

PETRONAS TECHNICAL STANDARDS

DESIGN AND ENGINEERING PRACTICE

MANUAL

CONTROL AND MITIGATION OF FIRES AND EXPLOSIONS ON OFFSHORE PRODUCTION INSTALLATIONS (AMENDMENTS/SUPPLEMENTS TO ISO 13702)

PTS 80.80.00.11

JANUARY 2011



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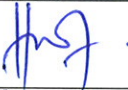
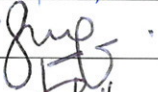
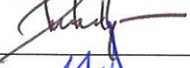
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For PTS Updates/Review

This revision of PTS 80.80.00.11 – Control and Mitigation of Fires and Explosions on Offshore Production Installations (Amendments/Supplements to ISO 13702) has been updated according to ISO13702.

The previous version of this PTS (September 2002) will be removed from PTS binder/ e-repository from herein onwards.

Document Approval

	Name	Designation	Date	Signature
Prepared/	Hasinah M Hanafi	Staff Engineer	17/01/2011	
Reviewed				
Approved	Zainab Kayat	Custodian	17/02/2011	
Verified	Shahrul Izan Bakti A Aziz	Senior Manager, Process Engineering, GTS	21/2/2011	
Verified	Pau Kiew Huai	General Manager, Engineering, GTS	21.2.11	
Endorsed	Sazali Hamzah	Senior General Manager, GTS	21.2.11	

The custodian of this PTS is:

Name: Zainab Kayat

Tel No: 03-27836531

Please direct any questions regarding this PTS to the above-named

Revision History

Rev No	Reviewed by	Approved by	Date
1	Hasinah M Hanafi	Zainab Kayat	Jan 2011

PREFACE

PETRONAS Technical Standards (PTS) publications reflect the views, at the time of publication, of PETRONAS OPU/Divisions.

They are based on the experience acquired during the involvement with the design, construction, operation and maintenance of processing units and facilities. Where appropriate they are based on, or reference is made to, national and international standards and codes of practice.

The objective is to set the recommended standard for good technical practice to be applied by PETRONAS' OPU in oil and gas production facilities, refineries, gas processing plants, chemical plants, marketing facilities or any other such facility, and thereby to achieve maximum technical and economic benefit from standardisation.

The information set forth in these publications is provided to users for their consideration and decision to implement. This is of particular importance where PTS may not cover every requirement or diversity of condition at each locality. The system of PTS is expected to be sufficiently flexible to allow individual operating units to adapt the information set forth in PTS to their own environment and requirements.

When Contractors or Manufacturers/Suppliers use PTS they shall be solely responsible for the quality of work and the attainment of the required design and engineering standards. In particular, for those requirements not specifically covered, the Principal will expect them to follow those design and engineering practices which will achieve the same level of integrity as reflected in the PTS. If in doubt, the Contractor or Manufacturer/Supplier shall, without detracting from his own responsibility, consult the Principal or its technical advisor.

The right to use PTS rests with three categories of users:

- 1) PETRONAS and its affiliates.
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PART I INTRODUCTION

1.1 SCOPE

This new PTS describes the objectives, functional requirements and guidelines for the control and mitigation of fires and explosions on offshore installations used for the development of hydrocarbon resources.

This PTS is applicable to fixed offshore structures and floating production, storage and off-take systems for the petroleum and natural gas industries.

Mobile offshore units as defined in ISO 13702 and subsea installations are excluded, although many of the principles contained in this PTS may be used as guidance.

This PTS is based on an approach where the selection of control and mitigation measures for fires and explosions is determined by an evaluation of the hazards on the offshore installation. The methodologies employed in this assessment and the resultant recommendations will differ depending on the complexity of the production process and facilities, type of facility (i.e. open or enclosed), manning levels, and the environmental conditions associated with the area of operation.

Users of this PTS should note that while observing its requirements, they should, at the same time, ensure compliance with such statutory requirements, rules and regulations as may be applicable to the individual offshore installation concerned.

This PTS is based on International Standard ISO 13702:1999, which is adopted with amendments as described in Part II.

1.2 DISTRIBUTION, INTENDED USE AND REGULATORY CONSIDERATIONS

Unless otherwise authorised by PETRONAS, the distribution of this PTS is confined to companies forming part of PETRONAS or managed by a Group company, and to PTS is intended for use in oil and gas exploration and production activities.

If Contractors and Manufacturers/Suppliers nominated by them.

This national and/or local regulations exist in which some of the requirements may be more stringent than in this PTS, the Contractor shall determine by careful scrutiny which of the requirements are more stringent and which combination of requirements will be acceptable as regards safety, environmental, economic, and legal aspects. In all cases, the Contractor shall inform the Principal of any deviation from the requirements of this PTS which is considered to be necessary in order to comply with national and/or local regulations. The Principal may then negotiate with the Authorities concerned with the object of obtaining agreement to follow this PTS as closely as possible.

1.3 DEFINITIONS

The **Contractor** is the party that carries out all or part of the design, engineering, procurement, construction, commissioning or management of a project, or operation or maintenance of a facility. The Principal may undertake all or part of the duties of the Contractor.

The **Manufacturer/Supplier** is the party that manufactures or supplies equipment and services to perform the duties specified by the Contractor.

The **Principal** is the party that initiates the project and ultimately pays for its design and construction. The Principal will generally specify the technical requirements. The Principal may also include an agent or consultant authorised to act for, and on behalf of, the Principal.

The word **shall** indicates a requirement.

The word **should** indicates a recommendation.

1.4 GENERAL INFORMATION

This PTS gives PETRONAS amendments and supplements to ISO 13702, First Edition, March 1999.

For ease of reference, the clause (or paragraph) numbering of ISO 13702 has been used throughout [Part II](#) of this PTS. Clauses (paragraphs) in ISO 13702 not mentioned remain unaltered. Where cross references are made, the number of the section/sub-section/clause of this specification is shown in brackets.

PART II AMENDMENTS/SUPPLEMENTS TO ISO 13702

ISO 13702:1999 is approved for use with the following amendments/supplements:

Clause 5 Installation layout

5.1 Objectives

Add new paragraph:

The following objectives pertain to installation layout as it affects the development of fires and explosions.

Replace bullet point 1 with the following sentence (Rapid removal of hydrocarbon accumulations may not be the optimum course of action):

To minimize the possibility of hazardous accumulations of both liquids and gaseous hydrocarbons, and to provide for the effective removal of any accumulations which do occur;

Clause 8 Control of spills

8.2 Functional requirements

Replace paragraph 5 with:

The design of the drainage system shall attempt to minimise the effects of a spill and any escalation that may arise from the spill.

Clause 10 Fire and gas systems

10.1 Objectives

Replace bullet point 1 with:

- To provide continuous automatic monitoring functions to alert personnel of the presence of a hazardous fire or flammable mixture;

10.2 Functional requirements

Replace paragraph 6, sentence 1 with:

If the development of a flammable gas mixture in a non-hazardous area is reasonably foreseeable, the air intakes to these areas, or the areas themselves, shall be fitted with gas detection.

Clause 11 Active fire protection

11.2 Functional Requirements

Insert new paragraph 4:

The testing requirements for assurance of (e.g., availability) performance specifications shall be considered in the selection of the system for particular areas.

Delete existing paragraph 7 (repeated here for clarity):

All Active Fire Protection (AFP) systems and equipment shall be marked with easily understood operating instructions.

Clause 12 Passive fire protection

12.1 Objectives

Replace bullet point 5 with:

If structures are vulnerable, to control collapse and minimise the consequences of failure of these structures;

12.2 Functional requirements

Replace paragraph 3 with:

If PFP is required to provide protection following an explosion, it shall be designed and installed such that the effects of the explosion, such as deformation of the substrate, will not affect its performance.

Clause 13 Explosion mitigation and protection systems

13.1 Objective

Replace bullet point with:

- To reduce the risks of an explosion to levels that are as low as reasonably practicable.

13.2 Functional requirements

Replace paragraph 1, bullet point 2 with:

- Control an explosion in order to reduce explosion loads to acceptable levels.

Clause 14 Evacuation, escape and rescue

14.1 Objectives

Replace bullet point 4 with:

- To allow for abandonment of the facility.

14.2 Functional requirements

Replace paragraph 2 with:

The Emergency Evacuation, Escape and Rescue (EERS) shall be based on an Evacuation, Escape and Rescue (EER) assessment which considers the range of events that may arise, and contains an approach to respond to these events.

Clause 15 Inspection, testing and maintenance

15.1 Objective

Replace bullet point with:

To inspect, test and maintain systems and equipment covered by this International Standard to ensure that they remain within their performance specification.

3. REFERENCES

In this PTS, reference is made to the following publications:

NOTE: Unless specifically designated by date, the latest edition of each publication shall be used, together with any amendments/supplements/revisions thereto.

PETRONAS STANDARDS

Index to PTS publications and standard specifications PTS 00.00.05.05

INTERNATIONAL STANDARDS

Petroleum and natural gas industries – Control and mitigation ISO 13702:1999
of fires and explosions on offshore production installations –
Requirements and guidelines

Issued by:
International Organisation for Standardization
1, Rue de Varembe
CH-1211 Geneva 20
Switzerland

NOTE: Copies can also be obtained from National Standards Organizations

NOTE: The PTS are available at address <http://pww.axis.petronas.com.my/topic/pts/default.aspx>