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### Abbreviation

<table>
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<tr>
<th>Abbreviation</th>
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<tr>
<td>“Director-General”</td>
<td>Director-General, Department of Mineral Fuels</td>
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<td>“DMF”</td>
<td>Department of Mineral Fuels</td>
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<tr>
<td>“PCD”</td>
<td>Pollution Control Department</td>
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<td>“RD”</td>
<td>Revenue Department</td>
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<td>“ONEP”</td>
<td>Office of Natural Resources and Environmental Policy and Planning</td>
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<td>“PTIT”</td>
<td>Petroleum Institute of Thailand</td>
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<td>“EEZ”</td>
<td>Exclusive Economic Zone</td>
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<td>“Guidelines”</td>
<td>Master Thailand Decommissioning Guidelines</td>
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<td>“IMO Guidelines and Standards”</td>
<td>International Maritime Organization Guidelines and Standards for the Removal of Offshore Installations and Structures on the Continental Shelf and in the Exclusive Economic Zone</td>
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<td>“LC”</td>
<td>Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matters, 1972, the so-called London Convention</td>
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<td>“NESAC”</td>
<td>National Economic and Social Advisory Council</td>
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<tr>
<td>“Petroleum Act”</td>
<td>Petroleum Act B.E. 2514 (A.D. 1971), as amended</td>
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<td>“BAT”</td>
<td>Best Available Technology</td>
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<td>“NEQA”</td>
<td>Enhancement and Conservation of National Environmental Quality Act B.E. 2535</td>
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<td>“DEA”</td>
<td>Decommissioning Environmental Assessment</td>
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<td>“EIA”</td>
<td>Environmental Impact Assessment</td>
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<td>“BPEO”</td>
<td>Best Practical Environmental Option</td>
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<td>“PP”</td>
<td>Public Participation</td>
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<td>“2P”</td>
<td>Sum of Proved Reserves and Probable Reserves</td>
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**Definitions**

Unless otherwise indicated, the following words and expressions in this document have specific meanings as given below.

**“Decommissioning” or “Decommission”**: To abandon wells, decommission, move or destroy pipelines, offshore structures, onshore structures, petroleum reservoirs, facilities, machines, obstacles and other materials which are no longer of use to the concession areas; to fill in cavities, wells, ditches, boreholes and make petroleum operations area suitable for the environment. The definition also includes usage of offshore structures, onshore structures, pipelines, petroleum reservoirs, facilities, machines, or other materials for other purposes under the decommissioning program approved by the Director-General.

**“Installations”**: Wells, offshore and onshore structures, pipelines, petroleum storage, facilities, equipment and other objects used for exploration, production, storage or transportation of petroleum.

**“Offshore Structures”**: Any platforms relevant to petroleum operations, consisting of well platforms, production platforms, gas-heating platforms and other platforms, whether constructed collectively or separately.

**“Onshore Structures”**: Production well stations, production stations and other components of those production well stations and production stations; including concrete bases, structures, sub-stations, terminal stations, ports, factories and accommodation.

**“Pipelines”**: Pipes or other similar objects that concessionaires use for conveying, transporting or undertaking of the petroleum produced by concessionaires from the production field to the production station, storage, points of sale or disposal, points of purchase, and points of export; including other pipeline accessories for pipelines installation or pipes, relevant equipment, pipes used in petroleum operations. However, pipelines exclude any pipe, accessory or structures governed by laws other than the Petroleum Act.

**“Wells”**: Exploration wells, production wells, disposal wells or other wells relating to petroleum operations.

**“Facilities”**: Equipment used in petroleum operations, pipeline peripheral equipment relating to structures, and other peripheral equipment or assets relating to the structures.

**“Petroleum Storage”**: Petroleum storage and tanker.

**“Remaining Reserves”**: Those quantities of hydrocarbons which are anticipated to be commercially recovered from known accumulations from a given date forward. [ = Reserves / SPE]

**“Obstruction”**: Any debris resulting from onshore and offshore decommissioning, or remaining objects used in petroleum operations that may obstruct or interrupt the usage, or pose hazards to fishery or onshore and offshore navigation.
1. INTRODUCTION

The decommissioning of installations used in petroleum exploration and production must be undertaken by the concessionaire upon the termination of petroleum production, expiry of concession and integrity of the installation. This is to ensure that the installations do not become an obstacle or hazard to other activities in the area including transportation, agricultural activities, marine navigation, exploration and research of marine resources. The process of decommissioning must take into account not only the laws of the country to which the resources belong, but where such installations are located offshore, also international laws and agreements between the countries. Therefore, decommissioning is a process which the concessionaire must carry out and the relevant government agencies must ensure proper compliance with both domestic and international laws.

Thailand has been engaged in the exploration and production of petroleum for over 30 years, with the majority of petroleum produced from the Gulf of Thailand. Currently, there are more than 200 platforms in the Gulf, and with the potential for further development leading to plans for the installation of an additional 10 platforms per year for next 10-15 years. As such, it is likely that in the next 20 years there may be over 400 platforms in the Gulf.

Many fields have been producing for more than 20 years and their facilities and equipment have been used for a long time, and many field production rates have declined. It thus seems an appropriate time to consider the decommissioning of the installations for which the remaining reserves are no longer economically justifiable or where such installations are no longer used or considered safe for use.

The Department of Mineral Fuels (DMF), as the responsible agency for promoting and governing the petroleum exploration and production business under the Petroleum Act, must regulate the decommissioning process under international and domestic laws and regulations. In this regard, technical safety operations, environmental management, decommissioning costs and public acceptance must be integrated.

To achieve this, DMF has established a working group to draft guidelines governing the decommissioning of the installations related to petroleum operations. This working group consists of relevant government agencies including the Pollution Control Department (PCD), Revenue Department (RD), Office of Natural Resources and Environmental Policy and Planning (ONEP), Petroleum Institute of Thailand (PTIT), as well as the concessionaires. Its objective is to establish decommissioning guidelines that are executable and acceptable to all related parties. The guidelines are drafted by applying past studies and international principles as a basis while ensuring maximum benefit to the country. This undertaking is divided into four general categories: technical feasibility with respect to Thailand, environmental management, legal considerations, and financial management.
Submission procedure and approval process

During Production Period
- Concessionaires, Co-ventures, Third Party Assignees, and Associated Assignors and assignees
- 2P < 40% and the remaining production period is less than five years
  - Financial Strength Test (1)
  - Decommissioning Environmental Management Plan (2)
  - DG’s Approval
  - Final Decommissioning Programme
  - DG’s Approval
- Decommissioning Execution
  - Submit Closeout Report for Decommissioning
  - DG’s Approval
  - Release of financial securities for decommissioning activities (if any)
  - Perform monitoring by concessionaires
  - Security is placed (if required)
  - Appoint third party
  - Submit Closeout Report for Post-decommissioning
  - DG’s Approval
  - Release of financial securities for monitoring activities (if any)
  - Release of decommissioning obligation under S.80/1

During Extension Period
- Initial Decommissioning Program
  - DG’s Approval

Revocation of Concession

Voluntary Decommissioning
- Financial Security
2. OBJECTIVES

- To provide guidance to concessionaires in onshore and offshore decommissioning upstream installations in the Thai territory and exclusive economic zone (EEZ\(^1\)). This includes the provision of detailed processes and timeframes for submission of the decommissioning programs, contents of the programs, placement of financial security, and the approval process for the decommissioning program.

- To guide concessionaires in preparing decommissioning programs and in carrying out decommissioning activities by employing Best Available Technology (BAT) while taking into account health, safety, environment and public acceptance, and

- To determine appropriate measures for studying and evaluating environmental impacts before adopting policies to prevent detrimental effects on the environment, as well as minimizing the impacts of decommissioning activities on the environment.

3 SCOPE

The guidelines cover the onshore and offshore decommissioning of installations for the petroleum exploration and production business in the Thai territory and EEZ under the Petroleum Act and concession agreements.

4. LEGAL FRAMEWORK

4.1 Thailand Decommissioning Obligations

Before the enactment of the Petroleum Act (No.6) B.E. 2550 (A.D.2007), neither specific nor detailed guidelines existed for decommissioning obligations, except for very general rules, described below:

- Clause 40 of Ministerial Regulation No.12 B.E.2524 (A.D. 1981) requires concessionaires to decommission their installations, stating that concessionaires must restore relevant onshore and offshore production areas to their former conditions and that all installations must be removed entirely within three months unless the Director-General directs otherwise.

- Clause 15 (4) of Model Concession, DMF/P 2 (ชธ/ป 2), annexed to Ministerial Regulation No.17 B.E.2532 (A.D. 1989), says that, at the end of the concession agreement, concessionaires must transfer certain parts of their installations to the government without any remuneration and must complete the remaining decommissioning portions within three months.

- Section 80 of the Petroleum Act B.E. 2514 (A.D. 1971) says concessionaires must perform their petroleum operations under sound principles and good petroleum industry practice regardless of whether the concessions have been terminated. In addition, the Petroleum Act imposes two general obligations. First, it forbids concessionaires to cause unjustifiable interference with the use or conservation of the sea and living resources. Second, concessionaires must take appropriate measures under good petroleum practice to prevent pollution arising from oil, mud and any other substance.

Before the enactment of Petroleum Act (No.6) B.E. 2550 (A.D.2007) and the ensuing ministerial regulations, the law simply prescribed general decommissioning obligations and did not specify any decommissioning method or specific guidance. Moreover, the general concepts proved impractical, i.e., the three-month period decommissioning completion may not be achievable for the number of installations to be decommissioned and the availability of contractors and equipment. Relevant agencies, including both governmental and private entities, recognized such deficiency and eventually Petroleum Act (No.6) B.E. 2550 (A.D.2007) was promulgated in October 2007. The amendments included Sections 80/1 and

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\(^1\) Article 55 of UNCLOS 1982: “The exclusive economic zone shall not extend beyond 200 nautical miles from the baselines from which the territorial sea is measured.”
80/2 which specifically impose decommissioning obligations and the placement of financial security obligations on concessionaires as follows:

- Section 80/1 requires concessionaires to submit a decommissioning program together with its estimated decommissioning costs for the approval of the Director-General before decommissioning begins.

- Section 80/2 further requires concessionaries to place security to ensure that their decommissioning obligations are observed under the approved program.

However, Section 80/1 and 80/2 do not provide specific detailed decommissioning requirements. Other particulars, including the rules, procedures, conditions and schedules of the submission process, and the placement of financial security, will be designated in a ministerial regulation. The new ministerial regulation to be issued will add more realistic timeframes and specific details.

In addition, the guidelines will be based on international practices, including United Nations Convention Law of the Sea 1982 (UNCLOS), International Maritime Organization (IMO) Guidelines and Standards and London Convention (LC) and the London Protocol to cover all details of decommissioning.

5 ENVIRONMENTAL FRAMEWORK

5.1 Environmental Principles

The environmental principles adopted for the decommissioning guidelines are intended to direct globally-accepted environmental concepts enshrined in international environmental law. They are all influenced by acceptable international conventions, including the Rio Declaration, Agenda 21, and Convention on Biological Diversity. The definition of each established principle and its consequences on the environmental policy toward decommissioning consist of the following:

5.1.1 Precautionary Principle

The 1992 Rio Declaration on Environment and Development set out a series of principles defining the rights and responsibilities of states. It introduced the concept that development could not be considered in isolation from environmental concerns and established sustainable development as customary law.

The Rio Declaration stated: "In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation."

For decommissioning, the following implications have been defined:

- The precautionary principle gives grounds for regulating particular discharges posing a potential risk to the marine environment

- In the event of uncertainty with regards to the impacts on marine mammals and/or protected species, the concessionaire should perform supplementary studies and implement additional measures to observe the impacted areas and ensure that such impacts are prevented or minimized

- In the event of uncertainty when considering the decommissioning option for contaminated pipelines, the environmental assessment should assume the worst-case scenario and choose the best practical option, mitigation and monitoring plans based on this assumption.
5.1.2 Environmentally Responsible Business Practice

Agenda 21 is a "comprehensive plan of action at international, national and local levels by UN, government and major groups in every area in which humans impact on the environment".

Chapter 30 of Agenda 21 refers to the "responsible and ethical management of products and processes from the point of view of health, safety and environmental aspects. Towards this end, business and industry should increase self-regulation, guided by appropriate codes, charters and initiatives integrated into all elements of business planning and decision-making, and fostering openness and dialogue with employees and the public."

Operators should promote an environmentally responsible decommissioning process by ensuring that:
- Self-regulation concerning health, safety and environment, guided by appropriate codes, are integrated into all elements of business planning and decision-making
- The same operating standards are adopted for all locations
- Operators work with contractors to guarantee environmentally sound practices along the supply chain
- Operators facilitate the transfer of pipeline decontamination technology, and
- Transparency and effective communication channels are maintained with stakeholders.

5.1.3 Environmentally Friendly Technologies

Chapter 34 of Agenda 21 describes environmentally friendly technologies as those that "protect the environment, are less polluting, use all resources in a more sustainable manner, recycle more of their wastes and products, and handle residual wastes in a more acceptable manner than the technologies for which they were substitutes."

Environmentally friendly technologies should therefore be employed by operators to minimize potential environmental impacts. They can be applied, but not limited, to:
- Cutting techniques
- Pipeline decontamination technology
- Waste storage, treatment and disposal (injection wells), and
- Consideration of energy consumption and emissions when assessing the available decommissioning options.

In addition, BAT should be used by operators to ensure that discharges, emissions and waste are minimized. Technologies designed to reduce and eliminate potential discharges into the sea should be included when considering mitigation measures for the environmental management plan.

Mercury decontamination technology should be developed to ensure diffusion of knowledge and development of practical techniques and procedures to protect the environment in a cost-effective manner.

The application of this principle toward carbon dioxide sequestration should also be considered to encourage the reuse of pipelines and depleted wells, therefore reducing carbon dioxide emission from gas processing.

5.1.4 Polluter-Pays Principle

This was established by the Organisation for Economic Co-operation and Development (OECD) and was incorporated into Thai legislation by the *Enhancement and Conservation of National Environmental Quality Act B.E.2535 (NEQA)*, Section 6 (2).
This principle is self-explanatory but has evolved to include the cost of mitigation, monitoring and cleaning up. Its aim is to enforce polluters to internalize the environmental externalities of economic activities so that the prices of goods and services fully reflect the costs of production. The use of air, water and land for waste is integrated into the economic sphere through economic instruments including permits, fines, taxes and assurance bonds.

Although the polluter-pays concept is stipulated in Thai legislation, amendments within Thai legislation would be required to enforce it successfully.

The present implications of this principle are as follows:

- For a resulting oil spill or pollution from any other source in violation of the accepted standards, fines should be used to implement this principle, and
- In case of mortality to marine mammals and/or protected species, the concessionaire will be held responsible and subjected to penalties stated in relevant laws.

5.1.5 Public Access to Information, Participation, and Justice in Decision-Making Affecting the Environment

The tenth principle of the Rio Declaration on Environment and Development stated that: “Environmental issues are best handled with the participation of all concerned citizens, at the relevant level. At the national level, each individual shall have appropriate access to information concerning the environment that is held by public authorities, including information on hazardous materials and activities in their communities, and the opportunity to participate in decision-making processes. States shall facilitate and encourage public awareness and participation by making information widely available.”

This principle is relevant to the environmental assessment and the transparency of the process, especially in revealing information on hazardous materials and activities in the vicinity and the right for nearby communities to have a say in what goes on in their ‘backyard’. This principle could bear significance in the following situations:

- The methods used to remove structures from the sea
- The condition of pipelines and residual deposits left in place
- The location of dismantling yards, and
- The final destination of hazardous materials.

5.2 Decommissioning Environmental Assessment (DEA)

NEQA governs the present environmental impact assessment (EIA) process in Thailand. Implementation of these laws is supported by various ministerial notifications.

No specific requirements currently exist for EIAs for the decommissioning of oil and gas installations. However, it is commonly accepted that an environmental assessment is required to manage the decommissioning process.

The current EIA policies prescribed by NEQA present certain constraints and limitations to the consideration and management of the cumulative impacts, the ability to fully address alternatives or effective mitigation measures, etc.

Effective environmental management requires the integration of environmental assessment into the decommissioning planning and approval process. Therefore, the DEA process, established for decommissioning, is to be integrated into the decommissioning process and included in the final decommissioning program.

The DEA process is based on a regional approach and consists of two key development stages, namely a regional development stage (consisting of a Regional Decommissioning
Environmental Assessment (RDEA) report) and a project development stage (consisting of two sub-processes, namely Best Practical Environmental Option (BPEO) and Decommissioning Environmental Management Plan (DEMP).

Details of the DEA process appear in Environmental Policies and Management Recommendations (Attachment A, Section 4.1.2).

5.2.1 Regional Decommissioning Environmental Assessment (RDEA)

Representing an EIA report performed at a regional level, RDEA provides a common basis for and simplifies the preparation of Decommissioning Environmental Management Plan, and assesses cumulative impacts and their significance. Different scenarios for assessment including the worst-case scenario will be used.

In performing an RDEA report, decision-making public participation (PP) is required at two different stages, namely the early scoping stages and during the review of the draft document stage.

5.2.2 Best Practical Environmental Option (BPEO)

Comparing the relative merits of different options based on pre-defined assessment factors, BPEO offers a systematic approach to decision-making in which the practicality of all reasonable options is examined: technical feasibility; environmental concerns, including waste management; risk and safety; costs; and public acceptance.

The BPEO process yields the best practicable option under a given situation and an auditable trail to support the final decision. This allows trade-offs, priorities and value judgments to be made consistently and transparently.

In performing BPEO, consultation-level PP is required as input for the BPEO tool to identify the preferred decommissioning option.

5.2.3 Decommissioning Environmental Management Plan (DEMP)

A document containing environmental management plans, DEMP is established in response to potential impacts of a selected decommissioning option.

Based on the results of RDEA, DEMP focuses on the selected decommissioning option, field-specific technology, mitigation measures and monitoring plans. It is performance-based with an emphasis on achieving the environmental objectives stated in the RDEA, and is used more as a tool for improved environmental design and management.

PP is also required to inform stakeholders about the selected decommissioning option, mitigating measures and monitoring plans contained within DEMP.

5.3 Environmental Compliance Audit

Compliance with the required conditions of RDEA and proposed management plans in DEMP should be verified and audited.

Third-party verification and audits are required for specific activities in the decommissioning process including cleaning and decontamination of pipelines, implementation and effectiveness of proposed mitigation measures, waste management plans, and post-decommissioning monitoring plans.

Audit reports should not only be regularly generated where relevant to document the findings, but also be used as a basis to develop any corrective action required.
Decommissioning Environmental Management Plan (2)

**DECOMMISSIONING PROCESS**

- Final Decommissioning Program (environmental part)
  - BPEO Tools to select preferred decommissioning options
  - Selected decommissioning options
  - DEMP
  - Close-out Requirements

- Approval by designated authority

- Decommissioning Execution

- Closeout Report for Decommissioning

- Post-Decommissioning Monitoring Execution

- Closeout Report for Post-Decommissioning

**Available decommissioning options from the RDEA Report**

- BPEO required

- No Additional assessment required

- BPEO Toolkit to select preferred option

- Preferred decommissioning options

- Review and endorse

- Selected decommissioning option(s)

- Draft Decommissioning Environmental Management Plan (DEMP)

- Review and endorse

- Final DEMP

**RDEA Report**

- Scoping preparation

- Draft Report preparation

- Review and endorse

- RDEA Report
6. GENERAL REQUIREMENTS

6.1 Submission of Decommissioning Programs

Under Sections 80/1 and 80/2 of the Petroleum Act, four groups are jointly responsible for complying with the decommissioning requirements:

(i) Concessionaires under Sections 24
(ii) Co-venturers under Section 47
(iii) Associated assignors and assignees under Section 49, and
(iv) Third-party assignees under Section 50.

6.1.1 Submission process

The concessionaire is required to submit its decommissioning program together with the financial-strength test report to the Director-General for approval when one of the following conditions is triggered.

6.1.1.1 During production period

(a) Total remaining reserve is lower than 40%

The concessionaire is required to submit an initial decommissioning program within two years after the total remaining reserve drops below 40%. In addition, it must submit a final decommissioning program at least two years before the execution of decommissioning or the end of the production period.

- Initial decommissioning program

Once the reserve drops below 40%, an initial decommissioning program together with the financial-strength test report must be submitted to the Director-General within two years after the receipt of the official notice from the Director-General.

However, if there is a significant discrepancy between the concessionaire’s and the designated authority’s estimation of the remaining reserve, the concessionaire has two alternatives:

Alternative 1 The concessionaire provides an explanation and/or additional supporting documents with the necessary information for determining the total remaining reserve for the Director-General’s reconsideration, or

Alternative 2 The concessionaire proposes a qualified third party, approved by the designated authority, to verify the estimation method.

In either case, an official notice must be issued within 30 days to inform the concessionaire of the outcome of the reconsideration. Under no circumstance should the reconsideration process exceed one year after the first notice is issued.

If the results, affirmed by the Director-General, shows that the total remaining reserve is below 40%, the concessionaire is required to submit the initial decommissioning program within two years after the official letter is issued.
• Final decommissioning program

The concessionaire is required to submit a final decommissioning program at least two years ahead of the commencement of the decommissioning or the end of the production period, whichever is earlier.

The above-mentioned process is described below.

(b) Total remaining reserve is equal to or greater than 40%

If the remaining production period is less than five years, although the total remaining reserve is equal to or greater than 40%, the concessionaire must submit a final decommissioning program with the financial-strength test report at least two years ahead of the commencement of decommissioning or the end of the production period, whichever is earlier.

The above-mentioned process is described below.

6.1.1.2 During extended production period

The concessionaire must submit an initial decommissioning program within the first two years of the extended production period. Then, a final decommissioning program must be submitted at least two years ahead of the commencement of decommissioning or the end of the extended production period, whichever is earlier.

• Initial decommissioning program

The concessionaire is required to submit the initial decommissioning program together with the financial-strength test report to the Director-General within the first two years of the extended production period.

• Final decommissioning program
The concessionaire is required to submit the final decommissioning program at least two years ahead of the commencement of decommissioning or the end of the extended production period, whichever is earlier.

The above-mentioned process is described below.

\[
CD = \text{Commencement of Decommissioning} \\
EEPP = \text{End of Extended Production Period}
\]

### 6.1.1.3 Revocation of the Concession

If the concession agreement is revoked under Section 51 of the Petroleum Act, the concessionaire is required to submit its final decommissioning program to the Director-General within six months of the issuance of the official revocation order. It is also required to place its financial security in the full amount of the anticipated decommissioning cost estimated by the Director-General. Please refer to the details of the acceptable types of financial security accepted by DMF and placement of financial security in the Financial Security and Tax Guidelines (Attachment B).

The above-mentioned process is described below.

### 6.1.1.4 Voluntary Decommissioning

The concessionaire may voluntarily submit a final decommissioning program at any time before the two years ahead of the actual commencement of decommissioning.

The above-mentioned process is described below.

\[
CD = \text{Commencement of Decommissioning}
\]

If the concessionaire does not submit its initial or final decommissioning program and the financial-strength test report within the above-mentioned period, the Director-General, at
his discretion, may call in the financial security in the total amount of the anticipated decommissioning cost estimated by the Director-General. Please refer to the details of the acceptable types of financial security accepted by the DMF, placement of financial security, and release of financial security in the Financial Security and Tax Guidelines (Attachment B).

6.1.2 Approval Process

6.1.2.1 Approval of initial decommissioning program

The concessionaire is required to submit its initial decommissioning program together with the financial-strength test report to the Director-General within the period mentioned above.

Approval must be given within 90 days upon receipt of all documents and information.

Any amendment to the approved initial decommissioning program at the instruction of the Director-General or at the request of the concessionaire is subject to the above-mentioned process.

6.1.2.2 Approval of final decommissioning program

The final decommissioning program must be submitted to the Director-General within the period mentioned above. If the concessionaire has already submitted its initial decommissioning program, it does not need to include the financial-strength test report again.

The concessionaire must obtain relevant permits and documents for undertaking decommissioning activities. Otherwise, it must demonstrate that if the final decommissioning program is approved, it will be able to obtain such permits and documents.

Approval must be given within 180 days from the receipt of all documents and information.

Any amendment to the approved final decommissioning program at the instruction of the Director-General or at the request of the concessionaire is subject to the above-mentioned process.

Once approved, the concessionaire can launch the decommissioning process earlier than the date prescribed in the approved final program, provided that it notifies the Director-General.

The concessionaire is responsible for dismantling, removing, leaving in place, or transferring ownership of the installations under the approved decommissioning program. These activities must be completed within five years from the expiry of the concession period.

6.1.2.3 Approval of extension to decommissioning period

If the decommissioning is not completed within five years from the expiry of the concession period, the concessionaire may submit a request to extend the decommissioning period to the Director-General at least 90 days ahead of the end of the decommissioning period. Up to two extensions to this period can be made, and each extension cannot exceed two years.

Approval of the extension request must be given within 90 days from the receipt of the request.
6.1.2.4 Approval of closeout report of decommissioning activities

The concessionaire must submit a closeout report for decommissioning activities within one year from the completion of decommissioning under the approved final decommissioning program. However, if the decommissioning takes longer than one year, the concessionaire must submit the closeout report under the schedule specified in the approved final decommissioning program.

Approval of the closeout report must be given within 120 days from the receipt of all relevant information and documents.

6.1.2.5 Approval of closeout report of post-decommissioning monitoring activities

As regards post-decommissioning monitoring requirements, the concessionaire may choose to proceed in one of these two ways:

Alternative 1 Perform monitoring activities on its own, or

Alternative 2 Remit a fund equivalent to the cost of the post-decommissioning monitoring to DMF or a designated authority. A third party, jointly appointed by the concessionaire and the Director-General, must implement post-decommissioning monitoring measures on behalf of the concessionaire.

The concessionaire must periodically submit a monitoring report to the Director-General under the approved final decommissioning program and a closeout report for decommissioning. In addition, it must submit a closeout report for post-decommissioning monitoring within six months (unless otherwise specified in the approved final decommissioning program and the closeout report for decommissioning) from the completion of post-decommissioning monitoring activities.

Approval to the close-out report must be given within 90 days from the receipt of all relevant information and documents.

6.1.3 Transfer of Installations

6.1.3.1 Transfer to the government

Under the concession agreement, concessionaires are responsible for transferring designated installations to the government without remuneration. The Director-General must inform the concessionaire at least three years ahead of the expiry of the concession period to specify which installations are to be transferred.

The concessionaire must then submit the following reports and permits to relevant government agencies:

- Environmental baseline report
- Facility condition report
- Anticipated decommissioning costs, and
- Approval given by the Petroleum Committee for the transfer of land ownership under Section 65 of the Petroleum Act (if applicable).

The concessionaire must collaborate with the Treasury Department if the transfer involves immovable properties.

The concessionaire is required to provide details and necessary permits in the final decommissioning program.
6.1.3.2 Transfer of cross-border installations

Since some installations may be used by more than one concessionaire and therefore the decommissioning carried out by one concessionaire may impact the operation of another, the concessionaire may proceed in one of these two ways:

**Alternative 1** The concessionaire agrees with other co-beneficiary concessionaires to enter into an agreement to transfer the ownership of the installations. Before executing the agreement, a draft must be attached with the final decommissioning program.

**Alternative 2** The concessionaire submits a request to DMF to transfer the installation to the government. If the DMF agrees in principle, the concessionaire must proceed with the transfer as noted in Item 6.1.3.1.

In either case, the concessionaire is required to submit all details and permits relevant to the transfer in the final decommissioning program.
The above-mentioned submission procedure and approval process is illustrated below.
6.2 Financial Security and Tax Guidelines

Section 80/2 of the Petroleum Act requires concessionaires, including co-venturers, associate assignors and assignees, and third-party assignees, to place financial security to ensure that the decommissioning under Section 80/1 of the Petroleum Act, including both decommissioning and post-decommissioning monitoring, is carried out in its entirety. A number of types of financial security can be placed, either individually or a combination.

Details of financial security appear below:

<table>
<thead>
<tr>
<th>Security:</th>
<th>Irrevocable standby letter of credit, performance bonds, government and state-enterprise bonds, cash placed in escrow accounts, and alternative forms of securities approved by DMF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surety:</td>
<td>Parent or associated company(^3) guarantees or alternative forms of sureties approved by DMF</td>
</tr>
</tbody>
</table>

To decide whether it is financially capable of fulfilling its decommissioning obligations, the concessionaire needs to conduct a financial-strength test. Generally, the test is monitored by the concessionaire itself. If it fails the test, it is required to place financial security. Further, DMF may request a review of the financial strength if any of the following happens:

- The transfer of ownership to other parties, either directly or indirectly, taking into account the ultimate shareholders
- Any event potentially resulting in a significant negative impact on the financial conditions of the concessionaire, and
- Any violation of laws or regulations resulting in a significant impact(s) on public health, safety and the environment.

If the concessionaire fails to comply with DMF’s request, DMF may give the concessionaire a remediation period. Continued failure to comply allows DMF to implement compulsory measures for the concessionaire to act.

To determine its financial strength, the concessionaire must execute the financial-strength test and submit a test report to DMF along with the decommissioning program as referred to in Item 6.1.

The financial-strength test is made up of two levels.

1. Concession-level test

   This test evaluates the financial strength of each concession based on the remaining reserve or net cash flow under the following conditions:

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\(^3\) Parent or associated company must meet specified qualifications, including credit rating and listed companies on a stock exchange, to issue valid guarantees.
If the total remaining reserve is at least 40%, the concessionaire will not be required to undergo the Condition 2 test. Passing the Condition 1 test means passing the financial-strength test, in which case the concessionaire is not yet required to place financial security for decommissioning.

If the total remaining reserve is lower than 40%, the concessionaire must evaluate its net cash flow to determine whether it satisfies Condition 2 above. Failure to satisfy both conditions is tantamount to failing the concession-level test and the concessionaire must move on to the company-level test.

2. Company-level test

This test assesses the financial strength of a company holding one or more concessions by evaluating the company’s net worth or net cash flow. In this test, the concessionaire is required to assess the financial strength based on one of the following options:

<table>
<thead>
<tr>
<th>Option 1:</th>
<th>The company’s net worth/shareholder equity certified by a third-party auditor, reflecting only assets in Thailand, exceeds twice the total anticipated decommissioning costs of all concessions held by the company. (The company’s net worth must be allocated in proportion to the investment cost under a particular tax regime.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Option 2:</td>
<td>The company’s net cash flow after tax and liabilities, reflecting only assets in Thailand, exceeds 1.25 times the total anticipated decommissioning cost. (The company’s net cash flow after tax and liabilities must be calculated in proportion to the relevant tax regime.)</td>
</tr>
</tbody>
</table>

The concessionaire may select either option. If it fails the selected option, it is considered to have failed the financial-strength test and must place the financial security.

Once the concessionaire fails the test or once the extended production period is equal to five years, whichever is earlier, it is required to place financial security. If the failure of the financial-strength test occurs first, the concessionaire must place financial security on a prorated schedule on a total remaining reserve/net cash flow basis. If there is equal to five years remaining under the concession agreement, the concessionaire is required to place financial security in full.

The guidelines further require that the anticipated decommissioning cost should be certified by a third-party auditor and re-certified every three years. In addition, the financial-strength test must be updated annually and submitted to DMF within 150 days from the end of the calendar year.

DMF will release the financial security, either in part or in full, upon the concessionaire’s completion of the decommissioning obligations. A portion of the financial security may be released if a closeout report for the completed part is submitted and approved by the Director-General.

With the exception of sureties, the financial security placed in the above-mentioned context must be treated as petroleum business expenditure and is tax deductible, which will be amortized under the straight-line method for the remaining life of the concession or remaining production period.


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4 This condition applies when the average petroleum price for the last 12 months, based on the average monthly Dated Brent Benchmark, is at least 40 USD per barrel.
The Financial Strength Test (1)

Concessionaires, Co-ventures, Third Party Assignees,
and Associate Assignors and Assignees

Last 5 years of extended production period

Financial Strength Test

Level 1: Concession-Level Test

Condition 1: 2P ≥ 40%

Yes

No security required

No

Condition 2: Concession Net Cash Flow after Tax > 1.25 of the Anticipated Decom Cost

Yes

No security required

No

Level 2: Company-Level Test

Select either

Option 1: Company Net Worth > 2 times of Total Anticipated Decom Cost (only assets in Thailand) OR Option 2: Company’s Net Cash Flow after Tax and Liabilities > 1.25 times of Total Anticipated Decom Cost

Yes

No security required

No

Security placed

Decommissioning execution

Submit closeout report

DG’s Approval

Release security in full/partial

- Perform monitoring by concessionaires
- Security is placed (if required)

Perform monitoring by appointed third party

Submit closeout report

DG’s Approval

Release security in full/partial (if any)

Release of decommissioning obligation under S.80/1
7 DECOMMISSIONING PROCESS

7.1 Pre-Decommissioning

7.1.1 Selection of decommissioning options

BPEO, a standard decision-making tool for deciding the preferred decommissioning option, assesses the relative performance of each decommissioning option against the established assessment criteria of technical feasibility, risk and safety, environmental impacts including waste management, costs and public acceptance.

The concessionaire needs to ensure that all available decommissioning options described in the approved RDEA report have been compared and assessed through BPEO in a systematic and transparent way. Assessment tables and findings must be submitted with the Final Decommissioning Program.

Five interactive BPEO tools have been developed to assist the concessionaire in such assessment, as detailed in Standard Tool for Selecting Decommissioning Option Guideline (Attachment C).

To use something other than the available interactive tools, the concessionaire must consult a designated authority whether BPEO assessment is required.

If technology and key environmental issues are not covered or up-to-date by the RDEA report, additional impact assessments, mitigation and monitoring measures for those impacts may be performed to fulfill the BPEO required inputs.

7.1.2 Decommissioning Environmental Management Plan (DEMP)

As required by DEMP, the concessionaire must develop an environmental management plan specifically for the decommissioning option approved by the designated authority, covering, but not limited to, the following topics:

- Mitigation and Monitoring Plan
- Project Specific Waste Management Plan
- Emergency Response Plan
- Project Specific Cleaning and Disposal Plan, and
- Project Specific Decontamination and Disposal Plan.

The environmental management plan must be submitted with the Final Decommissioning Program. Details of DEMP are described in Environmental Policies and Management Recommendations Attachment A, Section 4.2.2).

7.1.3 Decommissioning program requirements

The contents of the decommissioning program are important to both concessionaires and relevant authorities, as it contains the list of required information to be provided by concessionaires and the submission periods for the initial decommissioning programs and final decommissioning programs.

This required information includes the proposed decommissioning techniques and work scopes, list of facilities proposed for decommissioning, risk assessment, and anticipated decommissioning costs.

These items illustrate the minimum requirements for the contents of upstream installation decommissioning which the concessionaire must provide in the decommissioning program for the designated authorities to justify whether the decommissioning will be performed under relevant legislations, standards and guidelines to minimize further safety-related or environmental impacts.
Details of the requirements are described in Content of Decommissioning Program Guideline (Attachment D).

7.2 Decommissioning Execution

7.2.1 Onshore installations

7.2.1.1 Well Plugging and Abandonment (P&A)

Onshore well P&A is an essential activity for which the concessionaire must establish an implementation plan to ensure that all wells are properly and safely decommissioned. These include, but are not limited to, production, exploration, water injection, water source and injector wells.

The primary objective of a well abandonment operation is to protect freshwater aquifers and confine hydrocarbon resources. This guideline describes setting cement plugs at critical intervals to prevent the wellbore from becoming a conduit for fluid migration, specifications of well control and instructions for well P&A under assorted circumstances.

Details of well P&A are described in Onshore Well Plugging and Abandonment Guideline (Attachment E).

7.2.1.2 Pipelines and associated structures

All surface pipelines and associated structures must be removed unless there is an opportunity to reuse them in situ. The concessionaire should ensure that the key issues of pipeline reuse, namely integrity, cleanliness/decontamination and liability transfer, are taken into consideration.

The subsurface pipelines to be left or reused in situ need verification of cleanliness and/or decontamination to ensure that their conditions will not pose future risks to soil and groundwater.

Details are described in Onshore Pipelines Decommissioning Guideline (Attachment F).

7.2.1.3 Structures and facilities

Onshore structures and facilities include infrastructure, process equipment, electrical cables, well locations, pits and buildings.

Alternatives of structures and facilities decommissioning consist of leaving them in situ, removal and reuse. In selecting the appropriate option, the concessionaire must consider various aspects including safety to human lives, environmental impacts, technical feasibility, legislation and international standard requirements and public acceptance, to ensure that facility decommissioning is properly completed.

During decommissioning, in some cases, remediation actions may be required due to contaminations from structures and facilities and/or previous operations to surrounding soil, groundwater and surface water. In these cases, the concessionaire must include the required remediation plan in DEMP.

The concessionaire must incorporate all necessary information, including site information, site assessment, stakeholder consultation and safety management plans into the final decommissioning program.

Details are described in Onshore Structures & Facilities Decommissioning and Environmental Remediation Guideline (Attachment G).
7.2.2 Offshore Installations

7.2.2.1 Well Plugging and Abandonment (P&A)

One of the decommissioning requirements for concessionaires is to plug and abandon all offshore oil and gas wells, water injection wells and water disposal wells. Cement plugs must be set at critical intervals to prevent fluid migration to freshwater aquifers and the surface offshore environment.

Before starting well abandonment, wellbore stabilization using drilling fluids must be undertaken. Cement plugs must be placed across uncased portions, between uncased and cased portions, and across the cased portions of wellbores with the surface cement plug on top. All annular space must also be plugged with cement. All plugs are to be tested for integrity.

Details are described in Offshore Well Plugging and Abandonment Guideline (Attachment H).

7.2.2.2 Seabed Deposits Management

Drilled cuttings, mud chemicals and produced-water discharges are collectively known as seabed deposits. Management options include leaving these deposits in situ (undisturbed), capping in situ, removal & re-injection and removal & onshore disposal.

The concessionaire must have adequate information to evaluate physical, chemical, and biological states of these seabed deposits together with their effects on marine lives before determining its management options through BPEO.

The seabed deposits left in situ (undisturbed) and capped in situ will require an appropriate monitoring program to ensure that they do not pose further environmental impacts. The concessionaire must propose its preferred management option with a related monitoring program to the designated authority for approval.

Details of seabed deposits management are described in Seabed Deposits Management Guideline (Attachment I).

7.2.2.3 Pipelines and Associated Structures

Pipelines and associated structures cover pipelines and subsea equipment including pipeline end manifolds (PLEM), wyes, and tees.

Alternatives of pipeline decommissioning include leaving them in situ, removal and reuse. The preferred option is decided through BPEO, and the selected option must be approved by the designated authority. However, if pipelines contaminated with heavy metals are to be left in situ or reused, verification of decontamination will be a key issue.

Associated structures protruding above the seafloor and posing hazards to fishing, navigation or other users of the sea must be removed and disposed onshore. Any such items should be cleaned to a level that is safe for handling and transportation.

Details are described in Offshore Pipelines Decommissioning Guideline (Attachment J).

7.2.2.4 Structures and facilities

The decommissioning of offshore structures and facilities is divided into topside and substructure decommissioning work.

Topside decommissioning covers process equipment, piping, topside structures, living quarters, electrical and instrument equipment, etc. Topsides, where applicable, must be cleaned and decontaminated to an acceptable level before their removal for reuse, recycling and/or disposal. The cleanliness and decontamination must be audited by a third party to ensure compliance with the proposed DEMP. Details of facility cleaning and decontamination are described in Onshore
Structures and Facilities Decommissioning and Environmental Remediation Guideline (Attachment G).

For substructure decommissioning, the alternatives are to reuse, dispose of, or implement Rigs-to-Reefs. BPEO must be conducted to select the preferred option.

If Rigs-to-Reefs option is selected, the concessionaire should follow Rigs-to-Reefs Recommendations (Attachment K).

To remove substructures, piles and jacket legs must be cut by means of appropriate cutting, which, together with depth, must be considered for individual cases. The main criterion for cutting-depth evaluation is the impacts on other sea users. For example, the remains may obstruct trawling fishing vessels if cut at the seabed level, whereas disturbance to the seabed deposits may be an issue if cut below the seabed. The choice of cutting methods, however, focuses on the safety, environmental impacts and technical feasibility. BPEO must be applied to select the preferred options for cutting methods and depth.

Details are described in Cutting Methods and Depth Guideline (Attachment L).

In case explosives are a preferred cutting option, the concessionaire should follow Cutting Method by Using Explosives Guideline (Attachment M).

7.2.3 Reuse standards

Reuse of structures and facilities is a preferred option for decommissioning because of several factors including low generated waste, low environmental and safety impacts and less engineering complications. However, the integrity of aging structures and facilities is also a critical factor.

Before their reuse, integrity assessment has to be undertaken, using any appropriate techniques, typically non-destructive examination (NDE) ones; however, destructive examination (DE) techniques can be applied when required.

After integrity assessment, a technical evaluation should be conducted to ensure that the structures and facilities are appropriate for future use under new operating conditions.

If current integrity does not meet the requirements for future use, a further feasibility study is required to verify if any corrective action including repairing, refurbishment and replacement can be taken.

Details are described in Reuse Standard Guideline (Attachment N).

7.2.4 Waste Management

Fundamental to the management of decommissioning waste is the waste management hierarchy: reduction, reusing, recycling, recovery, treatment, and disposal. The concessionaire must demonstrate that the waste management hierarchy has been considered and applied where feasible. In addition, the concessionaire must ensure that the waste management contractor’s facilities and services command the technological standards by having the contractor and its facilities periodically audited.

Recommendation on selecting dismantling and disposal facilities are described in the Dismantling and Disposal Recommendations (Attachment O).

Management of waste through domestic or international channels must comply with applicable legislations and international conventions. Details are described in Waste Management Guidelines (Attachment P).

7.2.5 Safety Standards

Since decommissioning activities contain hazards that could cause injury to human lives and damage to assets, the concessionaire must demonstrate that all decommissioning activities are performed safely under applicable legislations and industrial standards.
The concessionaire must demonstrate that all decommissioning activities are performed safely under safe work practices and industrial standards. It must also ensure that all risky activities are identified and their mitigation plans are set up to properly manage all risks concerning decommissioning activities or reduce them to an As-Low-As-Reasonably-Practicable (ALARP) level.

The concessionaire must also submit a safety management plan as part of the final decommissioning program. The plan must identify all hazards and risks associated with decommissioning activities, including heavy lifting of aged structures and facilities, working with hazardous substances and contaminated equipment, structure-severing operation, dismantling and disposal activities, and mitigation measures to minimize such hazards.

Details are described in Onshore Decommissioning Safety Requirement Guideline and Offshore Decommissioning Safety Requirement Guideline (Attachment Q and R), respectively.

7.2.6 Debris Survey and Clearance

Debris survey and clearance are performed to verify the success and completion of decommissioning activities.

The scope of the debris survey is subject to the selected decommissioning options and the occurrence of any accident. If debris is found within the defined range, a wider corridor or radius may be required until no debris is found.

The concessionaire must propose the range, scope, appropriate technique, and schedule to perform its survey and clearance in the Final Decommissioning Program. The results of the survey and clearance must be included in the Closeout Report for Decommissioning.

Details of the debris survey and clearance are described in Decommissioning Monitoring Requirements Guideline (Attachment S, Section 4.2).

7.3 Post-Decommissioning

7.3.1 Project Closeout Report

A closeout report is a written document to demonstrate that the concessionaire has fulfilled decommissioning obligations. Upon submitting and receiving approval from the designated authority, its decommissioning security and liability will be released.

Closeout reports consist of two stages: decommissioning and post-decommissioning.

The Closeout Report for Decommissioning must be submitted after the completion of decommissioning activities, while the Closeout Report for Post-Decommissioning must be submitted after the completion of post-decommissioning monitoring.

Details are described in Closeout Report Requirements Guideline (Attachment T).

7.3.2 Post-decommissioning Monitoring Requirements

The main objectives of post-decommissioning monitoring are to assess environmental changes/recovery after production operations, assess the implications of the selected decommissioning option and monitor potential impacts from any remains left in situ.

Key environmental issues as specified in Environmental Policies and Management Recommendations (Attachment A, Section 4.2.1) should also be considered when planning post-decommissioning monitoring.

The frequency and duration of monitoring will be based on historical production and/or pre-decommissioning data, the selected decommissioning option and its potential impacts and acceptance by the designated authority. However, the expected maximum monitoring duration is nine years. Possible extensions/further remedial action or reduction will be based on monitoring results.
The post-decommissioning monitoring plan must be specified in DEMP and updated if necessary in the Closeout Report for Decommissioning.

The concessionaire is required to submit periodical monitoring reports under an agreed post-decommissioning monitoring program. Once its results achieve the set criteria, the designated authority will notify the concessionaire of the completion of post-decommissioning monitoring.

Details are described in Decommissioning Monitoring Requirements Guideline (Attachment S).

7.4 Third-Party Requirements

Third-party verification is required for specific decommissioning activities to ensure proper implementation of activities. Third-party undertaking generally applies for auditing and consultancy. In each case, the concessionaires must propose a qualified third party to the designated authority for acceptance.

Decommissioning activities requiring third-party work consist of:

1. Reserve verification
   To audit the development reserve estimation method proposed by the concessionaire in case of a significant discrepancy with that of the designated authority.

2. Decommissioning cost estimate
   To audit or provide the estimated decommissioning costs for the initial and final decommissioning programs and re-verify each decommissioning cost every three years.

3. Development of RDEA report
   To prepare RDEA reports, identifying potential impacts of decommissioning activities in each defined area.

4. Development of Decommissioning Environmental Management Plan
   To prepare DEMP, ensuring consistency with that of the RDEA report.

5. Audit implementation of Decommissioning Environmental Management Plan
   To audit the implementation of specific decommissioning activities, ensuring compliance with the proposed DEMP.

Details are described in Third-Party Auditor/Consultant Qualifications Guideline (Attachment U).

8. RELEASE OF LIABILITIES

8.1 Decommissioning Liabilities

The concessionaire, co-venturers, associated assignors and assignees, and third-party assignees are released from the decommissioning liabilities under Section 80/1 of the Petroleum Act once the concessionaire completes the decommissioning activities and post-decommissioning monitoring activities of installations under the approved decommissioning program and the closeout report for decommissioning, prepared under relevant ministerial regulations and guidelines.

8.2 Residual Liabilities

The concessionaire, co-venturers, associated assignors and assignees, and third-party assignees are liable for any damages if it can be proved that decommissioning activities caused damage to the environment, people or other parties.
8.3 Transfer of Installations

Where the installations are transferred, any liabilities incurred after the transfer must be paid for by the transferee. The transferor is not liable to civil and criminal claims instituted after the transfer.