

PETRONAS TECHNICAL STANDARDS

HEALTH, SAFETY AND ENVIRONMENT

GUIDELINE PROPRIETARY AND LICENCED TECHNOLOGY ASSESMENT (PLTA)

PTS 60.2207

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This revision of PTS 60.2207 – **Proprietary and Licensed Technology Assessment (January 2011, Revision 0.)** has been updated to incorporate PETRONAS Lessons Learned, 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 **60.2207 (September 2006)** will be removed from PTS binder / e-repository from herein onwards

The custodian of this PTS is: Manager - HSE MS, Standards & Regulations GHSED.

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

Document Approval

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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 standardization.

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, it is expected of 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 owner.

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1.0 INTRODUCTION

1.1 OBJECTIVES

This PTS covering Proprietary and Licensed Technology Assessment (PLTA) has been written to provide the guidance and tools necessary to develop and operate a system for managing the risks inherent in adopting new technology where access to details of that technology may be restricted due to intellectual property rights (IPR) issues or the needs of licensing. It follows and is aligned with the principles described in the PETRONAS Health, Safety, and Environmental Management Systems Manual (HSE MS Manual, PTS 60.0101).

This PTS provides:

- a reference for line managers and senior staff needing guidance in the key issues when determining whether to adopt proprietary and licensed technology.
- a description of methods which can be deployed and links to other documents and standards with guidance on their application.

Structure and Content

Refer to the Table of Contents for an overview of how this PTS is structured.

Format

This PTS is arranged in either hardcopy or softcopy format, which are available on the PETRONAS intranet for downloading and subsequent reference and usage.

User Base

Proprietary and Licensed Technology Assessment PTS users are expected to be OPU's and selected contractors. The PTS will either serve as a reference for others to assist in the development of 'in-house' specific reference documents, or will be used as a first-line reference in the case of smaller organizations.

1.2 USING THE PTS

Language

In this document the recommendations for a course of action are made with varying degrees of emphasis. As a rule:

'shall' indicates a course of action with a required, mandatory status within the OPU's. The English language equivalent or interchangeable term of "shall" is 'must.'

'should' indicates a preferred course of action.

'may' indicates a possible course of action

In this PTS document the collective expressions of PETRONAS are sometimes used for convenience in contexts where reference is made to the companies of the OPU in general. These expressions are used where no useful purpose is served by identifying the particular company or companies.

Application

Should any significant deviations be made from the guideline recommendations in this PTS document then users are required to inform PETRONAS of the nature and justification for these if it is intended that the deviations are to be permanent.

Feedback

This PTS document is not intended as a static set of rules, but a growing collection of HSE expertise. Consequently, users are invited to comment on the PTS to PETRONAS and to suggest changes and additional material which they consider would be useful for inclusion in future revisions.

1.3 RELATIONSHIP WITH OTHER SYSTEMS

This PTS on Proprietary and Licensed Technology Assessment has been designed and written so as to include PETRONAS Process Safety requirements and to harmonize and link back to the higher level document, the PETRONAS Health, Safety, and Environmental Management System (HSEMS), PETRONAS Project Management Systems (PPMS) and Design Engineering Manual (DEM)

Furthermore, this PTS has been developed to be an integral part and tool to assist in managing risk within the overall PETRONAS HSE MS. *Figure 1* below illustrates the elements of the PETRONAS HSE MS and their interactions.

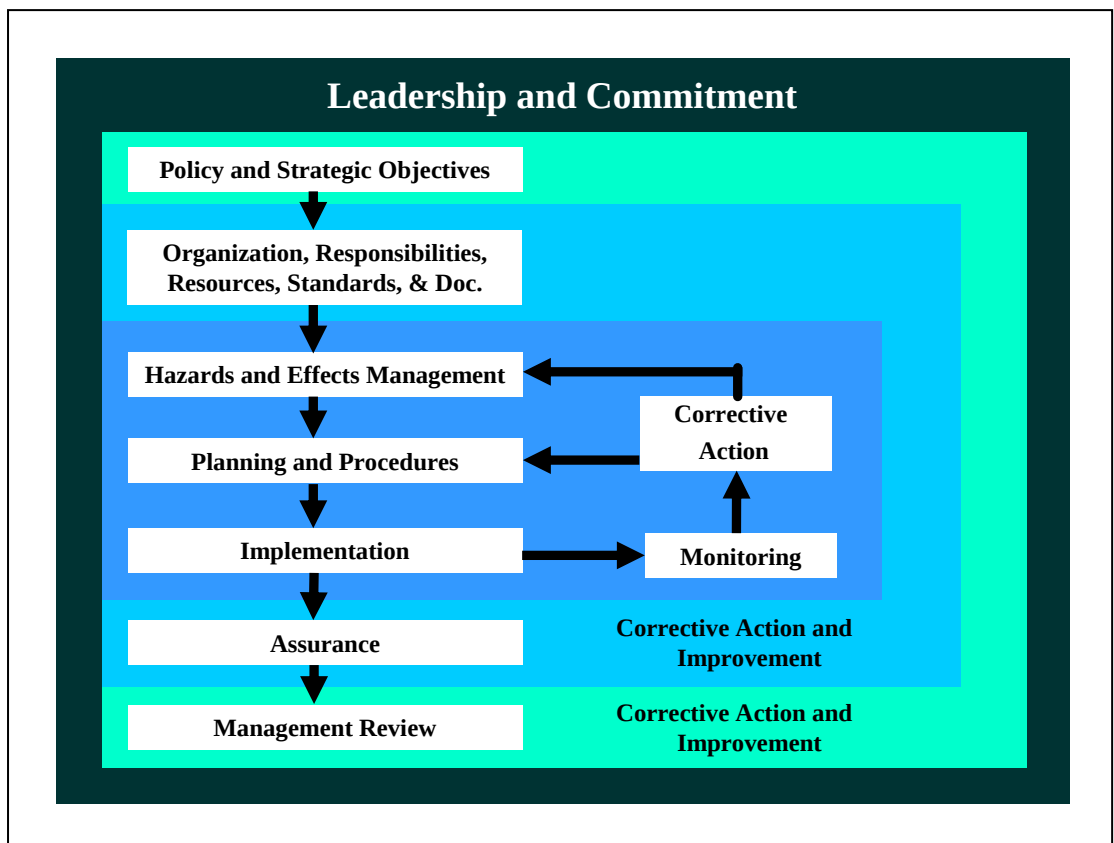


Figure 1: The PETRONAS HSE MS

The activities covered by this PTS fit into the overall PETRONAS HSE MS,

and include, but are not limited to, the following examples:

Leadership and Commitment: PETRONAS Management commits and expects all managers to proactively manage risk throughout the lifecycle of facilities in their respective OPU's.

Organization, Responsibilities, Resources, Standards, and

Documentation: The OPU shall provide sufficient, competent resources to conduct PLTA. This is to include designation of responsible personnel / Custodians to manage all aspects of the assessment process, ensuring suitable communication with vendors, allocation sufficient resources to the process, develop standards to ensure suitable, adequate, and effective performance of the process on site, and establish both Document and Records Control Management systems to handle management of related documentation.

Hazards and Effects Management (HEMP): Proprietary and Licensed Technology Assessment is an integral component of the Hazards and Effects Management system. This commonly and minimally would require that all proposed novel technologies be subject to a relevant and robust risk assessment process prior to their approval for use.

Planning and Procedures: It is often the case that the selection of technology has a critical impact on the implementation and operation of facilities. As such the Proprietary and Licensed Technology Assessment has an important influence in the process of planning and proceduralisation. It is also important that interfaces with existing systems are understood and assessed.

Implementation: The Proprietary and Licensed Technology shall be effectively implemented and suitably integrated in to the surrounding systems. This will include ensuring the OPU has the capability to operate the technology and maintain its integrity.

Assurance: From time to time, and based on planned schedules, the Proprietary and Licensed Technology Assessment process shall be subject to PETRONAS Assurance activities.

Management Review: The suitability, adequacy, and effectiveness of Proprietary and Licensed Technology Assessment process shall be periodically reviewed by Senior / Upper Management of the OPU as part of their formal and periodic Management Review processes at site.

2.0 PROPRIETARY AND LICENSED TECHNOLOGY ASSESSMENT

2.1 OVERVIEW

This section deals with the adoption of proprietary and licensed technology and presents a strategy for ensuring that it does not adversely affect the HSE performance, other business aspects, and success of the organization.

The adoption of proprietary and licensed technology is often driven by the desire to improve productivity and financial performance. It is essential that effective change management and design integrity processes are applied to ensure sufficient controls are in place to manage the risks posed by the technology.

Aim

The aim of Proprietary and Licensed Technology Assessment is:

To confirm that Proprietary and Licensed Technology is specified, designed, configured, commissioned and operated to contribute to effective risk management in the context in which it is installed.

For PETRONAS OPU's, this aim requires a sufficient understanding of the approach and method of application of Proprietary and Licensed Technology to be able to make a suitable assessment of risk as required by both the systems for management of change (for modifications to existing facilities) and design integrity (for creation of new facilities). It also requires the use of a methodology which facilitates the assessment whilst not contravening the IPR and licensing requirements.

Effective implementation of Proprietary and Licensed Technology Assessment is the responsibility of the OPU.

Expectations

When implementing a Proprietary and Licensed Technology Assessment process, the OPU shall ensure that the following expectations, as a minimum, are delivered:

Equipment and systems shall be designed with due cognisance of the risks associated with its specific operational environment and interfaced equipment. This precludes the adoption of technology as an autonomous "black-box", unless it's interaction with its operational environment (conditions, interfaces, nearby facilities, personnel expertise, inputs, outputs, etc.) has been comprehensively and formally considered and the results adopted as part of the design process.

Sufficient information shall be made available to be able to determine that suitable risk assessments have taken place and been acted upon. To facilitate the assessment of proprietary and licensed technology sufficient information needs to be made available. IPR and licensing agreements should be carefully evaluated at the contracting stage to ensure that sufficient information will be made available.

Novel technology shall be validated to ensure that it is capable of meeting its HSE risk management expectations. The validation of novel technology is essential in evaluating whether it will deliver the expected performance and for evaluating risk exposures. Validation should be systematic deploying a range of techniques including the use of realistic physical testing.

Ensure operators are aware of risks inherent in the technology and have sufficient information to be able to operate the equipment effectively. The training of personnel tasked with operating the technology and maintaining its integrity should have sufficient knowledge to be able to effectively manage normal operational, as well as abnormal and upset, conditions.

HCU/OPU may develop a dedicated PLTA document outlining how the HCU/OPU is going to address the requirements of this PTS or incorporate the requirements of this PTS into their respective Project Management System Manual. In either case, the requirements of this PTS shall be comprehensively addressed.

2.2 LINKS WITH OTHER SYSTEM ELEMENTS

The following HSE MS processes will normally have a direct link to the Proprietary and Licensed Technology Assessment activity. It is the responsibility of the Custodian of the activity and his/her team to ensure that all suitable links are identified for their relevance on a case-by-case basis, and if affected, appropriate control measures are identified, implemented, and monitored.

Design Integrity (DI) – PLTA will be a supporting activity related to the application of the requirements of the Design Integrity process.

Management of Change (MOC) – PLTA provides additional requirements for dealing with proprietary and licensed technology which support the MOC processes.

Process Hazard Analysis (PHA) – PHA tools for hazard identification and risk assessment (e.g., HAZOP, etc.) may be employed when assessing proprietary and licensed technology. The requirements on application, rigour and documentation of assessments within the PHA process should be adopted PLTA.

Assurance – Assurance approaches may be applied as part of assessing proprietary and licensed technology.

2.3 REQUIREMENTS

This PTS is based on, complies to, and has direct links to several requirements:

- 1) Supports PTS 60.0101, HSE MS Manual, which provides “global” HSE management system guidance for PETRONAS companies,
- 2) Recognises the requirements of compliance with legal, corporate and regulatory requirements.
- 3) Compatible with the ISO 14001 : 2004 Standard for Environmental Management Systems and the OHSAS 18001 : 1996 Specification for Occupational Health and Safety Management Systems
- 4) Based on other internationally accepted “best management practices.”

2.4 OVERALL ROLES AND RESPONSIBILITIES

The roles and responsibilities of individuals involved in the development, application, supervision, monitoring, and review of the Proprietary and Licensed Technology Assessment process shall be defined by each OPU.

However, ideally roles and responsibilities should be documented as a performance standard defining:

- **What** is to be done?
- **Who** is to do it?
- **When** or **how often** it is to be done?
- The **deliverable(s)** expected back.

The Proprietary and Licensed Technology Assessment process at the OPU shall have a Custodian with overall responsibility for managing the