

PETRONAS TECHNICAL STANDARDS

MANUAL

DESIGN, INSTALLATION & TESTING FOR UPSTREAM TELECOMMUNICATION SYSTEM

PTS 32.71.00.17

OCTOBER 2011



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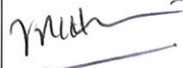
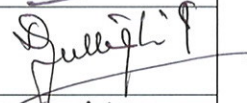
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This new PTS **32.71.00.17 - Design, Installation & Testing for Upstream Telecommunication System (October 2011)** has been developed to replace **PTS 20.212 - Design, Installation & Testing of Telecommunication System Offshore (January 1992)**.

This PTS also includes PETRONAS Lessons Learnt and PETRONAS Best Practice for the subject matter **Design, Installation & Testing for Upstream Telecommunication System**.

PTS 20.212 (January 1992) will be removed from PTS binder / e-repository from herein onwards.

Document Approval

	Name	Designation	Date	Signature
Prepared/ Reviewed	M Sharif B Osman	Principal Engineer, Telecommunication, DD, PCSB	24/10/11	
Approved	V R Harindran	Custodian Engineer, Instrument & Control, Engineering, GTS	24/10/11	
Verified	Dzulkifli Abd Razak	Senior Manager, I&C, Engineering, GTS	24/10/11	
Verified	Saifol Mualim Ahmad Yahaya	General Manager, Engineering, GTS	28/10/11	
Endorsed	Pau Kiew Huai	Senior General Manager, GTS	31.10.11	

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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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1. INTRODUCTION

1.1 SCOPE

This PTS shall govern the basic technical requirements for all Telecommunication design and engineering practice in PETRONAS.

The compliance with the requirements of this document shall not relieve the engineer/consultant/contractor of his obligation to apply and observe good engineering practice to meet statutory requirement and regulations at all times.

Where deviations from these requirements are considered necessary for reasons of regulations, safety, economy, reliability and ease of operation, PETRONAS shall be consulted and its written approval obtained prior to any further action.

In the event of conflict between this document and provisions of other standards referred to by this document, the matter shall be referred to PETRONAS. The decision given by PETRONAS on the matter shall be final.

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 Contractors and Manufacturers/Suppliers nominated by them.

This PTS is intended for use in oil refineries, chemical plants, gas plants, exploration and production facilities and supply/marketing installations. When PTS are applied, a Management of Change (MOC) process should be implemented. This is of particular importance when existing facilities are to be modified.

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 the 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 document as closely as possible.

1.3 DEFINITIONS

1.3.1 General 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 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 work 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 the Principal.

The word **shall** indicate a requirement.

The word **should** indicate a recommendation.

1.3.2 Specific definitions

The **Manned Facility** is a facility which is bridge linked to a Living Quarters. The facility may consist of several bridge linked platforms such as drilling jackets or platforms, production stations, compression platforms and gas processing platforms. No specific level of attendance is implied by this term.

The **Unmanned Facility** is a facility which is not bridge linked to a Living Quarters. The facility may consist of several bridge linked platforms such as drilling jackets or platforms, production stations, compression platforms and gas processing platforms. No specific level of attendance is implied by this term.

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 (5).

1.5 ABBREVIATIONS

CCR	Central Control Room
CEPT	European Conference of Postal & Telecommunication Administration
DBM	Design Basis Memorandum
DCS	Distributed Control System
DSC	Digital Selective Calling
DTMF	Dual Tone Multi-Frequency
EIA	Electronics Industries Association
FXO/FXS	Foreign Exchange Side Central Office End/Foreign Exchange Side Subscriber End
GMDSS	Global Marine Distress Safety System
GPA	General Platform Alarm
HF	High Frequency
HLO	Helicopter Landing Officer
IEC	International Electrotechnical Commission
IEE	Institution of Electrical Engineers
INMARSAT	International Maritime Satellite
IP	Internet Protocol
LAN	Local Area Network
LOS	Line of Sight
LSZH	Low Smoke Zero Halogen
MCMC	Malaysian Communication and Multimedia Commission
MDF	Main Distribution Frame
MDP	Main Distribution Panel
NDB	Non-Directional Beacon
OSI	Open Systems Interconnection
PAGA	Public Address and General Alarm
PAPA	Prepare to Abandon Platform Alarm
PABX	Private Automatic Branch Exchange
PCM	Pulse Code Modulation
PDH	Plesiochronous Digital Hierarchy
PINTAR	PETRONAS Integrated and Real Time Operation
PSK	Phase Shift Keying
PTS	PETRONAS Technical Standard
QAM	Quadrature Amplitude Modulation
SDH	Synchronous Digital Hierarchy
SOLAS	Safety of Life at Sea

SWL	Safe Working Load
TM	Telekom Malaysia
TVRO	Television Receive Only
UHF	Ultra High Frequency
VHF	Very High Frequency
VSAT	Very Small Aperture Terminal
WMS	Weather Monitoring System

2. GENERAL

For the purpose of this document, the following terms and interpretations shall apply:

2.1 COMPLIANCE WITH CODES, REGULATIONS AND RECOMMENDATIONS

Technical Standard shall be carried out in accordance with the PTS listed in Sections 6.0 and shall satisfy all statutory requirements and regulations as listed in Section 6.0 of this PTS

2.2 RELIABILITY, OPERATIBILITY, MAINTAINABILITY AND SAFETY

The design of Telecommunications installations shall be based on the Reliability, Operability, Maintainability and Safety (ROMS) requirements for all anticipated conditions. The design shall in particular ensure:

- (i) fully comprehensive communication facilities to meet PETRONAS' oil & gas offshore production activities. Consideration shall be given to both present and future requirements.
- (ii) adequate back-up of communication facilities in the event of emergency -optimum elevation of antennae with the assistance of Telecoms tower to achieve LOS path clearance and reliable VHF/UHF, radio coverage.
- (iii) ease of maintenance, with emphasis on accessibility, removability, and flexibility for redeployment and expansion by addition of modular units/component cards without the need for re-wiring
- (iv) maximize the use of "state of the art" technology to optimize control and management of fields by supporting PINTAR, DCS, Telemetry and other operations enhancing systems.

2.3 PROTECTION AGAINST EXPLOSION, FIRE AND OTHER HAZARDS

2.3.1 General

For the classification of areas PTS 20.084 (Classification of Hazardous Areas) shall apply.

The design of Telecommunication infrastructure and its associated equipment shall be such as to minimize the risk of explosion or fire due to radiation and the use of electricity in areas where flammable liquids, vapors or gases may be present.

Where appropriate, intrinsically safe equipment shall be used.

2.3.2 Selection and Installation

Selection of equipment and installation methods in relation to the presence of flammable atmospheres shall be based on hazardous area classification drawings developed in accordance with the requirements of PTS 20.084.

Antennae Mounting

Antennae required to radiate power at RF (Radio Frequency) more than 5 Watts are generally classified as non-intrinsically safe devices. Therefore they should be located in a non hazardous area taking into consideration the allowable aerial cable distance from the equipment room and not causing any undue obstruction to aviation services, crane movement etc.

Main Radio Equipment Room

These rooms should whenever possible be located in unclassified areas.

Where a Radio Equipment Room is installed in an area classified as Zone 2 in accordance