approval		VI

Notes:

Table of Contents

1.0	OBJECTIVES	5
2.0	SCOPE	5
3.0	DEFINITIONS AND ABBREVIATIONS	5
3.1	Definitions	5
3.2	Abbreviations	6
4.0	GUIDELINES	7
4.1	FEED Stage	7
4.2	EPIC Stage	7
4.3	Preparation of Pneumatic Test Package	7
4.3.1	Information to be included in Pneumatic Test Package.....	7
4.4	Risk Assessment and Safety	8
5.0	RESPONSIBILITIES	9
5.1	End-Users	9
5.2	QP-VI departments.....	9
6.0	REFERENCES	9

1.0 OBJECTIVES

The objective of this document is to establish and maintain documented guidelines for all End-Users / Contractors for preparing and submitting pneumatic test packages to QP Industrial Cities (QP-VI) directorate for review and approval.

Approval from QP-VI is mandatory for pneumatic test activities carried out in the off-plot areas by End-Users / Contractors, for proper coordination and safety of equipment and personnel and for subsequent initiation of permit application. In view of the high risk associated with pneumatic testing, the maximum duration of the permit issued for the testing activities will be limited to 7 days and, if required, shall be extended further.

QP strongly recommends conducting all the tests hydrostatically due to inherent potential hazard of conducting pneumatic tests. Thus, hydrostatic pressure testing is the mandated and preferred testing method by QP. Pneumatic tests may be accepted on a case-by-case basis with appropriate technical justification.

2.0 SCOPE

This guideline covers the general requirements for preparing pneumatic test packages by End-Users / Contractors for submission to QP-VI for the tests to be performed in off-plot areas in Dukhan Concession Area / Mesaieed Industrial City / Ras Laffan Industrial City.

3.0 DEFINITIONS AND ABBREVIATIONS

3.1 Definitions

Terms	Description
Approval	Agreement to proceed with specified activities.
Approve	To accept as satisfactory, permit or officially agree
Common area / off-plot area	Any area within Industrial Cities (RLC, MIC & DCA) but is outside the battery limits of End-User's plant.
Contractor	A party engaged by End-User to perform works / or services under a contract
End-User	A Company or firm that uses services, facilities and occupies QP Industrial Cities (QP-VI) land for the purpose of manufacturing a product or providing a service to QP-VI or other tenants within QP-VI.
Guidelines	A document, which contains general instructions / guidance to carry out a series of actions.
Pneumatic test	A pressure or tightness test where a gas, generally air or nitrogen is the test medium.
Shall	A mandatory action
Should	A preferred course of action or activity
Technical Support Division	Technical Support division (IET(L)), a central function of the QP-VI, providing technical support (infrastructure planning, industrial planning and engineering services) to the departments of QP-VI in RLC, MIC and DCA.

3.2 Abbreviations

Abbreviation	Definition
DCA	Dukhan Concession Area
HSSE	Health, Safety, Security and Environment
IE(L)	Manager, Development Planning and Engineering (RLC)
IET(L)	Asst. Manager, Industrial Cities Technical Support
IM(D)	Manager, Dukhan Concession Area
IM(L)	Manager, Ras Laffan Industrial City
IM(M)	Manager, Mesaieed Industrial City
MIC	Mesaieed Industrial City
MSDS	Material Safety Data Sheet
NDT	Non-Destructive Tests
P&ID	Piping & Instrument Diagrams
QP	Qatar Petroleum
QP-VI	QP Industrial Cities directorate
RLC	Ras Laffan Industrial City
VI	Vice President, Industrial Cities

4.0 GUIDELINES

Before performing pneumatic tests in any pipeline or facility in the common areas of DCA / MIC / RLC, all End-Users / Contractors are required to submit necessary technical details of the proposed testing to QP-VI for review and approval.

Pneumatic strength testing may be considered as an alternate, only when hydrostatic testing is not technically feasible.

The submission shall be done in accordance with the procedures given in the "QGDL-VI-008 Guidelines for End User Technical Submissions to QP Industrial Cities, Rev. 03 and other relevant guidelines.

End-Users / Contractors shall ensure submission of the test package and method statement well in advance of testing operation to allow the QP-VI discipline engineers to review the package and discuss it with the relevant parties.

End-Users / Contractors shall review all test packages before submitting it to QP-VI for review and approval.

The approval letter from QP-VI is necessary for the End-User / Contractor to initiate a permit for the pneumatic testing activities.

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

The below sections describe the requirements for preparing the test packages.

4.1 FEED Stage

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

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

4.2 EPIC Stage

After receiving an in-principle agreement for the pneumatic testing of the pipeline from QP-VI during FEED stage, End-User / Contractor shall prepare the pneumatic test package.

4.3 Preparation of Pneumatic Test Package

The End-User / Contractor shall prepare a test procedure, which shall include but not limited to, a pressure test diagram, a mark-up of the P&IDs / Process Flow Diagrams (PFDs) and list of safety measures, showing the extent of the pipe work to be included in each test.

4.3.1 Information to be included in Pneumatic Test Package

The End-User / Contractor shall prepare pneumatic test package, which shall contain, as a minimum, the following information.

- a. A copy of the in-principle agreement letter obtained during the FEED stage from QP-VI for the pneumatic testing of the pipeline.
- b. A colour marked-up plot plan showing the location of pipelines proposed for pneumatic test. It should be depicted on relevant QP-VI corridor drawing so that the exact location, battery limits and interfacing with other pipelines in the corridors will be easily identified.
- c. A colour marked-up P&ID defining the pipeline segments for the pneumatic test.
- d. Approved Line designation table containing all the lines included in the pneumatic test.
- e. Purpose of test: pneumatic strength test/leak test etc.
- f. Source of test medium and estimated volume of test medium.

- g. Mode of sourcing the test medium with details (if other than air).
- h. 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.
- i. Procedure for detection, reporting and repair of leaks and Emergency plan for dealing with potential failures/leaks.
- j. Procedure for depressurization.
- k. 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.
- l. Location and type of pressure relief protection devices
- m. End-User's certificate stating that all required NDT have been completed and cleared for pneumatic testing.
- n. 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.
- o. 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 actuators etc., which could potentially be damaged in the event of a major failure of the line being tested.
- p. Concurrence from asset owners who are affected during the test. Refer to items (m) and (o).
- q. Quantitative Risk Assessment (QRA) conducted for each line by an independent third party and Job Safety Analysis. In case of small piping (like instrument lines), the requirement of QRA shall be discussed and finalized with QP.
- r. A checklist of compliance stating that all the requirements for carrying out the pneumatic testing have been complied with.
- s. Risk assessment of the pneumatic test.

4.4 Risk Assessment and Safety

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

- 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.
- 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.
- A statement that the above mentioned risk reduction/mitigation measures shall be fully implemented and documented during the duration of these tests.
- 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.
- 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.
- 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".
- Test timing shall be carefully decided to ensure minimum traffic and presence of personnel in the surrounding plant facilities.

	Guidelines for Submission of Pneumatic Test Packages to QP Industrial Cities	QPR-VI-019 Rev. No: 02 Date: 10.07.2017 Page 9 of 9
---	---	---

5.0 RESPONSIBILITIES

5.1 End-Users

The following are the responsibilities of the End-Users:

- The preparation, review and submission of pneumatic test packages as per QP-VI guidelines.
- 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-VI.
- Apply for permit after receiving final approval for the test package from QP-VI and get concurrence from asset owners who are affected during test.
- Perform pneumatic tests as per approved QP-VI procedures and requirements.
- Remove all temporary facilities, testing equipment and re-instatement of the affected areas to the original condition.
- Adhere to these guidelines and any other stipulations, which may be imposed by a regulation, guideline or procedure from time to time by QP-VI.
- 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.

5.2 QP-VI departments

The following are the responsibilities of the QP-VI departments:

- Review and evaluate the request for pneumatic test from End-Users / Contractors during FEED stage and accord in-principle agreement if found acceptable.
- Review pneumatic test packages submitted by End-Users / Contractors and issue approval letter / comments.
- Review and Approve permit application for carrying out the testing activities for a maximum duration of 7 days and, if required, approve further extension.
- Perform site inspections prior to and during pneumatic tests besides periodic inspection by inspectors from QP-VI HSSE departments in respective cities.
- Update information included in this document.
- Provide upon written request, up-to-date documents and drawings as referred to in Section 6.0.

6.0 REFERENCES

- QGDL-VI-008 : Guidelines for End-User Technical Submissions to QP Industrial Cities
- QRG-IML-001 : Health, Safety and Environment Regulations
- QP-PHL-S-001 : QP Corporate Philosophy for Fire & Safety
- QP-SPC-L-012 : QP Corporate Technical Specification for Pre-Commissioning and Commissioning of New Pipelines
- ASME PCC-2-2015, Repair of Pressure Equipment and Piping
- Naval Ordnance Laboratory (Attachment 2) for zoning calculations.

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