

PETRONAS TECHNICAL STANDARDS

DESIGN AND ENGINEERING PRACTICE

MANUAL

DESIGN OF HOSE BULK TRANSFER FACILITIES FOR OFFSHORE INSTALLATIONS

PTS 37.05.10.12

DECEMBER 2010



PTS Circular 2010 - 1



PTS No:	37.05.10.12
PTS Title:	DESIGN OF HOSE BULK TRANSFER FACILITIES FOR OFFSHORE INSTALLATIONS

This revision of PTS 37.05.10.12 – Design of hose bulk transfer facilities for offshore (November 2010, Revision 01) has been updated to incorporate PETRONAS Lessons Learnt, Best Practice and new information issued by relevant industry code and standards.

All updates in the document are highlighted in *italic* font.

The previous version of this PTS 37.05.10.12 (August 2000) will be removed from PTS binder / e-repository from herein onwards.

The custodian of this PTS is:

Name: Roslan Bin Hamid

Tel. No: +603-2783 6443

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

Document Approval

	Name	Designation	Date	Signature
Prepared/ Reviewed	Roslan Bin Hamid	Staff Engineer, Process Design, GTS	20Dec2010	
Approved	Zainab Binti Kayat	Custodian Engineer, Process Engineering, GTS	10/01/2011	
Verified	Shahrul Izan Bakti B A Aziz	Senior Manager, Process Engineering, GTS	10/2/2011	
Verified	Pau Kiew Huai	General Manager, Engineering, GTS	11.2.2011	
Endorsed	~~Sazali B Hamzah~~ Pau Kiew Huai	Senior General Manager, GTS	11.2.2011	

Revision History

Rev No.	Reviewed by	Approved by	Date
Rev. 01	Roslan Bin Hamid	Zainab Binti Kayat	December 2010

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.

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Table of Contents

1.	INTRODUCTION	5
1.1	SCOPE	5
1.2	DISTRIBUTION, INTENDED USE AND REGULATORY CONSIDERATIONS	5
1.3	DEFINITIONS	5
1.4	CROSS-REFERENCES	5
1.5	SUMMARY OF CHANGES	6
2.	OPERATIONAL REQUIREMENTS	7
2.1	GENERAL	7
2.2	BULK MATERIALS	7
2.3	TRANSFER AND HANDLING	7
2.4	POLLUTION AND SAFETY	8
3.	DESIGN PHILOSOPHY	10
3.1	GENERAL	10
3.2	HOSE STATION	10
3.3	FLEXIBLE HOSES AND COUPLINGS	10
3.4	HOSE STOWAGE FACILITY	12
3.5	FILLING LINES	12
3.6	INSTRUMENTATION	13
3.7	COMPRESSED AIR	13
3.8	MECHANICAL HANDLING	13
3.9	SPARES	14
4.	REFERENCES	15
5.	BIBLIOGRAPHY	16

1. INTRODUCTION

1.1 SCOPE

This new PTS specifies requirements and give recommendations for the design of the hose bulk transfer facilities for new fixed offshore installations. It may also be used as a basis for the review of facilities on existing installations although generally they will only be modified where this is justified by safety or operational considerations. This PTS covers all components of the bulk transfer facilities but excludes the design of the storage tanks themselves.

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 the PETRONAS Group or managed by a Group company, and to Contractors and Manufacturers/Suppliers nominated by them.

This PTS is intended for use on offshore installations.

If 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

1.3.1 General definitions

The **Contractor** is the party which 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 which manufactures or supplies equipment and services to perform the duties specified by the Contractor.

The **Principal** is the party which 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 CROSS-REFERENCES

Where cross-references to other parts of this PTS are made, the referenced section number is shown in brackets. Other documents referenced in this PTS are listed in (4) and (5).

1.5 SUMMARY OF CHANGES

The previous edition of this PTS was dated August 2000. Summary of changes made to the last edition is given below:

Section	Changes
5	Change and update the new bibliography for "Code of Safe Practice for Solid Bulk Cargoes 1988" to "Code of Safe Practice for Solid Bulk Cargoes (BC Code)1994.

2. OPERATIONAL REQUIREMENTS

2.1 GENERAL

Offshore installations often require regular supplies of bulk materials, both liquids and powders. These are delivered by supply boats equipped with pumps and compressors which provide the motive force to transfer the bulk materials to storage tanks on the installation via hoses and filling lines. Flexible hoses shall be provided which are permanently connected at one end to the storage tank filling lines on the installation and temporarily connected to the supply boat to enable the transfer of bulk materials. Facilities are required to stow the flexible hoses alongside the installation when they are not in use. The main installation crane is used to lower the hoses from their stowage positions to the supply boat and to retrieve the hoses on completion of discharge.

NOTE: The aspects of stowing and shipping bulk cargoes onboard supply boats are outside the scope of this PTS. However, attention is drawn to a Code of Safe Practice for Solid Bulk Cargoes published by the International Maritime Organization (IMO). The primary aim of the code is to promote safe stowage and shipment of bulk cargoes.

2.2 BULK MATERIALS

The following bulk materials which are transferred by hose are commonly required on offshore installations which have an ongoing drilling programme:

- baryte and bentonite;
- cement powder;
- brine and drill water;
- oil-based mud;
- potable water;
- diesel oil;
- base oil;
- well kill fluid.

Offshore installations without an ongoing drilling programme normally only require potable water, diesel oil and well kill fluid to be transferred by hose.

2.3 TRANSFER AND HANDLING

2.3.1 Transfer conditions

Typical hose bulk transfer operations start when the hoses are passed to the supply boat by means of the installation crane and are connected to the appropriate supply boat outlet. For powders the hoses are purged/blown out with air to free them from any residual material etc. before they are offered to the supply boat. When the appropriate approval is given, the commodity is pumped to the installation.

After the required quantity has been transferred or a high-level alarm has sounded, the flow is stopped and the liquid in the hose is drained back to the supply boat. The installation filling lines are drained to their respective commodity tanks. For powders, after loading, the supply boat blows the residual powder to the platform and into the tanks.

The bulk material capacity and transfer capability varies between supply boats. In general the aim is to effect a rapid continuous transfer without the risk of spillage.