

PETRONAS TECHNICAL STANDARDS

HEALTH, SAFETY AND ENVIRONMENT

STANDARD

HEALTH, SAFETY AND ENVIRONMENT MANAGEMENT SYSTEM (HSE MS)

PTS 60.0101

AUGUST 2009



PTS Circular 2009



PTS No:	60.0101
PTS Title:	Health, Safety & Environment Management System

This revision of PTS **60.0101 – Health, Safety & Environment Management System (August 2009, Revision 2)** has been updated to incorporate 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 key changes in the revised HSE MS Standard include the following:

- Enhancement in presentation of the content
- Aligned/synchronised the terms/terminologies used with that of International Standards
- Removed ambiguity and redundancy through:
 - a) Revision of the sub-elements under Element 4 - Hazards and Effects Management Process
 - b) Relocation of sub-element 5.1 - HSE Plan to be a sub-element of 2.2 - Strategic HSE Objectives, Plan and Program
 - c) Combination of sub-elements 2.1 and 2.2 into one sub-element 2.1 - Content and Dissemination of Policy
 - d) Introduction of new sub-element: 3.7 - Legal, Standards and Other Requirements
- Addition of 2 new appendices:
 - a) HSE MS Implementation Assessment Guidelines and Checklist
 - b) Correspondence between the Sub-elements of PETRONAS HSE MS, OHSAS 18001:2007 and ISO 14001:2004

The previous version of this PTS 60.0101 (**October 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.

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Revision History

Date	Version	Description of Updates	Author
19/10/'95	Rev 0	Original hard copy and CD-ROM	EPO/61
01/10/'06	Rev 1	Aligning manual with PSM, ISO, and other current best practices.	PSM Workgroup
31/03/09	Rev 2	Aligning with International Recognised HSE Management System, Standards and Best Practices.	HSE MS Review Working Group

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, 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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Acknowledgement

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HSE MS DOCUMENT OVERVIEW

Objectives

The HSE MS Document has been written to provide the guidance and tools necessary to develop and operate a management system for HSE matters in a PETRONAS HCU/OPU at the corporate and business activity levels.

It provides:

- a reference of first resort for line managers and senior staff needing guidance in the essential HSE requirements of any area of PETRONAS operations.
- a route map to more detailed references with guidance on their application.

Content

The Document provides the necessary information on HSE Management Systems as guidance for the development of an HSE Management System within the HCU/OPUs/JVs and with contractors. It includes separate documents on Contractor Management, Competence, and Assurance. HSE MS is part of an overall management system and should therefore be strictly referred to as a sub-system but for simplicity the term HSE MS is used. HSE MS is an integral part of the overall management system of the facility or the company

Each element of the HSE MS is discussed to provide materials for business process-specific HSE Management Systems. Examples include professional HSE guidance in the management of hazards that can be utilised or referenced in the activities catalogue as part of an HCU/OPU/JV HSE Case by the custodian or party responsible for that activity.

Hazards and Effects Management provides guidance on the application of tools and techniques used in the management of hazards, their effects throughout the life cycle of a field or operation, and their controls. International, industry, and other selected references are included in this manual as reference for the users.

User Base

HSE MS Document users are expected to be HCU/OPUs/JVs and selected contractors. The Document 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 organisations.

USING THIS HSE MS DOCUMENT

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 HCU/OPU/JV.

'should' indicates a preferred course of action.

'may' indicates a possible course of action

In this document the collective expressions of PETRONAS are sometimes used for convenience in contexts where reference is made to the HCU/OPU/JV 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 recommendations in these guidelines 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

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

RELATIONSHIP WITH OTHER SYSTEMS

This current revision to the HSEMS PTS is designed and written so as to harmonise with the following management system models:

- ISO 14001:2004
- OHSAS 18001:2007 International Safety Management
- Malaysian Standards (MS1722)
- Process Safety Management (PSM)
- PETRONAS Corporate Sustainability Framework
- *Other HSE management best practices*

The HSE Management System (HSE MS) approach was developed as a way of fully implementing essential elements in a structured manner, to ensure that the organisation, procedures, and practices are in place and can be shown to be working effectively. This methodology is based upon the principle that all hazards within the business must be identified, understood, assessed, and either eliminated or suitably controlled. This requires an assessment of all the activities that the HCU/OPU/JV is engaged in to determine the ones which have HSE-critical elements. Understanding and control is achieved by applying the Hazards and Effects Management Process (HEMP) in progressively more detail as more information becomes available.

This Document makes extensive reference to other PETRONAS Technical Standards (PTS) and other publications. In the drive towards standardisation, these documents refer to an increasing extent to international standards such as ISO, and industry standards such as Process Safety Management (PSM).

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Objective

The objectives of this document are to:

- Provide PETRONAS HCU/OPUs/JVs with complete and comprehensive guidance on all aspects of an HSE Management System.
- Guide standardisation of HSE management system in PETRONAS HCU/OPUs/JVs
- Promote a common framework recognisable by contractors and suppliers worldwide thereby easing prequalification, assessment, and interfacing of management systems and joint preparation of Safety (HSE) Cases.

Scope and structure

This Document on HSE Management Systems effectively describes both the 'what' and the 'how' and draws extensively from those systems which already exist within the Group, such as incident reporting, emergency response, permits-to-work, etc.

Other key areas identified in this document, particularly those which address the standards and guidelines on process safety requirements, are described in greater detail in accompanying documents as in Relevant PETRONAS Technical Standards & PETRONAS Technical Guidelines

PETRONAS HSE Management System

A management system describes the way an organisation is managed with respect to its stated objectives. It does this by concentrating on critical activities, ensuring that they are properly controlled and those measurements are made and reported so as to enable monitoring of overall performance and identification of areas for improvement. Management systems provide continuity, a consistent and structured approach, identify improvement opportunities, and can be used to demonstrate that controls supported by procedures and documentation are in place. The introduction of such systems is required in some areas by legislators. In PETRONAS the changing face of the business, including the increasing use of contractors for non-core business activities requires more, rather than less, formalisation of the business processes.

The benefits and stability afforded by management systems are self-evident, particularly in helping to identify gaps in the existing management structure. However, for management systems to be successful, it is essential to avoid rigidity, bureaucracy, over-complexity, and the suppression of innovative thinking.

The focus must be maintained on the critical issues. Most management systems have in common a basic 'plan,' 'do,' 'check,' and 'act / feedback' (PDCA) loop. Figure 1 shows this basic process, which provides the basis for most ISO-related systems and best-practice approaches as well.

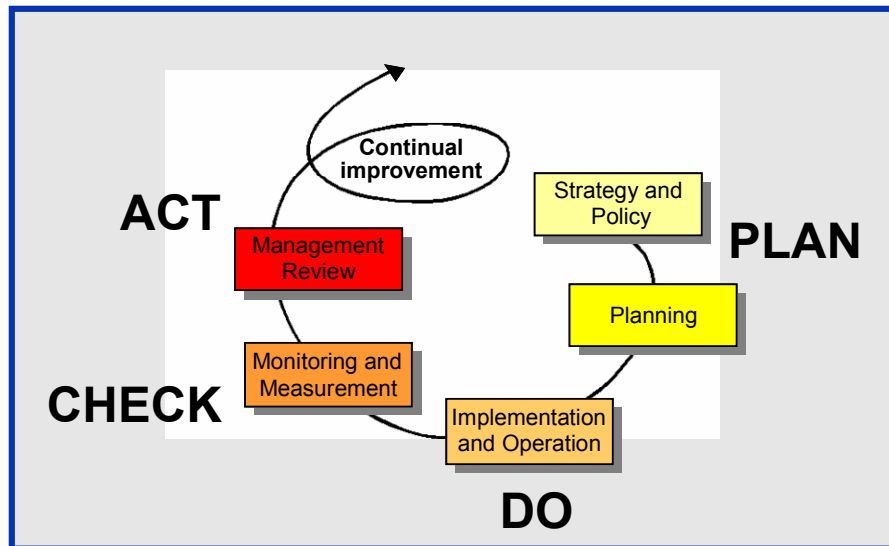


Figure 1 - The PDCA + Continual Improvement Loop

Within an HCU/OPU, a number of processes will be ongoing and typically these might include Survey Operations, Concept Development, Design, Construction, Production and Maintenance, and Decommissioning / Abandonment. Each of these processes contributes to the 'do' or 'implement' part of the Corporate Business Process Loop and each have a 'plan', 'do', 'check' and 'feedback' loop of their own. Figure 2 gives a graphical presentation of this layered management system concept. Within each process there are a number of activities and tasks which have their own Business Process Loop.

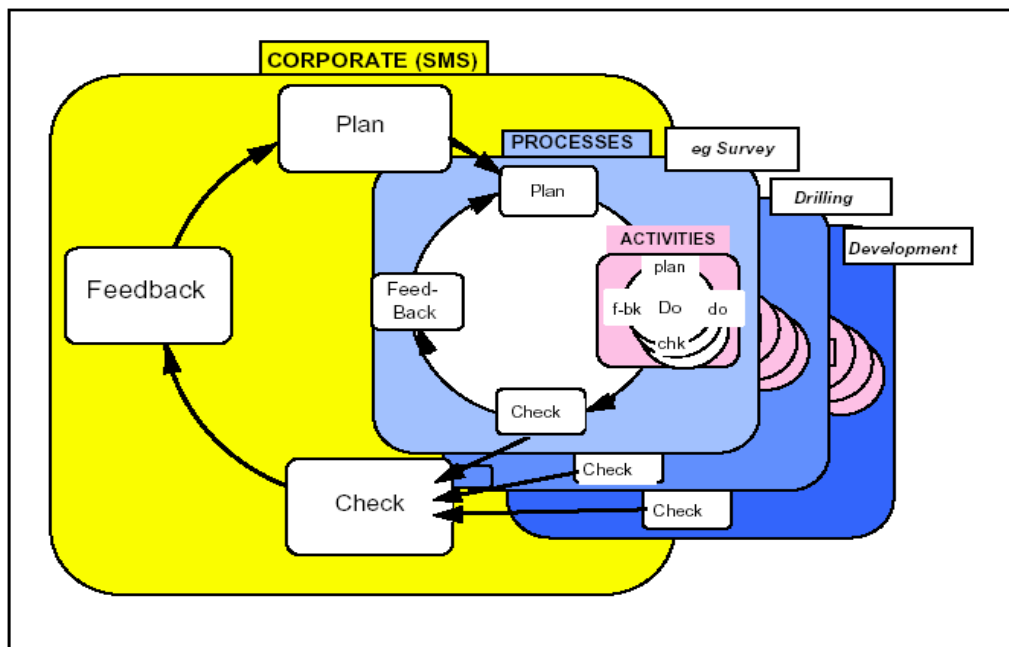


Figure 2 - HSE Management System at corporate, process, and activity levels

Any management system which was to describe the Business Process Loop for every activity and task would be completely unworkable. The key therefore is the identification of those critical activities which require formalised controls. In the case of business processes involving Health, Safety, and Environment, identification of HSE-critical activities is done using a technique called the Hazards and Effects Management Process (HEMP).

1.0 Leadership and Commitment

This chapter addresses the top-down commitment and company culture necessary for success in the *systematic management of HSE*.

Management and supervision shall be regarded as being fully committed to HSE by all staff and contractors. They are to be seen as providing a leading role towards constant improvement through leadership and action planning.

1.1 Visibility

Requirements

- a) Top management of each company or worksite shall provide strong and visible leadership to promote a culture in which all employees share a commitment to HSE.
- b) Top management shall:
 - i. Set a personal example in day to day work by:
 - Putting HSE matters high on the agenda of meetings, from Board downwards.
 - Communicating the importance of HSE considerations in business decisions and in communication with stakeholders.
 - Immediate and visible response and involvement in case of incidents or other abnormal events related to HSE.
 - Seeking internal and external views on HSE.
 - Recognising achievement.
 - ii. Demonstrate commitment to implementing the HSE MS and achieve internationally recognised certification of the system (e.g. ISO 14001, OHSAS 18001), by ensuring that the necessary resources, milestones and reviews are allocated within the Business Plan.
 - iii. Communicate HSE expectations to employees by developing an HSE policy.
 - iv. Promote the sharing of HSE lessons learnt.

Procedures, Documents and Records

- refer to 1.3

1.2 Proactive in Target Setting

Requirements

- a) Top management shall be proactive in target setting by integrating PETRONAS HSE targets into their business activities *including the issuance of Annual Letter of HSE Assurance*
- b) Jointly developing and discussing with their managers, employees and contractors HSE 'result' and 'activity' improvement targets and indicators for continual improvement
 - i. Ensuring staff shall have HSE 'results' and 'activity' targets in their appraisal.
 - ii. Participating in the review of all HSE 'result' and 'activity' indicators.

Procedures, Documents and Records

- refer to 1.3

1.3 Informed Involvement

Requirements

To demonstrate leadership and commitment, top management shall show informed involvement in HSE issues. This shall be achieved by leaders:

- a) *Reviewing the progress both in the development and content of HSE Management Systems and Safety or CIMA report e.g. by being actively involved and show leadership initiative in HSE activities and reviews, at both local and remote sites.*
- b) *Making available the appropriate resources and expertise to meet targets*
- c) *Attend relevant HSE trainings*
- d) Being fully aware of the high priority areas for improvement identified in the HSE Management System, particularly in relation to legal compliance and stakeholder issues and the status of the follow up actions.
- e) *Being personally involved in the improvement efforts arising from the formal 'Management Review' of the HSE Management System.*

In addition to the above 1.1-1.3 requirements, leadership and commitment is further demonstrated by:

- attendance at and chairing HSE meetings
- receiving and acting on HSE reports
- promoting HSE topics in company meetings and in company publications
- nominating high-potential staff for HSE positions
- developing an open approach to external liaison with authorities and the general public
- conducting HSE assurance or inspections personally
- emphasising plans for achieving HSE objectives
- participating in the execution of HSE Plans
- holding HSE review and analysis sessions
- including HSE performance data, etc. on agendas for board meetings
- *participating in Management safety walkabout*
- *participating in incident investigation & report review*
- communicating with contractors on HSE matters
- attending HSE meetings / conferences outside the company
- allocating experienced and competent personnel to develop and maintain the HSE MS system
- setting specific HSE tasks and targets for individuals and departments for continual HSE performance improvement
- *discuss and review with employees, suppliers and contractors progress against meeting specific 'results' and 'activity' HSE targets.*
- *demonstrate active personal participation in HSE activities such as training, reward and recognition schemes, industry/contractor workshops, conferences and audits*

Procedures, Documents and Records

- Minutes from management meetings
- Feedback from site visits & inspections
- Endorsement of HSE Cases and Plans by senior management
- Minutes of meetings with contractors
- Reports on incident investigations
- Reference to HSE topics in company meetings and in company publications
- Awards & recognition events for HSE performance

- Speeches / papers / publications on HSE related topics by company personnel in public domain
- Minutes of formal HSE MS Management Reviews
- HSE Tasks and Targets in staff appraisals

2.0 POLICY AND STRATEGIC OBJECTIVES

OPUs/JVs shall have a written HSE Policy in line with the Group policy statement on Health, Safety and Environment as a minimum. In setting strategic objectives and developing HSE Plan, OPUs/JVs management shall consider the overall risk levels of its business activities taking into consideration the legal requirements, technological change, emerging issues and key stakeholders expectations.

2.1 Content & Dissemination

2.1.1 Content

Requirements

- a) The OPUs and JVs (with management and operational control) HSE and associated policies shall be available to relevant parties and shall:
 - i. Be consistent with the PETRONAS policy statement on Health, Safety and Environment and include commitment to take reasonable and practicable steps to prevent and eliminate the risk of injuries, occupational illnesses and damage to properties as well as conservation of the environment.
 - ii. Be relevant and take into consideration the current and *future nature and scale of the activities, products and services of the OPUs and JVs*
 - iii. Approved and signed by the MD/CEO of the respective OPUs/JVs and be kept current.
- b) The MD/CEO of OPUs and JVs shall be the custodian of the HSE policy and be responsible for its review.
- c) *At least once a year the HSE policy shall be reviewed* taking into account the continued relevance of its intent, scope and adequacy as part of the formal HSE Management System review. (note: employees participation in policy review - Refer 8.0 Management Review)
- d) *Contractor HSE policies shall be consistent with the OPUs/JVs policies.*

Procedures, Documents and Records

- PETRONAS Policy Statement on Health, Safety & Environment
- OPU/JVs HSE Policy
- Daughter Policies e.g. OPU policies on smoking, alcohol and drug etc. - Guiding Principles e.g.: Group Land Transport Safety Guiding Principles,
- Drug & Alcohol Abuse Employment Guideline,
- Business Plan / Strategic Objectives
- HSE Plan
- OHSAS 18001 Guidelines
- ISO 14001 Guidelines
- ISM Guidelines
- OSHA '94 (Applicable to Malaysia only)
- MS 1722 OSHMS Guidelines (Applicable to Malaysia)

2.1.2 Dissemination

Requirements

- a) The HSE Policy shall be communicated to all employees and *key stakeholders e.g. contractor, visitor, supplier etc*
- b) *The HSE policy shall be readily available to the public in a language and format that is easily understood.*
- c) All employees and contractors shall be informed of the HSE policies and their personal role in meeting the requirements of the policies.
- d) Records shall be maintained to demonstrate that employees and contractors have received this information.
- e) *Any changes in HSE Policy shall be communicated to all employees and contractors*

Procedures, Documents and Records

- Attendance records of employees (company and contractors) attending HSE induction/briefing covering HSE Policy
- OPU/JV communication procedure

2.2 Strategic HSE Objectives, Plan and Program

2.2.1 Strategic HSE Objectives

Requirements

- a) *Each OPU/JV shall establish and maintain documented health, safety and environmental objectives, at each relevant function and level within the company.*
- b) Strategic objectives shall be in line with the PETRONAS policy statement on Health, Safety & Environment, OPU/JV HSE Policies and business activities taking into consideration the legal

requirements, technological change, emerging issues and key stakeholders expectations.

- c) The strategic objectives shall provide a framework for setting and reviewing HSE Plan and targets to ensure continual improvement.

Procedures, Documents and Records

- OPU/JV Business Plan
- Legal Register
- PETRONAS Guideline for Business Conduct

2.2.2 HSE Plan

Requirements

- a) Within its Business Planning Cycle, the OPU/JV shall prepare HSE targets and plans annually in line with the OPU/JV HSE policy and strategic objectives. The targets and plans shall clearly identify accountable parties and milestones and shall be linked to the Business Plan.
- b) HSE Plans shall cover such activities as exploration, new developments, existing operations, modifications, acquisitions, abandonment programmes, research and development, product development, etc.
- c) *HSE Plans shall take into account present and anticipated future legislative and regulatory requirements (identified in registers of legislation), intolerable risks, technological options, financial, operational and business requirements and expectations of stakeholders. (to define 'stakeholders')*
- d) OPU/JV HSE targets and plans shall be communicated to employees.

Procedures, Documents and Records

- a) *Business Plans*
- b) OPU/JV HSE Plan
- c) *HSE Objectives and Targets*

2.2.3 HSE Program and Activities

Requirements

- a) *Detailed HSE Programs and Activities shall be developed to support the annual HSE Plan. The programs shall establish clear milestone and schedule with respective accountable parties assigned. HSE Program shall be developed to support the mitigation measures arising from the risk assessment.*
- b) *Key Performance Indicators (KPI) shall be established for all HSE programs.*
- c) *KPI shall be monitored, tracked, analysed and reported to ensure effective and timely implementation of the programs.*
- d) *All HSE programs and activities shall be cascaded to relevant departments, communicated and promoted through various platforms to engage all staff and contractors in enhancing HSE culture.*

Procedures, Documents and Records

- *Register of Health, Safety and Environmental Legislation and Obligations.*
- *Risk assessment report e.g. aspect/impact assessment, HRA, JSA, etc.*
- *Record of communication to relevant departments*
- *Procedure for the updating and maintaining register of HSE Legislation and Obligations*
- *Departmental HSE programs and activities*

3.0 ORGANISATION, RESPONSIBILITIES, RESOURCES, STANDARDS AND DOCUMENTS

This chapter addresses the organisation of people, resources and documentation for sound and sustainable HSE performance.

The organisation and resources shall be adequate for its purpose. Responsibilities at all levels shall be clearly described, communicated and understood. Staff shall be developed following structured competency assessment and training systems.

3.1 Roles and Responsibilities (Organisational structure and responsibilities)

Requirements

- a) The organisational structure, roles, responsibilities, authorities, accountabilities and interrelations (e.g. partners, contractors, regulators) necessary to implement the HSE MS shall be defined, documented, communicated and reviewed at regular intervals.
- b) Top management of the organisation shall appoint (a) management representative (s) who shall have clearly defined roles, responsibilities, authority and resources for ensuring that HSE MS requirements are established, implemented and maintained in all locations and spheres of operation within the organisation
- c) *The Management Representative shall be accountable to Top Management and should have sufficient knowledge of the company and its activities, and of HSE issues, with sufficient authority to undertake the role effectively. They shall regularly report on the performance of the HSE MS to top management for review and as a basis for improvement.*
- d) The application of the HSE MS to a local operation or plant shall be the responsibility of the local line management, in accordance with the asset management hierarchy.
- e) *All HSE Critical Activities shall be identified and recorded in the HSE MS (see 3.8 Documentation and Control HSE-MS) and HSE Case(s) (see 4.5 Statutory HSE Risk Assessment Requirement). Responsibilities shall be assigned to every HSE critical activity and inputs and outputs necessary for its control recorded. Performance standards and mechanisms for verification shall also be in place.*
- f) Employee (company and contractors) competencies for HSE critical activities shall be defined and responsibilities and requirements associated with the control of the activities understood by the employee.

Procedures, Documents and Records

- Organisation Chart
- Job Descriptions including HSE responsibilities
- Catalogue and specification of HSE Critical Activities
- HSE tasks and targets in staff appraisals
- HSE performance criteria in "scorecards"

3.2 Management Representative(s) and HSE Advisors

Requirements

3.2.1 Management Representative (MR)

- a) *The HSE Manager (or equivalent) shall be appointed as Management Representative*
- b) The Management Representative shall have direct access to top management.
- c) Ensuring that the OPU/JVs HSE Management system is established implemented and maintained in accordance to HSEMS PTS.
- d) Reporting to Top Management on performance of management system for review including recommendations for improvement

3.2.2 HSE Advisors

- a) *HSE Advisors shall be HSE competent persons who meet the relevant regulatory and professional requirements to be able to provide professional HSE advice.*
- b) HSE Advisors shall have direct access to Top Management
- c) HSE Advisors shall monitor and communicate information on HSE issues (and best practice from internal and external sources.
- d) HSE Advisors shall collate HSE performance reports and maintain HSE performance data for internal use & external reporting to local authorities.
- e) HSE Advisors shall provide input to Top Management for the review and co-ordinate the preparation and verification of the annual HSE Report.
- f) HSE Advisors shall maintain a schedule of HSE audits/inspections and participate in the review of findings from all audits / inspections / incident investigations.

Procedures, Documents and Records

- Specification of HSE Critical Activities for which Management Representative & HSE Advisors are responsible
- Job Description of Management Representative & HSE Advisors
- HSE Inspection/Audit/Review Programme
- Competence Requirements for HSE Advisor roles
- Minutes of HSE MS Review meetings
- HSE MS Manual and change register
- Audit and Review reports and follow-up
- Annual HSE reports

3.3 Resources

Requirements

- a) Top management shall provide sufficient resources to ensure the effective operation of the HSE MS and effective management of risks. This shall include provision of resources for:
 - i. prompt rectification of HSE-related deficiencies identified by the company or regulators
 - ii. on-going verification that HSE Critical systems function in accordance with the design intent and objectives
 - iii. ongoing training to maintain and enhance competencies
- b) *Establish recruitment, selection and placement processes to ensure that personnel are qualified, competent, and physically and mentally fit for their assigned tasks*
- c) Current resource levels shall be sufficient to meet the requirements for staffing all HSE critical roles and shall be regularly reviewed. *Procedures shall ensure that any changes in resource level do not increase HSE risk e.g. leave rotations shall ensure resource does not drop to a level that will compromise HSE Critical Activities and shall comply with the requirement in 5.3 - Management of Change.*

Procedures, Documents and Records

- Approved organisation chart
- Minimum acceptable resource levels for HSE critical activities (manning philosophy)
- Leave schedules/rotas
- Recruitment, selection and placement /organisation change procedure

3.4 Competence

Requirements

- a) All HSE critical activities shall have defined competency levels recorded in the Hazard register/safety/CIMAH report
- b) *All personnel who perform HSE critical activities are HSE critical staff and require appropriate experience, qualifications and training to ensure they are competent to undertake these important risk control measures.*
- c) An HSE competency assurance process shall be in place for all HSE critical employees (company and contractor). This process shall be documented and the record of competencies to be maintained
- d) The competency requirements of all HSE critical activities shall be periodically reviewed and improved. The competence of employees shall be reassessed and shortfalls addressed.

Procedures, Documents and Records

- *Competence Assurance System Procedures & Records*
- Training matrix
- Training programmes
- *Competence Standards*
- *Individual appraisal*

3.5 Contractors

Requirements

- a) HSE risk shall be formally assessed for every contract prior to the invitation to tender
- b) *A person within the company shall be identified for every contract as being responsible for all activities in the contracting process and the execution of the contract.*
- c) Contractor HSE competence shall be assessed against the HSE risk in every contract prior to contract award
- d) *Contractor mobilisation shall be conditional upon receipt of an acceptable HSE Plan based on the level of HSE risk and suitable interface arrangements to ensure compliance with the company HSE MS. All high-risk contracts shall have a documented demonstration as to how the risks from hazards and effects are reduced to ALARP. This can be in the form of a HSE Case for major contracts or an HSE Plan.*
- e) *Contracts shall specify an inspection / audit timetable, action to be taken in case of non compliance with standards, terms and conditions defining reward or penalties for HSE performance and the requirement for at least an annual formal review of HSE MS for contracts running for long periods.*
- f) Companies are able to demonstrate that the HSE MS of contractors are subject to continuous improvement in the course of project execution.
- g) *Evaluation of Contractor HSE performance shall be conducted after the completion of the contract as part of project close out requirement*
- h) Clear deliverables and performance standards are agreed to and system are put in place to assure HSE and technical compliance

Sample of Procedures, Documents and Records

- Contractor HSE management procedures
- Contractor HSE pre-qualification procedures
- Assessment of Contract HSE Plans
- Register of contractors, pre qualified to carry out company work
- Records/database of contractor performance on existing and previous company contracts
- HSE Cases and HSE Plans
- Contractor HSE MS and plans (including bridging documentation)
- Database or list of contracts and contract holders
- HAZOP, QRA, project risk assessment etc.
- Monitoring reports on HSE requirements as per contracts
- Contract close-out report

3.6 Communication

Requirements

- a) *Composition of HSE committee shall comply with the regulatory requirements.*
- b) The hierarchy of HSE meetings and information flows within the organisation shall be described and documented.
- c) All employees and contractor shall be aware of key HSE information, expectations and process for raising concerns.
- d) HSE Committees shall focus on relevant HSE issues and provide a framework for communication on the management of these issues by:
 - i. *Stimulating effective two-way communication on HSE issues between management and personnel e.g. for the review of policies and procedures.*
 - ii. *engaging all staff in the implementation of HSE management*
 - iii. *serving as HSE advisory bodies to management and promoting suggestions for improvement*
 - iv. *monitoring measures taken for the prevention of accidents, their implementation and adherence*
 - v. *organising inspections and audits focused on unsafe, unhealthy or environmentally unfriendly practices*
 - vi. *reviewing reports of inspection and audits*
 - vii. *monitoring follow-up of accidents and incidents that have occurred*
 - viii. *endeavour to secure the co-operation of all persons in the promotion of HSE*
 - ix. *Advising on HSE training, instructions and guidance of workers.*
- e) Procedures for internal HSE communication shall be in place and reviewed periodically. These shall describe mechanisms for encouraging two way communications on HSE issues within the organisation.
- f) *Procedures shall be in place for the management of external communications. These shall address:-*
 - i. *HSE issues raised by stakeholders*
 - ii. *the registration and processing of public complaints*
 - iii. *data/information/collection from public/community for survey or study purposes*
 - iv. *product use and hazard communication*
- g) HSE risk and mitigation measures put in place by company.
- h) Information on the HSE policy, targets and performance shall be formally reported and made available to key stakeholders, *with a mechanism in place to collect feedback.*
- i) *All employees and contractors shall be made aware of their HSE responsibilities during their induction. Records of the HSE induction process shall be maintained.*
- j) Methods shall be in place to motivate staff to be more aware of HSE controls and to develop an HSE Culture. This can include:
 - i. *the direct and personal interest shown by a supervisor in his subordinate's work through immediate recognition or criticism. This remains the most powerful motivational and behaviour modification technique in HSE matters.*
 - ii. *HSE performance boards sited in prominent locations with regular update that provides*

focus to the HSE effort.

- iii. *establish consequence management based on appropriate HSE indicators*

Procedures, Documents and Records

- *Procedure for internal communication and reporting*
- *Procedure for managing external communications*
- *HSE Meeting Minutes*
- *Incentive and suggestion schemes*
- *Register of complaints from staff and public*
- *Register of suggestions for improvement*
- *Overview of meeting types, frequency, participants, objectives etc.*

3.7 Legal, Standards and Other Requirements

Requirements:

- a) *The OPUs/JVs shall develop procedures to identify the relevant legal, standards and other requirement applicable for their operations. This includes tracking on new requirements, changes and deviation, and monitoring of compliance.*
- b) *All action plans identified to meet new, changes and deviation to the legal, standards and other requirements shall be endorsed by the Top Management.*
- c) *The list/register shall be kept and maintained to demonstrate compliance.*
- d) *Communication process shall be established to disseminate the information and changes to the employees, contractors and relevant third parties.*

Procedures, Documents and Records

- *Host Country Legislative Requirements Register*
- *Applicable standards and other requirements (e.g. Kyoto Protocol, Basel Convention, Montreal Protocol, etc.)*
- *OPU/JV owned established HSE Legal and Other Requirements Register*

3.8 Documentation & Control - HSE MS

Requirements

- a) A system shall be in place for the management and control of documents in paper and/or *electronic format. This shall include formal administration, custodianship and review frequency requirement for technical correctness and communication of correct use.*
- b) There shall be a manual that describes an HSE MS compliant with the guidance contained in this document and international standards. The manual shall be updated and upgraded in line with requirements for continual improvement.
- c) The function of the manual is to describe or reference the processes, documents and standards used to manage HSE and assist employees and contractors in understanding how the company will meet the objectives of the HSE Policy.
- d) Manual shall be accessible to employees and contractors in the most effective format.
- e) All the documents required for the maintenance of HSEMS shall be identified and control to ensure relevancy. This shall include Legal register, Hazard register, procedures/working instructions/documents referred in the HSE Manual.

Procedures, Documents and Records

- HCU/OPU/JV HSE Management System Manual
- *Documentation Management & Control procedure*

4.0 HAZARDS & EFFECTS MANAGEMENT PROCESS

Hazards & Effects Management Process describes the identification of HSE hazards and evaluation of HSE risks, for all activities, products and services, and development of control and recovery measures to reduce HSE risks to as low as reasonably practicable (ALARP).

There are 4 steps in the HEMP process namely: 'identify', 'assess', 'control' and 'recover'.

An HSE risk assessment shall be conducted for all activities within the control and influence of an HCU/OPU/JV which include:

- acquisition, divestment, abandonment or merger of business entities
- design and development, commissioning, operation and decommissioning of facilities and services
- manufacturing, storage, transport, use and disposal of new and existing product

4.1 Identification of Hazards & Effects

Requirements

- a) The HSE MS shall include procedures for the systematic identification of the health, safety and environmental 'hazards, effects and aspects' that may either affect, or arise from, the activities and services of the OPU/JV. These shall cover routine, non-routine, start-up, shutdown and emergency operating conditions and activities of all personnel inclusive of contractor working at OPU/JV facilities.
- b) *Procedures for HEMP shall be based on established PTS* and shall include a process for updating the hazard, effects and aspect/impact inventories/registers as a result of plant facility changes, process and technology changes or findings from e.g. job hazard analyses, inspections or incident analyses and completion of corrective action undertaken to address the risks. This procedure shall be linked to the Management of Change procedure.
- c) The scope of the identification step shall include those activities that the company can have control of and over which it can be expected to have an influence. It shall cover the whole *lifecycle of an activity. (e.g. from inception through to decommissioning and disposal)*.
- d) *Identification of HSE hazards shall take into account the hazards identified through assessments such as CHRA, QRA, CIMA, Safety Report, Fire Risk Assessment, HAZOP, HAZID, EAI, EIA, etc.*
- e) A comprehensive inventory or register of HSE hazards and environmental aspects shall be maintained in OPUs/JVs.

Procedures, Documents and Records

Refer to 4.5

4.2 Assessment

Requirements

- a) *The OPU/JV shall develop and maintain procedures to assess the HSE risks and significance of the identified 'hazard, effects and aspects' for all operations and assets, compliant with PETRONAS Technical Standards.*
- b) All hazards, effects and aspects/impacts identified in the HEMP process shall be ranked based on the risk matrix.
- c) *A qualitative assessment of risk is adequate for most situations but when the risk level is intolerable a quantitative risk assessment (QRA) may be required.*
- d) In all cases identified risk reduction measures shall be undertaken to bring the risk to a level deemed 'as low as reasonably practicable' (ALARP).
- e) Risk assessment and significance evaluation methodology taking into account the severity of the consequence, frequency of the activities and probability of the incident occurrence as per HSE Risk Assessment Matrix.
- f) *A complete review of the assessments (hazard register and aspect tables/registers) shall be conducted minimum every five (5) years.*
- g) Assessments shall be conducted by a team comprising competent personnel and the personnel directly involved with the risk.

Procedures, Documents and Records

Refer to 4.5

4.3 Control Measures

Requirements

- a) HEMP procedure shall describe the process of establishing control measures based on the risk assessment. *Hierarchy of controls (elimination, substitution, isolation, engineering, administrative & Personal Protective Equipment) shall be applied to reduce the risk level.*
- b) Control measures identified through risk assessment shall be implemented to bring the risk level to ALARP. This shall be maintained to ensure its integrity and continual improvement to further lower the risk.
- c) The control measures established shall be commensurated with the risks where the responsibilities and accountabilities for their implementation are clearly defined.
- d) *Performance against each controls indicator shall be monitored and measured routinely. The results shall be trended and reviewed.*
- e) *Control measures shall be reviewed and updated whenever there are changes or in light of incidents and industry best practice and included in HSE Plans.*

Procedures, Documents and Records

Refer 4.5

4.4 Recovery Measures

Requirements

- a) HEMP procedure shall describe the process of establishing recovery measures based on the risk assessment. Recovery measures such as early warning system, medical response, emergency response, oil spill response, fire fighting equipment shall be evaluated and applied to minimise the consequence of the event
- b) In the operations phase established recovery measures must be maintained to ensure its integrity and continual improvement to further lower the risk.
- c) The recovery measures established shall be commensurate with the risks where the responsibilities and accountabilities for their implementation are clearly defined.
- d) *Performance against each recovery measures indicator shall be monitored and measured routinely. The results shall be trended and reviewed.*
- e) *Recovery measures shall be reviewed and updated whenever there are changes or in light of incidents, post mortem of drills/exercises and industry best practice and included in HSE Plans.*

Procedures, Documents and Records

- OPU/JV Emergency Response Call Out and Duty Roster (internal)
- Contact numbers for external agencies
- OPU/JV Emergency Response Procedures
- OPU/JV Oil spill clean up procedures
- OPU/JV Medical Emergency Procedures
- Post mortem report of emergency exercise/drill
- Emergency exercise/drill/training plan
- Hazard and Effect Register

4.5 Statutory HSE Risk Assessment Requirement

Requirements

- a) *The OPU/JVs shall identify Statutory Risk Assessment Document and document those critical operations and installations, which require a fully documented demonstration that risks have been reduced to a level as low as reasonably practicable (ALARP) to comply with relevant regulatory requirements e.g HSE Case, CIMAH, CHRA & EIA.*
- b) The Statutory Risk Assessment Document should also accurately reflect current practice at the location or site and be reviewed as per regulatory requirements.
- c) The Statutory Risk Assessment Document should demonstrate that controls in place reduce risks to ALARP.
- d) The Statutory Risk Assessment Document shall detail activities that must be discontinued or restricted in given circumstances. These circumstances might be when HSE critical equipment is not available, during adverse weather or when particular non-routine hazardous activities are being carried out. The Statutory Risk Assessment Document shall be endorsed by the Asset or Process Owner and by those managing the asset or operation.
- e) *Retention period of documents shall be defined according to requirement stated specifically by the relevant authority.*

Procedures, Documents and Records

- Hazard register
- Environmental Aspect Impact Register
- Environmental Impact Assessment Report
- Chemical Health Risk Assessment Report
- Quantitative Risk Assessment
- Control of Industrial Major Hazard
- Safety Report
- Fire Risk Assessment
- Hazard Operability Study
- Manual of Permitted Operations (MOPO) [Applicable to E&P]
- OPU/JV HEMP Procedure
- OPU/JV Standard Operating procedures and work instructions
- PTS 60.0401 Hazards and Effects Management Process
- HSE Critical Activity Catalogue