TESTING AND COMMISSIONING PROCEDURE

FOR

LIQUEFIED PETROLEUM GAS INSTALLATION

IN

GOVERNMENT BUILDINGS

OF

THE HONG KONG SPECIAL ADMINISTRATIVE REGION

2007 EDITION

ARCHITECTURAL SERVICES DEPARTMENT
THE GOVERNMENT OF THE HONG KONG SPECIAL ADMINISTRATIVE REGION

PREFACE

This Testing and Commissioning (T & C) Procedure aims to lay down the minimum testing and commissioning requirements to be carried out on liquefied petroleum gas installation in Government Buildings of the Hong Kong Special Administrative Region (HKSAR). Such requirements are applicable to both new installations upon completion and existing ones after major alteration.

The present edition was developed based on its 2000 edition by the Mechanical Installation Specialist Support Group that was established under the Building Services Branch Technical Information and Research & Development Committee. With the benefit of information technology, electronic version of this new edition is to be viewed on and free for download from the Architectural Services Department (ArchSD) Internet homepage. As part of the Government's efforts to limit paper consumption, hard copies of this T & C Procedure will not be put up for sale.

The Architectural Services Department welcomes comments on its contents at anytime since the updating of this T & C Procedure is a continuous process to tie in with technological advances.

DISCLAIMER

This T & C Procedure is solely compiled for use on liquefied petroleum gas installation carried out for or on behalf of the ArchSD in Government buildings of the HKSAR.

There are no representations, either expressed or implied, as to the suitability of this T & C Procedure for purposes other than that stated above. The material contained in this T & C Procedure may not be pertinent or fully cover the extent of the installation in non-government buildings. Users who choose to adopt this T & C Procedure for their works are responsible for making their own assessments and judgement of all information contained here. The Architectural Services Department does not accept any liability and responsibility for any special, indirect or consequential loss or damage whatsoever arising out of or in connection with the use of this T & C Procedure or reliance placed on it.

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Annex

Testing and Commissioning Procedure for Liquefied Petroleum Gas Installation

1. Introduction

The procedures stated in this document cover the activities in preliminary tests and inspections, functional performance tests and the commissioning of newly completed installations and existing ones after major alteration. They are so compiled to facilitate the work of Project Building Services Engineer (PBSE) / Project Electrical and Mechanical Engineer (PEME) and Project Building Services Inspector (PBSI) / Project Electrical and Mechanical Inspector (PEMI) in the following aspects with respect to testing and commissioning (T&C):

(i) To vet and approve the T&C procedures proposed and submitted by the Contractor;
(ii) To witness those T&C procedures as specified; and
(iii) To accept the T&C certificates and other supporting data.

The Contractor shall carry out the T & C works as detailed in this document. Supplementary T&C plans may be proposed by the Contractor as appropriate and agreed by PBSE/PEME, e.g. for special equipment supplied and/or installed by the Contractor.

The administrative requirements for T & C works are in general as specified in the latest General Specification for Liquefied Petroleum Gas Installation (the General Specification) 2007 Edition issued by the Building Services Branch of the Architectural Services Department. If there is any discrepancy between this procedure and the General Specification, the General Specification shall take precedence.

2. Objectives of the T & C works

The objectives of the T & C works are:

(i) to verify proper functioning of the equipment/system after installation; and

(ii) to verify that the performance of the installed equipment/systems meet with the specified design intent through a series of tests and adjustments.

(iii) to capture and record performance data of the whole installation as the baseline for future operation and maintenance.

All the test results shall be recorded by the Contractor in the appropriate test record forms, the reference of which is shown against each individual test. A complete set of these forms is included in Part 3 and Part 4 of Annex II.

3. Scope of the T & C Works

3.1 Tests and Inspections during Construction

The purpose of these tests is to ensure that all components and systems are in a satisfactory and safe condition before start up. Preliminary adjustment and setting of equipment at this stage shall also be carried out at the same time to pave way for the coming functional performance tests.

Before carrying out any test, the Contractor shall ensure that the installation complies with all relevant statutory requirements and regulations. The T & C works shall also comply with all site safety regulatory requirements currently in force namely:-

(i) Gas Safety Ordinance Cap 51, and other subsidiary legislation made under the Ordinance;

(ii) Occupational Safety and Health Ordinance, Chapter 509, and other subsidiary legislation made under the Ordinance;

(iii) Factories and Industrial Undertakings Ordinance, Chapter 59, and other subsidiary legislation made under the Ordinance;

(iv) Construction Site (Safety) Regulations

(v) Dangerous Goods Ordinance, Cap 384;

(vi) Waste Disposal Ordinance, Cap 354;

(vii) Boilers and Pressure Vessels Ordinance, Cap 56;

(viii) Electricity Ordinance, Chapter 406, and other subsidiary legislations;

(ix) Code of Practice for the Electricity (Wiring) Regulations published by Electrical and Mechanical Services Department, the Government of the HKSAR;

Items to be buried underground shall be inspected and tested before protective finishing is applied and the finished work is buried. The Contractor shall arrange Gas Authority to inspect and witness the tests including pressure test and "Holiday test" for the underground pipeline and storage tanks prior to cover up/back-filling.

Where portions of the L.P. Gas Installation may only be accessible by making use of the builder's temporary facilities, such as scaffolding, the Contractor shall invite the PBSE/PBSI staff to carry out inspection and/or witness any tests before the removal of the temporary facilities.

3.2 Functional Performance Tests

The purpose of functional performance tests is to demonstrate that the equipment/installation can meet the functional and performance requirements as specified in the General/Particular Specifications. Functional performance test should proceed from the testing of individual components to the testing of different systems in the installation.

The Contractor may have to make temporary modifications as the test proceeds. The specific tests required and the order of tests will vary depending on the type and size of systems, number of systems, sequence of construction, interface with other installations, relationship with the building elements and other specific requirements as indicated in the General/Particular Specifications. The testing of systems may have to be carried out in stages depending on the progress of work or as proposed by the Contractor.

Part of the tests may be required to be carried out in suppliers' premises in accordance with the provisions in the General/Particular Specification.

Any performance deficiencies revealed during the functional performance tests must be evaluated to determine the cause and whether they are part of the contractual obligations. After completion of the necessary corrective measures, the Contractor shall repeat the tests.

If any test cannot be completed because of circumstances that are beyond the control of the Contractor, it shall be properly documented and reported to the PBSE, who shall then liaise with the relevant parties to resolve the situation. The Contractor shall resume his testing work immediately upon the attainment of a suitable testing environment.

3.3 Commissioning and Statutory Inspections

Commissioning is the advancement of an installation from the stage of static completion to full working conditions and to meet the performance requirements as specified in the General/Particular Specification. This will include setting into operation and regulation of the installation. It is expected that fine-tuning of the commissioned system shall be done by the Contractor to match system performance to the actual needs of the building occupier more closely.

Where necessary, after the proper testing and commissioning of the Swimming Pool Water Treatment Installation, the Contractor shall notify the appropriate authority, through the PBSE of the completion of the installation and its readiness for final inspection.

3.4 Documentation and Deliverables

The Contractor shall submit his proposed T & C procedures together with the Testing and Commissioning Progress Chart shown in Annex I to PBSE for approval.

All inspection and T & C results shall be recorded in the data record forms shown in Part 3 and 4 of Annex II. Data recorded in other formats may also acceptable subject to agreement between the PBSE and the Contractor. Upon completion of all the required T&C works, the Contractor's project engineer shall complete and sign a testing and commissioning certificate as shown in Part 1 and 2 of Annex II to the effect that the agreed T & C works have been duly carried out.

A functional performance test report covering all measured data, data sheets, and a comprehensive summary describing the operation of the system at the time of the functional performance tests shall be prepared and submitted to the PBSE. Deviations in performance from the General/Particular Specifications or the design intent should be recorded, with a description and analysis included.

Where required in the General Specification, the Contractor shall conduct a final evaluation of the performance of the L. P. Gas Installation, the results of which shall be included in the commissioning report.

4. T & C Procedures

4.1 Bulk LPG Storage Vessel

LPG storage vessels should be tested and certified by a Competent Person to prove that the vessel is up to the required standard: -

a) Ultrasonic/radiographic tests for examining internal flaws in accordance with the applicable design code; and
b) Magnetic particle or penetrant tests for examining surface flaws in accordance with BS6072.

In addition, the following tests shall be carried out on site by the Contractor: -

a) Hydraulic test at testing pressure 1.5 times of the design pressure of the storage vessels,
b) Commissioning pneumatic test at 700 kPa or 90% of design pressure, whichever is lower,
c) Paint thickness test (400μm minimum).
d) For underground vessels, "holiday" test after the vessel is coated.
e) Leak test for the connections up to a minimum pressure of 689 kPa.

Format of the test certificate shall follow Code of Practice for Hong Kong LPG Industry Module 1 issued by the GSO.

4.2 Vaporisers

Vaporisers and associated relief valves shall be hydraulic tested and certified by a Competent Person at 1.5 times of the design pressure. The components of the vaporiser not capable of accepting the test pressure shall be isolated or removed whichever appropriate during the hydraulic test.

Satisfactory operation of liquid control and heat input control device shall be checked.

Flame failure devices, pilot and main burner systems shall be checked and adjusted to give satisfactory and safe operation.

For indirect heated vaporiser using water as heating medium, water level safety controls shall be checked for proper operation.

Format of the test certificate shall follow Code of Practice for Hong Kong LPG Industry Module 1 issued by the GSO.

4.3 Pipework System

All pipework shall be tested after construction and before being placed in operation to ensure that it is structurally sound and gas-tight. In carrying out the test, precautions shall be taken to protect against any dangers which may arise if such pipe fails the test. : -

a) the person carrying out the test;
b) any persons working in the vicinity; and
c) members of the public,

All pipework shall be pressure tested as follows: -

a) All liquid lines shall be hydraulically tested at 1.1 times the HRPV setting after isolation of elements that could be damaged by the test pressure. Pressure test certificates shall state HRPV setting in addition to hydraulic test pressure. After the hydraulic test is completed, all isolated elements shall be properly installed and the whole system shall be tested pneumatically at a minimum pressure of 689 kPa.

b) High pressure vapour lines shall be tested either pneumatically or hydraulically at a minimum pressure of 1034 kPa.

c) Medium and low pressure vapour lines shall be tested either pneumatically or hydraulically at a minimum pressure of 103 kPa and 69 kPa respectively.

Time shall be allowed for temperature stabilization during pressure testing. The line pressure shall be adjusted to the test pressure after stabilization.

Note: The time allowing for temperature stabilization depends on the ambient temperature, test medium, pipe size and length. Generally this shall not be less than 15 minutes.

For pneumatic testing, the test shall be undertaken in phases as follows: -

a) Initially pressurize the system to 140 kPa and hold it for sufficient time to ensure that all fittings have been adequately fastened.
b) The pressure shall then be raised in stages until the required test pressure is reached.
c) After each pressure increase, sufficient time shall be allowed to ensure system integrity.

All exposed pipework shall be subject to annual visual examination and leak test using soap solution.

For hydraulic and pneumatic pressure test, the test period shall be of a minimum of 30 minutes and there shall be no sign of pressure decay during this period.

Note: Pressure decay indicates leakage and leaks shall then be identified by sight and sound or soap solution.

All open ends of a piping system shall be suitably blanked before testing.

Pipework pressure tests shall be recorded and the test report shall include the following: -

a) name of Contractor, and signature of the Competent Person who supervise the tests;
b) test date;

c) maximum working pressure;
d) test pressure, medium and duration;
e) test results; and
f) material, rating and specification of pipework and fittings.

The pressure of the pipework shall be reduced to zero as soon as is practicable after the pressure tests (see Gas Safety (Gas Supply) Regulation 20). Upon satisfactory completion of pressure tests, the pipework shall be purged into service in accordance with Code of Practice for Hong Kong LPG Industry Module 1 prior to commissioning and operation of the LPG installation.

Format of the test certificate shall follow Code of Practice for Hong Kong LPG Industry Module 1 issued by the GSO.

4.4 Regulators

Regulators shall be checked for the required pressure control functioning over the required range of flows and for tight shut-off at zero flow.

5.0 Commissioning and Statutory Inspections

5.1 After the proper testing and commissioning of the L.P. Gas Installation, the Contractor shall notify the appropriate Authority, through PBSE, on the completion of the installation and its readiness of inspection and testing. Before testing and commissioning of LPG installation, the "Competent Person" of the Contractor shall check that fire protection system for the LPG installation, if provided, should have been tested and accepted by Fire Services Department and put into operation.

5.2 The L.P. Gas Installation can only be put into use after it has been inspected, tested and approved by the appropriate Authority. Approval of use shall be obtained by the Contractor before filling up the LPG storage tank or supplying LPG cylinders for commissioning.

5.3 When submitting the testing certificate(s) EMSD/GSO/106, 107, 108 as shown on Appendix C to the Gas Authority, a copy of the same certificate(s) shall be provided to PBSE for record purpose.

5.4 The Contractor shall make all necessary applications to the appropriate Authority and attend to the inspections conducted by their representatives. Additional tests and inspection, where not specified above, shall also be carried out to meet the statutory requirements to the satisfaction of the appropriate Authority.

6. Calibrated Equipment

6.1 The Contractor shall supply calibrated equipment as stipulated in the Specification of the Contract for the inspection, measuring and testing of the installation. A list of calibrated instrument necessary for the T&C Works shall be recorded in Annex III.

Testing and Commissioning Progress Chart
"Liquefied Petroleum Gas Installation"

Contract No. : _____

Contract Title : _____

Name of Liquefied Petroleum Gas Contractor/sub-contractor : _____

Contract Period : / /20 to / /20 * Revised/Actual Completion Date : / /20

	Testing and Commissioning Progress Chart for Liquefied Petroleum Gas Installation (Rev.)(1)																		
	Dates (2)																		Remark
	Activities	Reference to Approved T&C Procedure	S	A	S	A	S	A	S	A	S	A	S	A	S	A	S	A	
1.	Piping System Visual inspection	Section 3.1																	
	G/F																		
	1/F																		
	2/F																		
	3/F																		
	4/F																		
	Submission of Record of Test																		
2.	Bulk LPG Storage System	Section 3.2																	
	Visual inspection																		
	G/F																		
	1/F																		
	2/F																		
	3/F																		
	4/F																		
	Submission of Record of Test																		

Tested / Checked by : (Name of Contractor's Representative)	Signature - ( )	Post :	
		Tel. No. :	
		Date :	
Witnessed by : (Name(s) of *PBSE/PBSI)	Signature - ( )	Post :	
		Tel. No. :	
		Date :	

Testing and Commissioning Progress Chart
"Liquefied Petroleum Gas Installation"

	Testing and Commissioning Progress Chart for Liquefied Petroleum Gas Installation (Rev.)(1)																		
		Dates (2)																	Remark
	Activities	Reference to Approved T&C Procedure	S	A	S	A	S	A	S	A	S	A	S	A	S	A	S	A	
3.	LPG Cylinder Storage System	Section 3.3																	
	Visual inspection																		
	G/F																		
	1/F																		
	2/F																		
	3/F																		
	4/F																		
	5/F																		
	Submission of Record of Test																		
4.	Vaporizers/accessories	Section 3.4																	
	Visual inspection																		
	G/F																		
	1/F																		
	2/F																		
	3/F																		
	4/F																		
	Submission of Record of Test																		
5.	LPG Appliances	Section 3.5																	
	Visual inspection																		
	G/F																		
	1/F																		
	2/F																		
	3/F																		
	4/F																		
	Submission of Record of Test																		

Tested / Checked by : (Name of Contractor's Representative)	Signature - ( )	Post :	
		Tel. No. :	
		Date :	
Witnessed by : (Name(s) of *PBSE/PBSI)	Signature - ( )	Post :	
		Tel. No. :	
		Date :	

Testing and Commissioning Progress Chart
"Liquefied Petroleum Gas Installation"

	Testing and Commissioning Progress Chart for Liquefied Petroleum Gas Installation (Rev.)(1)																		
	Dates (2)																		Remark
	Activities	Reference to Approved T&C Procedure	S	A	S	A	S	A	S	A	S	A	S	A	S	A	S	A	
6.	Hazard Precaution and Fire Prevention	Section 3.6																	
	Visual inspection																		
	Submission of Record of Test																		
7.	Functional Test	Section 3.7																	
8.	Performance Test	Section 3.8																	
9.	Submission of T&C Certificate																		

Notes

* Delete as appropriate

(1) Insert revision no.

(2) Insert additional columns as necessary
S - schedule % completion
A - actual % completion

Tested / Checked by : (Name of Contractor's Representative)	Signature - ( )	Post :	
		Tel. No. :	
		Date :	
Witnessed by : (Name(s) of *PBSE/PBSI)	Signature - ( )	Post :	
		Tel. No. :	
		Date :	

Testing and Commissioning Certificate on Liquefied Petroleum Gas Installation

Part 1 : Detail of Project

1.1 Project title (with location) :

1.2 * P.W.P. / Project No. :

1.3 *Contract/sub-contract/Quotation No. :

1.4 * Contractor/Sub-contractor :

1.5 PBSE :

1.6 PBSI :

Part 2 : Declaration

2.1 I certify that the Liquefied Petroleum Gas Installation as specified in the Contract/Sub-contract/Quotation at the above location has been inspected, tested and commissioned in accordance with this procedure and/or any other procedures agreed between the PBSE and the Contractor. The results are satisfactory in the aspects as mentioned in Part 3 and/or as recorded in Part 4 of this Certificate, except as indicated in the COMMENTS items.

2.2 I also certify that site tests have been performed in accordance with the requirements set out in Appendix A of this procedure and that the results are satisfactory. A record of the tests has been prepared and submitted to the PBSE.

(Name of Competent Person)	Signature - ( )	Post : Tel. No. : Date :	
(Name of Contractor's Representative)	Signature - ( )	Post : Tel. No. : Date :	
(Designation of Contractor's Representative)	Signature - ( )	Post : Tel. No. : Date :	
(Name and Stamp of Contractor)	Signature - ( )	Post : Tel. No. : Date :	

Note : This certificate must be signed by a person authorized by the Firm/Company and recognised by Gas Authority under Gas Safety Regulations.

* Delete if not applicable

Part 3. Items Inspected and Tested

		Items tested checked by Contractor	Items witnessed by PBSE/PBSI
3.1	Inspection, Testing and Commissioning of Piping System		
3.1.1	Visual Inspection		
3.1.1.1	Steel and Copper Pipework		
a)	Are all pipelines of the correct types and approved by the PBSE?	*Yes/No/N.A.	*Yes/No/N.A.
b)	Are all pipelines up to 13 mm bore of steel or copper made?	*Yes/No/N.A.	*Yes/No/N.A.
c)	Are all pipelines above 13 mm bore of steel made?	*Yes/No/N.A.	*Yes/No/N.A.
3.1.1.2	Flexible Hoses and Tubing		
a)	Are all flexible hoses and tubing of correct types and approved by the PBSE ?	*Yes/No/N.A.	*Yes/No/N.A.
b)	Are corrosion resistant braiding for flexible hoses and tubing used?	*Yes/No/N.A.	*Yes/No/N.A.
c)	Are emergency valves installed in all liquid pipelines to which the flexible hoses are connected?	*Yes/No/N.A.	*Yes/No/N.A.
d)	Are emergency valves installed in all vapour pipelines at high pressure stage to which the flexible hoses are connected?	*Yes/No/N.A.	*Yes/No/N.A.
e)	Are manual shut-off valves installed for vapour pipelines at medium pressure or below to which the flexible hoses are connected?	*Yes/No/N.A.	*Yes/No/N.A.
f)	Are all flexible tubing within 2 m long and marked with “LPG” and tagged with a label indicating the date of next replacement?	*Yes/No/N.A.	*Yes/No/N.A.
g)	Is any flexible tubing extended from one room to another or passing through wall or ceiling?	*Yes/No/N.A.	*Yes/No/N.A.

Tested / Checked by : (Name of Contractor’s Representative)	Signature - ( )	Post : Tel. No. : Date :	
Certified by : (Name of Competent Person)	Signature - ( )	Post : Tel. No. : Date :	
Witnessed by : (Name(s) of *PBSE/PBSI)	Signature - ( )	Post : Tel. No. : Date :	

		Items tested checked by Contractor	Items witnessed by PBSE/PBSI
h)	Are all end fittings of the flexible hoses and tubing of correct and approved type?	*Yes/No/N.A.	*Yes/No/N.A.
i)	Are fittings for securing flexible hoses and tubing free from burrs/sharp edges and not over-tightened?	*Yes/No/N.A.	*Yes/No/N.A.
3.1.1.3	Pipe Joints and Fittings		
a)	Are all steel pipe joints over 50 mm bore welded or welded flanged?	*Yes/No/N.A.	*Yes/No/N.A.
b)	Is only electric arc welding used on steel pipes of 125 mm bore and larger.	*Yes/No/N.A.	*Yes/No/N.A.
c)	Are copper pipe joints of compression type or sweated type silver soldered or brazed using jointing material of melting point exceeding 540^{o}C?	*Yes/No/N.A.	*Yes/No/N.A.
d)	Are pipe fittings of the correct and approved types?	*Yes/No/N.A.	*Yes/No/N.A.
e)	Are gaskets used resistant to LPG?	*Yes/No/N.A.	*Yes/No/N.A.
3.1.1.4	Piping Installation		
a)	Are pipeworks installed in accordance with the approved drawings?	*Yes/No/N.A.	*Yes/No/N.A.
b)	Are all pipework buried in floor slabs protected against corrosion and mechanical damage?	*Yes/No/N.A.	*Yes/No/N.A.
c)	Are surface pipeworks adequately supported and are the supports made of correct materials and correctly constructed?	*Yes/No/N.A.	*Yes/No/N.A.
d)	Are the pipe runs having adequate flexibility and facilities to compensate for thermal expansion and contraction of pipes, or mechanical stress at branch pipes?	*Yes/No/N.A.	*Yes/No/N.A.
e)	Are insulations provided in pipe supports where cathodic protection has been provided?	*Yes/No/N.A.	*Yes/No/N.A.

Tested / Checked by : (Name of Contractor's Representative)	Signature - ( )	Post : Tel. No. : Date :	
Certified by : (Name of Competent Person)	Signature - ( )	Post : Tel. No. : Date :	
Witnessed by : (Name(s) of *PBSE/PBSI)	Signature - ( )	Post : Tel. No. : Date :	

		Items tested checked by Contractor	Items witnessed by PBSE/PBSI
f)	Are all pipeworks protected against corrosion by wrapping, galvanizing or painting as appropriate?	*Yes/No/N.A.	*Yes/No/N.A.
g)	Are pipeworks passing through walls or floor slabs properly wrapped and enclosed in metal sleeves and without joints?	*Yes/No/N.A.	*Yes/No/N.A.
h)	Is re-condensation of LPG expected in any section of pipework and, if so, has thermal insulation been provided?	*Yes/No/N.A.	*Yes/No/N.A.
i)	Is a minimum clearance of 150 mm maintained between LPG pipes and electric conduits, trunking and cables?	*Yes/No/N.A.	*Yes/No/N.A.
j)	Are all pipeworks buried underground adequately treated and protected against corrosion and mechanical damage, especially those sections at road crossing?	*Yes/No/N.A.	*Yes/No/N.A.
k)	Are all underground pipeworks outside premises buried at a depth of not less than 800 mm and at a minimum clearance of 200 mm from electrical cables?	*Yes/No/N.A.	*Yes/No/N.A.
l)	Have pipe markers been fixed to indicate the route of buried pipelines?	*Yes/No/N.A.	*Yes/No/N.A.
m)	Have LPG identification labels been provided for all surface LPG distribution pipes?	*Yes/No/N.A.	*Yes/No/N.A.
3.1.1.5	Valves and Accessories		
a)	Are all valves of correct and approved types?	*Yes/No/N.A.	*Yes/No/N.A.
b)	Are all valves accessible and with clear indication of direction of operation?	*Yes/No/N.A.	*Yes/No/N.A.
c)	Are all excess flow valves and non-return valves installed in the correct direction?	*Yes/No/N.A.	*Yes/No/N.A.
d)	Are all pressure relief valves fitted with vent connections of correct length and chained self-detachable weatherproof cap?	*Yes/No/N.A.	*Yes/No/N.A.

Tested / Checked by : (Name of Contractor's Representative)	Signature - ( )	Post : Tel. No. : Date :	
Certified by : (Name of Competent Person)	Signature - ( )	Post : Tel. No. : Date :	
Witnessed by : (Name(s) of *PBSE/PBSI)	Signature - ( )	Post : Tel. No. : Date :	

		Items tested checked by Contractor	Items witnessed by PBSE/PBSI
e)	Are all pressure relief valves clearly and permanent marked with manufacturer's identification, discharge pressure and certified capacity?	*Yes/No/N.A.	*Yes/No/N.A.
f)	Are the connection fittings of the strainer and solenoid valve at the LPG liquid lines of welded flange type?	*Yes/No/N.A.	*Yes/No/N.A.
g)	Are enclosures for LPG meters provided with sufficient ventilation?	*Yes/No/N.A.	*Yes/No/N.A.
h)	Are LPG traps filled with water	*Yes/No/N.A.	*Yes/No/N.A.
3.1.1.6	Pressure Regulating and Monitoring Devices		
a)	Are all pressure regulators/ service governors of correct and approved types?	*Yes/No/N.A.	*Yes/No/N.A.
b)	Are all pressure regulators/ service governors sealed and locked against unauthorized adjustment?	*Yes/No/N.A.	*Yes/No/N.A.
c)	Are all first stage pressure regulating devices located as close as practicable to the storage vessel or vaporizer?	*Yes/No/N.A.	*Yes/No/N.A.
d)	Are isolating valves provided at both upstream and downstream of regulators?	*Yes/No/N.A.	*Yes/No/N.A.
3.1.2	Testing and Commissioning		
3.1.2.1	Pipework		
a)	All pipeworks have been pressure and leak tested, by means of *pressure drop hydraulic method/soap and water/ pneumatic method, before and after applying corrosion treatment, concealed or buried.	*Yes/No/N.A.	*Yes/No/N.A.
b)	Before pressure testing, the units which are not capable of sustaining the test pressure have been isolated.	*Yes/No/N.A.	*Yes/No/N.A.
c)	Results of pressure test on pipeworks were as shown in the "Record of Tests" and were considered to be satisfactory.	*Yes/No/N.A.	*Yes/No/N.A.

Tested / Checked by : (Name of Contractor's Representative)	Signature - ( )	Post : Tel. No. : Date :	
Certified by : (Name of Competent Person)	Signature - ( )	Post : Tel. No. : Date :	
Witnessed by : (Name(s) of *PBSE/PBSI)	Signature - ( )	Post : Tel. No. : Date :	

		Items tested checked by Contractor	Items witnessed by PBSE/PBSI
3.1.2.2	Valves and Accessories		
a)	During the pressure testing, have all isolating valves and quick-acting shut-off valves been checked and is there no leakage through them at their fully closed positions?	*Yes/No/N.A.	*Yes/No/N.A.
b)	Have all non-return valves been checked and found to be functioning properly?	*Yes/No/N.A.	*Yes/No/N.A.
c)	Have all excess flow valves been checked and could they close upon excessive discharge within 1.5 time of the normal service flow rates?	*Yes/No/N.A.	*Yes/No/N.A.
d)	Have all pressure relief valves been calibrated and keep installation sealed by manufacturer or competent person and are the testing certificates enclosed to the "Record of Tests"?	*Yes/No/N.A.	*Yes/No/N.A.
e)	Have all pressure relief valves vent caps been in place and mobile?	*Yes/No/N.A.	*Yes/No/N.A.
f)	Are all pressure gauges working properly and reading correct figures?	*Yes/No/N.A.	*Yes/No/N.A.
g)	Are all emergency shut-off valves checked for proper functioning?	*Yes/No/N.A.	*Yes/No/N.A.
h)	Are all valves and regulators checked on the tight shut-off with zero flow?	*Yes/No/N.A.	*Yes/No/N.A.
3.1.2.3	Pressure Regulating and Monitoring Devices		
a)	Have all pressure regulating devices been set to provide specified and approved downstream working pressures?	*Yes/No/N.A.	*Yes/No/N.A.
b)	Have all active monitor regulators been set so that they will close when slightly higher downstream pressure is sensed?	*Yes/No/N.A.	*Yes/No/N.A.
c)	Are all service governors set correctly and working properly?	*Yes/No/N.A.	*Yes/No/N.A.

Tested / Checked by : (Name of Contractor's Representative)	Signature - ( )	Post :	
		Tel. No. :	
		Date :	
Certified by : (Name of Competent Person)	Signature - ( )	Post :	
		Tel. No. :	
		Date :	
Witnessed by : (Name(s) of *PBSE/PBSI)	Signature - ( )	Post :	
		Tel. No. :	
		Date :	

		Items tested checked by Contractor	Items witnessed by PBSE/PBSI
d)	Are all under pressure shut off devices and over pressure shut off devices working properly?	*Yes/No/N.A.	*Yes/No/N.A.
e)	Are all internal relief valves, if equipped, of regulators/governors working properly at a pressure increase of 2 kPa at downstream?	*Yes/No/N.A.	*Yes/No/N.A.
3.2	Inspection, Testing and Commissioning of Bulk LPG Storage System		
3.2.1	Visual Inspection		
3.2.1.1	Storage Vessels		
a)	Are the storage vessels of the correct models and constructed exactly in accordance with the construction drawings which have been approved by the PBSE?	*Yes/No/N.A.	*Yes/No/N.A.
b)	Are correct and visible data plate permanently fixed on the storage vessels?	*Yes/No/N.A.	*Yes/No/N.A.
c)	Have details of information on the data plates been included in the "Record of Tests"?	*Yes/No/N.A.	*Yes/No/N.A.
d)	For above ground vessels over 5000 litres water capacity or where piers are used as part of the vessel support : Are the vessels secured at the end where the principal liquid and vapour lines are attached while the other end being free to move?	*Yes/No/N.A.	*Yes/No/N.A.
e)	For underground vessels : Are the vessels secured at both ends against flotation and against movement at the end to which the connections are made?	*Yes/No/N.A.	*Yes/No/N.A.
f)	For horizontal vessels : Are the vessels sloped slightly towards the drain connection?	*Yes/No/N.A.	*Yes/No/N.A.
g)	For vertical vessels : Are the skirts provided with at least two vents?	*Yes/No/N.A.	*Yes/No/N.A.
h)	For underground vessels : Are all fittings on the vessel accessible above ground level?	*Yes/No/N.A.	*Yes/No/N.A.

Tested / Checked by : (Name of Contractor's Representative)	Signature - ( )	Post : Tel. No. : Date :	
Certified by : (Name of Competent Person)	Signature - ( )	Post : Tel. No. : Date :	
Witnessed by : (Name(s) of *PBSE/PBSI)	Signature - ( )	Post : Tel. No. : Date :	

		Items tested checked by Contractor	Items witnessed by PBSE/PBSI
3.2.1.2	Pressure Relief Valves		
a)	Is each vessel provided with pressure relief valve(s) as designed?	*Yes/No/N.A.	*Yes/No/N.A.
b)	For vessel with only one pressure relief valve, does the automatic shut off valve comply with the requirements as specified in the LPGGS?	*Yes/No/N.A.	*Yes/No/N.A.
3.2.1.3	Vent Pipes		
a)	For vessels over 5000 litres water capacity and for all underground vessels : Are adequately supported vent pipes installed?	*Yes/No/N.A.	*Yes/No/N.A.
b)	Are outlets of vent pipes at least 2 m above top of vessels and 3 m above ground level?	*Yes/No/N.A.	*Yes/No/N.A.
c)	Have means been provided in vent pipes for drainage of water?	*Yes/No/N.A.	*Yes/No/N.A.
d)	Are vent pipes provided with loose fitting captive rain caps?	*Yes/No/N.A.	*Yes/No/N.A.
e)	For vessels fitted with protective covers : Are vents provided to direct the discharged LPG away from the vessel shell?	*Yes/No/N.A.	*Yes/No/N.A.
3.2.1.4	Shut Off Valves and Emergency Valves		
a)	Are shut off valves provided for vessel connection in accordance with the LPGGS?	*Yes/No/N.A.	*Yes/No/N.A.
b)	Are emergency valves provided for vessel connection in accordance with the LPGGS?	*Yes/No/N.A.	*Yes/No/N.A.
c)	Are remotely controlled emergency valve operated from safe area and of the fail-safe type?	*Yes/No/N.A.	*Yes/No/N.A.
3.2.1.5	Drain Connection		

Tested / Checked by : (Name of Contractor's Representative)	Signature - ( )	Post : Tel. No. : Date :	
Certified by : (Name of Competent Person)	Signature - ( )	Post : Tel. No. : Date :	
Witnessed by : (Name(s) of *PBSE/PBSI)	Signature - ( )	Post : Tel. No. : Date :	

		Items tested checked by Contractor	Items witnessed by PBSE/PBSI
a)	Are drain pipes with first and second shut off valves provided in accordance with the LPGGS?	*Yes/No/N.A.	*Yes/No/N.A.
b)	Are drain pipes or blow-off lines having discharge outlets away from any other drainage systems?	*Yes/No/N.A.	*Yes/No/N.A.
c)	Are outlets of drain system blank-flanged, plugged, otherwise secured against tampering when not in use?	*Yes/No/N.A.	*Yes/No/N.A.
d)	Are sections of drain pipes between valves and plugged outlets fitted with hydrostatic pressure relief valves?	*Yes/No/N.A.	*Yes/No/N.A.
3.2.1.6	Gauges		
a)	Are pressure gauge (connected to the vapour space), temperature gauge, fixed maximum liquid level device and content gauge provided for each vessel?	*Yes/No/N.A.	*Yes/No/N.A.
b)	For content gauge which relies on bleeding to atmosphere : Is bleeding hole not larger than 1.4 mm or otherwise protected by a shut off valve and a suitable emergency valve?	*Yes/No/N.A.	*Yes/No/N.A.
c)	Is pressure gauge connection protected by tapping reduced internally to a bleeding hole not larger than 1.4 mm or by a suitable excess flow valve and a shut off valve?	*Yes/No/N.A.	*Yes/No/N.A.
3.2.1.7	Filling Connections		
a)	Are an emergency valve and a shut off valve provided for each filling connection?	*Yes/No/N.A.	*Yes/No/N.A.
b)	Is filling connection for each vessel located at suitable location within the storage fence area and close to, but not under, the vessel?	*Yes/No/N.A.	*Yes/No/N.A.
c)	Are “Liquid” and “vapour” labels provided for offset/remote filling connections?	*Yes/No/N.A.	*Yes/No/N.A.
3.2.1.8	Maximum Permitted Filling Volume		

Tested / Checked by : (Name of Contractor’s Representative)	Signature - ( )	Post : Tel. No. : Date :	
Certified by : (Name of Competent Person)	Signature - ( )	Post : Tel. No. : Date :	
Witnessed by : (Name(s) of *PBSE/PBSI)	Signature - ( )	Post : Tel. No. : Date :	

		Items tested checked by Contractor	Items witnessed by PBSE/PBSI
a)	Is the initial filling below the maximum permitted filling volume in accordance with LPGGS?	*Yes/No/N.A.	*Yes/No/N.A.
3.2.1.9	Finishing and Coating		
a)	Has a coating been applied to the exterior of each underground vessel in accordance with the LPGGS?	*Yes/No/N.A.	*Yes/No/N.A.
b)	Has "holiday" test been carried out after coating of an underground vessel?	*Yes/No/N.A.	*Yes/No/N.A.
3.2.1.10	Earthing System		
a)	Is each vessel electrically earthed (provided that the earthing of the vessel does not contradict to the cathodic protection requirement)?	*Yes/No/N.A.	*Yes/No/N.A.
b)	Is an earthing terminal provided near the LPG filling point for the connection of the bulk tanker vehicle?	*Yes/No/N.A.	*Yes/No/N.A.
c)	Is the earthing resistance of the LPG system within 1 megaohm?	*Yes/No/N.A.	*Yes/No/N.A.
3.2.1.11	Cathodic Protection		
a)	Has cathodic protection been provided for each semi-underground or underground vessel?	*Yes/No/N.A.	*Yes/No/N.A.
3.2.2	Testing and Commissioning		
3.2.2.1	Storage Vessels		
a*)	Recognised test certificate for internal flaw on each vessel has been attached to the "Record of Tests".	*Yes/No/N.A.	*Yes/No/N.A.
*	Ultrasonic/radiographic test for examining internal flaw on each vessel has been carried out. Results of the test are satisfactory.	*Yes/No/N.A.	*Yes/No/N.A.
b*)	Recognised test certificate for external flaw on each vessel has been attached to the "Record or Tests".	*Yes/No/N.A.	*Yes/No/N.A.

Tested / Checked by : (Name of Contractor's Representative)	Signature - ( )	Post : Tel. No. : Date :	
Certified by : (Name of Competent Person)	Signature - ( )	Post : Tel. No. : Date :	
Witnessed by : (Name(s) of *PBSE/PBSI)	Signature - ( )	Post : Tel. No. : Date :	

		Items tested checked by Contractor	Items witnessed by PBSE/PBSI
*	Magnetic particle or penetrate test for examining surface flaw on each vessel has been carried out. Results of the test are satisfactory.	*Yes/No/N.A.	*Yes/No/N.A.
c)	Hydraulic test at testing pressure has been carried out for each vessel. Results of the test are satisfactory.	*Yes/No/N.A.	*Yes/No/N.A.
d)	Commissioning pneumatic test for each vessel has been carried out. Results of the test are satisfactory.	*Yes/No/N.A.	*Yes/No/N.A.
e)	"Holiday" test for each underground vessel has been carried out. Results of the test are satisfactory.	*Yes/No/N.A.	*Yes/No/N.A.
f)	Leak test for connections up to minimum pressure has been carried out. Results of the test are satisfactory.	*Yes/No/N.A.	*Yes/No/N.A.
g)	Paint thickness complies with LPGGS	*Yes/No/N.A.	*Yes/No/N.A.
3.2.2.2	Pressure Relief Valves		
a)	Manufacturer's/competent person's certificate(s) on the calibration of the pressure relief valves for vessels is/are attached to the "Record of Tests".	*Yes/No/N.A.	*Yes/No/N.A.
3.2.2.3	Shut Off Valves and Emergency Valves		
a)	All shut off valves and emergency valves have been checked and were working properly.	*Yes/No/N.A.	*Yes/No/N.A.
3.2.2.4	Gauges		
a)	The content gauge(s), the maximum liquid level device(s), pressure gauge(s) and temperature gauge(s) have checked and were working properly.	*Yes/No/N.A.	*Yes/No/N.A.
3.2.2.5	Earthing System		
a)	The earthing system has been tested and the earthing resistance was found to be satisfactory.	*Yes/No/N.A.	*Yes/No/N.A.
3.2.2.6	Cathodic Protection		

Tested / Checked by : (Name of Contractor's Representative)	Signature - ( )	Post : Tel. No. : Date :	
Certified by : (Name of Competent Person)	Signature - ( )	Post : Tel. No. : Date :	
Witnessed by : (Name(s) of *PBSE/PBSI)	Signature - ( )	Post : Tel. No. : Date :	

		Items tested checked by Contractor	Items witnessed by PBSE/PBSI
a)	The cathodic protection system has been tested and the test results are satisfactory.	*Yes/No/N.A.	*Yes/No/N.A.
3.2.2.7	Purging and Filling with LPG		
a)	The method and procedure for purging of vessels and filling with LPG have been in accordance with LPGGS.	*Yes/No/N.A.	*Yes/No/N.A.
3.3	Inspection, Testing and Commissioning of LPG Cylinder Storage System		
3.3.1.1	For liquid-drawn system: Are hydrostatic pressure relief valves installed on each liquid line which can be isolated by valves?	*Yes/No/N.A.	*Yes/No/N.A.
3.3.1.2	For multi-cylinder system : Is the manual or automatic changeover device provided with indication showing the particular bank of cylinders are being used?	*Yes/No/N.A.	*Yes/No/N.A.
3.3.1.3	Are appropriate safety devices and by-pass piping provided in accordance with LPGGS?	*Yes/No/N.A.	*Yes/No/N.A.
3.3.1.4	Is approved type clip-on regulator for domestic installation using LPG cylinder of 15kg or less?	*Yes/No/N.A.	*Yes/No/N.A.
3.3.2	Testing and Commissioning		
3.3.2.1	Is the manual or the automatic changeover device working properly?	*Yes/No/N.A.	*Yes/No/N.A.
3.4	Inspection, Testing and Commissioning of Vaporizers		
3.4.1	Visual Inspection		
3.4.1.1	Are the vaporizers of the correct and approved type?	*Yes/No/N.A.	*Yes/No/N.A.
3.4.1.2	Has each vaporizer provided with a permanently fixed label as required by the LPGGS?	*Yes/No/N.A.	*Yes/No/N.A.
3.4.1.3	Has each vaporizer been provided with :-		
a)	high pressure relief valve?	*Yes/No/N.A.	*Yes/No/N.A.

Tested / Checked by : (Name of Contractor's Representative)	Signature - ( )	Post :	
		Tel. No. :	
		Date :	
Certified by : (Name of Competent Person)	Signature - ( )	Post :	
		Tel. No. :	
		Date :	
Witnessed by : (Name(s) of *PBSE/PBSI)	Signature - ( )	Post :	
		Tel. No. :	
		Date :	

		Items tested checked by Contractor	Items witnessed by PBSE/PBSI
b)	liquid control device?	*Yes/No/N.A.	*Yes/No/N.A.
c)	non-bimetal heat input control?	*Yes/No/N.A.	*Yes/No/N.A.
d)	LPG drain point?	*Yes/No/N.A.	*Yes/No/N.A.
e)	automatic water level control?	*Yes/No/N.A.	*Yes/No/N.A.
f)	gauges for states of LPG?	*Yes/No/N.A.	*Yes/No/N.A.
i)	shut off valves at both vapour and liquid LPG lines from vaporizer to storage vessel?	*Yes/No/N.A.	*Yes/No/N.A.
3.4.1.4	Has a suitable and permanent drain pipe been provided for the LPG drain valve?	*Yes/No/N.A.	*Yes/No/N.A.
3.4.1.5	Has a suitable vent pipe been provided for the pressure relief valve?	*Yes/No/N.A.	*Yes/No/N.A.
3.4.2	Testing and Commissioning		
3.4.2.1	The vaporizer has been hydraulic tested by competent person and the test certificate is attached to the "Record of Tests".	*Yes/No/N.A.	*Yes/No/N.A.
3.4.2.2.	*Manufacturer's/competent person's certificate on the calibration of the pressure relief valve for the vaporizer is attached to the "Record of Tests".	*Yes/No/N.A.	*Yes/No/N.A.
3.4.2.3.	Are the liquid-LPG control device, the heat input control device, the automatic water level control and all gauges in proper working order?	*Yes/No/N.A.	*Yes/No/N.A.
3.4.2.4.	Have the flame failure device, pilot and the main burner system been checked for proper function?	*Yes/No/N.A.	*Yes/No/N.A.
3.4.2.5	For indirect heated vaporiser using water as heating medium, have the water level safety control been checked for proper operation	*Yes/No/N.A.	*Yes/No/N.A.
3.5	Inspection, Testing and Commissioning of LPG Appliances		

Tested / Checked by : (Name of Contractor's Representative)	Signature - ( )	Post : Tel. No. : Date :	
Certified by : (Name of Competent Person)	Signature - ( )	Post : Tel. No. : Date :	
Witnessed by : (Name(s) of *PBSE/PBSI)	Signature - ( )	Post : Tel. No. : Date :	

		Items tested checked by Contractor	Items witnessed by PBSE/PBSI
3.5.1	Visual Inspection		
3.5.1.1.	Are all appliances of correct and approved models?	*Yes/No/N.A.	*Yes/No/N.A.
3.5.1.2.	Have all appliances been installed properly in accordance with manufacturers' instructions?	*Yes/No/N.A.	*Yes/No/N.A.
3.5.1.3.	Are the main flame and pilot flame, if provided, protected against draughts?	*Yes/No/N.A.	*Yes/No/N.A.
3.5.1.4.	Are flame failure devices of approved type provided for totally enclosed and semi-enclosed burners? Are they sheltered from over-spilling and over-heating?	*Yes/No/N.A.	*Yes/No/N.A.
3.5.1.5.	Are back-up overheat protective devices provided for temperature controls?	*Yes/No/N.A.	*Yes/No/N.A.
3.5.1.6.	For gas-fired water heating appliances : Are low water pressure safety devices provided?	*Yes/No/N.A.	*Yes/No/N.A.
3.5.1.7.	Are gas shut-off valves provided at gas inlets of appliances and in readily accessible position?	*Yes/No/N.A.	*Yes/No/N.A.
3.5.1.8.	Are flues readily accessible for inspection and maintenance? Are they properly installed where they pass through roof, ceiling and combustible materials?	*Yes/No/N.A.	*Yes/No/N.A.
3.5.1.9.	For flues incorporating forced draught devices and automatically operated damper devices : Have these devices been interlocked with the gas supply to burners?	*Yes/No/N.A.	*Yes/No/N.A.
3.5.1.10.	Are manual operated dampers incorporated in flue systems maintained in fixed open position?	*Yes/No/N.A.	*Yes/No/N.A.
3.5.2	Testing and Commissioning		
3.5.2.1.	Are the gas supply pressure, water supply pressure and electricity supply voltage within the operating range of the appliances?	*Yes/No/N.A.	*Yes/No/N.A.
3.5.2.2.	Are all safety controls and flame failure devices tested and ensured in proper working order?	*Yes/No/N.A.	*Yes/No/N.A.

Tested / Checked by : (Name of Contractor's Representative)	Signature - ( )	Post : Tel. No. : Date :	
Certified by : (Name of Competent Person)	Signature - ( )	Post : Tel. No. : Date :	
Witnessed by : (Name(s) of *PBSE/PBSI)	Signature - ( )	Post : Tel. No. : Date :	

		Items tested checked by Contractor	Items witnessed by PBSE/PBSI
3.5.2.3.	Are the ignition, combustion and air supply properly sequenced for automatic combustion system?	*Yes/No/N.A.	*Yes/No/N.A.
3.5.2.4.	Are all gas valves, cocks and taps gas tight and operate in satisfactory condition?	*Yes/No/N.A.	*Yes/No/N.A.
3.5.2.5.	Are all provisions for combustion and ventilation air adequate?	*Yes/No/N.A.	*Yes/No/N.A.
3.5.2.4.	Are the gas/air ratio of burners be adjusted correctly for proper combustion?	*Yes/No/N.A.	*Yes/No/N.A.
3.5.2.5.	Are the flue systems working effectively? Are the interlocking between gas supply, forced draught devices and automatically operated dampers working properly?	*Yes/No/N.A.	*Yes/No/N.A.
3.5.2.6.	Are all ignition devices working properly?	*Yes/No/N.A.	*Yes/No/N.A.
3.5.2.7.	Are the contact temperatures of the outer casings of appliances below the maximum allowable values?	*Yes/No/N.A.	*Yes/No/N.A.
3.6	Inspection for Hazard Precaution and Fire Prevention		
3.6.1	Inspection for Electrical and Electrostatic Hazard Precaution		
3.6.1.1.	Are all electrical equipment in the designated hazardous area comply with the recommendations of the relevant British Standard Specification?	*Yes/No/N.A.	*Yes/No/N.A.
3.6.1.2.	Are all the LPG piping and equipment electrically continuous and earthed, except where breaking in continuity is necessary for cathodic protection requirements?	*Yes/No/N.A.	*Yes/No/N.A.
3.6.1.3.	Is it true that the LPG piping has not been used as electrical circuit protective conductor or earth electrode for the other system, though their bonding to the circuit protective conductor may be necessary?	*Yes/No/N.A.	*Yes/No/N.A.

Tested / Checked by : (Name of Contractor's Representative)	Signature - ( )	Post : Tel. No. : Date :	
Certified by : (Name of Competent Person)	Signature - ( )	Post : Tel. No. : Date :	
Witnessed by : (Name(s) of *PBSE/PBSI)	Signature - ( )	Post : Tel. No. : Date :	

		Items tested checked by Contractor	Items witnessed by PBSE/PBSI
3.6.2	Inspection for Fire Prevention		
3.6.2.1.	Have all fire fighting systems and facilities required by Fire Services Department been provided for the LPG storage compounds/cabinets?	*Yes/No/N.A.	*Yes/No/N.A.
3.6.2.2.	Have all warning signs/emergency notices been painted or fixed in appropriate locations as required by Fire Services Department and COP for Hong Kong LPG Industry Module 1?	*Yes/No/N.A.	*Yes/No/N.A.
3.6.2.3.	Have weeds, long grass and any combustible material been kept clear from an area as specified by the LPGGS?	*Yes/No/N.A.	*Yes/No/N.A.
3.6.2.4.	Is the mechanical ventilation system associated with the LPG installation in proper working order?	*Yes/No/N.A.	*Yes/No/N.A.
3.6.3	Ventilation		
3.6.3.1	Is all mechanical ventilation system associated with LPG installation in proper operation?	*Yes/No/N.A.	*Yes/No/N.A.
3.7	Functional Test		
3.7.1	Is LPG available when gas equipment is connected?	*Yes/No/N.A.	*Yes/No/N.A.
3.8	Performance Test		
3.8.1	Is gas distribution system operating within correct pressure regime?	*Yes/No/N.A.	*Yes/No/N.A.
3.8.2	Is vaporiser in satisfactory operation and with correct power input (heat input)?	*Yes/No/N.A.	*Yes/No/N.A.
3.8.3	Is adequate gas flow provided for the gas equipment?	*Yes/No/N.A.	*Yes/No/N.A.
3.9	Comments	*Yes/No/N.A.	*Yes/No/N.A.

Tested / Checked by : (Name of Contractor's Representative)	Signature - ( )	Post :	
		Tel. No. :	
		Date :	
Certified by : (Name of Competent Person)	Signature - ( )	Post :	
		Tel. No. :	
		Date :	
Witnessed by : (Name(s) of *PBSE/PBSI)	Signature - ( )	Post :	
		Tel. No. :	
		Date :	

Part 4. Test Record attached to the Test Certificate

4.1 Pressure test of pipework before treated, concealed or buried

Date of test	Section of pipework	Pressure stage	Working pressure (kPa)	Testing Pressure (kPa)	Duration of testing	Test result

Tested / Checked by : (Name of Contractor's Representative)	Signature - ( )	Post :	
		Tel. No. :	
		Date :	
Certified by : (Name of Competent Person)	Signature - ( )	Post :	
		Tel. No. :	
		Date :	
Witnessed by : (Name(s) of *PBSE/PBSI)	Signature - ( )	Post :	
		Tel. No. :	
		Date :	

4.2 Pressure test of pipework on completion

Date of test	Section of pipework	Pressure stage	Working pressure (kPa)	Testing Pressure (kPa)	Duration of testing	Test result

Tested / Checked by : (Name of Contractor's Representative)	Signature - ( )	Post :	
		Tel. No. :	
		Date :	
Certified by : (Name of Competent Person)	Signature - ( )	Post :	
		Tel. No. :	
		Date :	
Witnessed by : (Name(s) of *PBSE/PBSI)	Signature - ( )	Post :	
		Tel. No. :	
		Date :	

4.3 Function test on valves

(including isolation valves, quick-action / emergency shut-off valves, check valves, etc.)

Date of test	Valve ref. no.	Type of valve	Pressure stage	Working pressure (kPa)	Testing Pressure (kPa)	Duration of testing	Test result

Tested / Checked by : (Name of Contractor's Representative)	Signature - ( )	Post :	
		Tel. No. :	
		Date :	
Certified by : (Name of Competent Person)	Signature - ( )	Post :	
		Tel. No. :	
		Date :	
Witnessed by : (Name(s) of *PBSE/PBSI)	Signature - ( )	Post :	
		Tel. No. :	
		Date :	

4.4 Function test on pressure regulation devices
(for shut-off function of monitoring regulators, pressure relief function of internal relief valves of regulators and governors, etc.)

Date of test	Device ref. no.	Type of Device	Pressure stage	Upstream pressure (kPa)	Downstream Pressure (kPa)	Actuating pressure +(kPa)	Test result

Tested / Checked by : (Name of Contractor's Representative)	Signature - ( )	Post :	
		Tel. No. :	
		Date :	
Certified by : (Name of Competent Person)	Signature - ( )	Post :	
		Tel. No. :	
		Date :	
Witnessed by : (Name(s) of *PBSE/PBSI)	Signature - ( )	Post :	
		Tel. No. :	
		Date :	

4.5 Test on electrical continuity of LPG installation

Date of test	Points of measurement		Resistance measured Ω	Remarks
	From	To		

Tested / Checked by : (Name of Contractor's Representative)	Signature - ( )	Post :	
		Tel. No. :	
		Date :	
Certified by : (Name of Competent Person)	Signature - ( )	Post :	
		Tel. No. :	
		Date :	
Witnessed by : (Name(s) of *PBSE/PBSI)	Signature - ( )	Post :	
		Tel. No. :	
		Date :	

4.6 Test on earthing system

Date of test	Points of measurement		Resistance measured Ω	Remarks
	From	To		

Tested / Checked by : (Name of Contractor's Representative)	Signature - ( )	Post :	
		Tel. No. :	
		Date :	
Certified by : (Name of Competent Person)	Signature - ( )	Post :	
		Tel. No. :	
		Date :	
Witnessed by : (Name(s) of *PBSE/PBSI)	Signature - ( )	Post :	
		Tel. No. :	
		Date :	

4.7 Insulation test on electrical installation

Date of test	Circuit/ device tested	Resistance measured Ω	Remarks

Tested / Checked by : (Name of Contractor's Representative)	Signature - ( )	Post : Tel. No. : Date :	
Certified by : (Name of Competent Person)	Signature - ( )	Post : Tel. No. : Date :	
Witnessed by : (Name(s) of *PBSE/PBSI)	Signature - ( )	Post : Tel. No. : Date :	

4.8 Test certification for pipework

Location and address of installation :

_____

_____

This is to certify that all liquefied petroleum gas pipework installed at the above premises is constructed of suitable material and has been pressure tested in accordance with Fire Services Department's requirements. All buried pipework has been adequately protected against corrosion in accordance with the specifications. The testing and corrosion proof coating have been witnessed by the undersigned on _____ .

Details of piping materials and tests are as follows :-

Section of Pipe	All Liquid Lines	All High Pressure Vapour Lines before First Stage Regulating System	All Medium Pressure Vapour Line	All Low Pressure Vapour Line
Pipeline Specification & Schedule				
Fitting Specification & Schedule				
Valve Material and Rating				
Testing Medium				
Working Pressure (kPa)				
Test Pressure (kPa)				
Duration of Test (Hr)				

Remarks :

Tested / Checked by : (Name of Contractor's Representative)	Signature - ( )	Post :	
		Tel. No. :	
		Date :	
Certified by : (Name of Competent Person)	Signature - ( )	Post :	
		Tel. No. :	
		Date :	
Witnessed by : (Name(s) of *PBSE/PBSI)	Signature - ( )	Post :	
		Tel. No. :	
		Date :	

4.9 Test certification for *pressure relief valves/hydrostatic relief valves

This is to certify that the following *pressure relief valve(s)/and hydrostatic relief valve(s) *has/have been pressure tested and sealed :-

Date of test	Valve ref. no.	Type of valve	Made/ model no.	Pressure stage	Working pressure (kPa)	Agiotage pressure (kPa)	Test result

Tested / Checked by : (Name of Contractor's Representative)	Signature - ( )	Post :	
		Tel. No. :	
		Date :	
Certified by : (Name of Competent Person)	Signature - ( )	Post :	
		Tel. No. :	
		Date :	
Witnessed by : (Name(s) of *PBSE/PBSI)	Signature - ( )	Post :	
		Tel. No. :	
		Date :	

4.10 Test certification for excess flow valves

This is to certify that the following excess flow valve(s) *has/have been pressure tested :-

Date of test	Valve ref. no.	Made/ model no.	Pressure stage	Working pressure (kPa)	Design flow rate (l/s)	Actuating flow rate (l/s)	Test result

Tested / Checked by : (Name of Contractor's Representative)	Signature - ( )	Post :	
		Tel. No. :	
		Date :	
Certified by : (Name of Competent Person)	Signature - ( )	Post :	
		Tel. No. :	
		Date :	
Witnessed by : (Name(s) of *PBSE/PBSI)	Signature - ( )	Post :	
		Tel. No. :	
		Date :	

4.11 Test certification for pressure gauges

This is to certify that the following pressure gauges(s) *has/have been tested and results are as indicated :-

Date of test	Gauge ref. no.	Made/ model no.	Pressure range (kPa)		Tolerance	Remarks
			From	To		

Tested / Checked by : (Name of Contractor's Representative)	Signature - ( )	Post :	
		Tel. No. :	
		Date :	
Certified by : (Name of Competent Person)	Signature - ( )	Post :	
		Tel. No. :	
		Date :	
Witnessed by : (Name(s) of *PBSE/PBSI)	Signature - ( )	Post :	
		Tel. No. :	
		Date :	

4.12 Test certification for LPG storage facilities

4.12.1 Bulk LPG Storage System

Type of Test	Date of Test	Summary of Result and Observation	Test Certificate Attached
Test on internal flaw			* Yes/No
Ultrasonic/radiographic test			* Yes/No
Test on external flaw			* Yes/No
Magnetic particle test			* Yes/No
Penetration test			* Yes/No
Hydraulic test			* Yes/No
Pneumatic test			* Yes/No
Holiday test			* Yes/No
Leak test			* Yes/No
Paint thickness test			* Yes/No
Cathodic protection test			* Yes/No

4.12.2 LPG Cylinder

a. Type approval of gas container by Gas Authority attached * Yes/No

4.12.3 Approval of use before LPG filling

a. Approval of us by Gas Authority attached * Yes/No

Tested / Checked by : (Name of Contractor's Representative)	Signature - ( )	Post : Tel. No. : Date :	
Certified by : (Name of Competent Person)	Signature - ( )	Post : Tel. No. : Date :	
Witnessed by : (Name(s) of *PBSE/PBSI)	Signature - ( )	Post : Tel. No. : Date :	

4.13 Factory Test Certificates for Gas Appliances

Gas Appliance and Type	Model	Certificate No. and Date	Issued by

Note: **Approval given by Gas Authority under COP GU05 should be submitted together with factory test certificates for all gas appliances.**

Tested / Checked by : (Name of Contractor's Representative)	Signature - ( )	Post : Tel. No. : Date :	
Certified by : (Name of Competent Person)	Signature - ( )	Post : Tel. No. : Date :	
Witnessed by : (Name(s) of *PBSE/PBSI)	Signature - ( )	Post : Tel. No. : Date :	

List of Calibrated Instrument/Equipments Necessary for T&C Works

Type	Model	Serial No. of Instrument	Date of Calibration

Tested / Checked by : (Name of Contractor's Representative)	Signature - ( )	Post : Tel. No. : Date :	
Certified by : (Name of Competent Person)	Signature - ( )	Post : Tel. No. : Date :	
Witnessed by : (Name(s) of *PBSE/PBSI)	Signature - ( )	Post : Tel. No. : Date :	

Testing and Examination of LPG Tank

Under Regulation 8 of Gas Safety (Gas Supply) Regulations, Cap.51

GasSO Ref:

To : The Gas Authority

Address of Notifiable Gas Installation : _____

_____

Mode of Storage, Serial No., Water Capacity & Vessel Design Code : _____

_____

Date of Installation & Last Revalidation : _____

I certify that the above vessel has satisfactorily been tested and examined under my supervision in accordance with the Gas Standards office's requirements in order to comply with Regulation 8 of the Gas Safety (Gas Supply) Regulations and it is suitable for LPG service:-

Test/Examination	Test Dates(s)	Attached Document Reference No.	Tested by	Remarks
Full visual examination &				
Ultrasonic thickness test				
Magnetic particle test				
Paint thickness & holiday tests				
Testing & examination of vessel fittings				
Cathodic protection test				
Electrical continuity test				

Tested / Checked by : (Name of Contractor's Representative)	Signature - ( )	Post :	
		Tel. No. :	
		Date :	
Contractor's Company Chop:			
Witnessed by : (Name(s) of *PBSE/PBSI)	Signature - ( )	Post :	
		Tel. No. :	
		Date :	

Testing and Examination of LPG Vaporiser

Under Part IV Gas Safety (Gas Supply) Regulations, Cap. 51

GasSO Ref:

To : The Gas Authority

Address of Notifiable Gas Installation : _____

_____

I certify that the LPG vaporiser(s) installed at the above permit has satisfactorily been tested and examined under my supervision in accordance with the Gas Standards Office's requirements in order to comply with Part IV of the Gas Safety (Gas Supply) Regulations. The test and examination was carried out by :-

_____ of _____

on _____ .

Details of vaporiser(s) and test are as follows:-

	(1)	(2)	(3)
Make & Model			
Serial Number			
Date of Manufacture			
Vaporising Capacity (kg/hr)			
Pressure Vessel Code			
Test Pressure (kPa)			
Duration of Test (Hr)			
Pressure Relief Valve			
Overall Condition			

Tested / Checked by : (Name of Contractor's Representative)	Signature - ( )	Post :	
		Tel. No. :	
		Date :	
Contractor's Company Chop:			
Witnessed by : (Name(s) of *PBSE/PBSI)	Signature - ( )	Post :	
		Tel. No. :	
		Date :	

Testing and Examination of LPG Pipes

Under Part V of Gas Safety (Gas Supply) Regulations, Cap.51

GasSO Ref:

To : The Gas Authority

Address of Notifiable Gas Installation : _____

_____

I certify that all liquefied petroleum gas pipework installed at the above permit is constructed of suitable materials and has been tested/examined in accordance with the Gas Standards Office's requirements. All pipework has been adequately protected against corrosion in accordance with the specifications. The test/examination was carried out by _____ of _____

on _____ .

Details of pipework materials and tests are as follows :-

Section of Pipework	All liquid Lines	All High Pressure Vapour Lines before First Stage Regulating System	All Medium Pressure Vapour Lines	All Low Pressure Vapour Lines
Pipeline specification & schedule				
Fitting specification & schedule				
Valve material and rating				
Testing medium				
Working pressure (kPa)				
Test pressure (kPa)				
Duration of test (Hr)				
Pressure setting of Hydrostatic Pressure Relief Valve (kPa)		N/A	N/A	N/A

Remarks : Pressure drop observed? Yes/No.

If 'Yes", please specify causes and remedial actions:- _____

Tested / Checked by : (Name of Contractor's Representative)	Signature - ( )	Post :	
		Tel. No. :	
		Date :	
Contractor's Company Chop:			
Witnessed by : (Name(s) of *PBSE/PBSI)	Signature - ( )	Post :	
		Tel. No. :	
		Date :	