Thailand Decommissioning of E&P Installations Project

Witsarut Thungsuntonkhun, Ph.D., Petroleum Engineer
Outline

• Thailand Decommissioning Guideline Project
• Legal Issues
• Thailand Legal Framework in Decommissioning
• Rules and Regulations related End of Concession Management
Project Background

• Since May 2006 DMF had setup the Decommissioning guidelines Project to scrutinize previously identified issues, develop mitigations and obtain a mutual consensus of all involved parties

• Decision organization is from the DMF with representatives from other government departments, PTIT and industry

• Project team is resourced from the industry, PTIT, and the DMF plus other government departments as necessary
Mission Statement

“To develop Decommissioning Guidelines for Petroleum Exploration and Production Facilities in Thailand, jointly developed by all stakeholders in a practical way, utilizing past studies in order to have a consistent practice, which will help attain sustainable benefits for the Kingdom of Thailand”
Organization (Working Level)

Stakeholders (Work Groups)

Project Manager

Third Party (Int’l Consultant)

DMF

External Coordinator

PTIT's Decommissioning T/F chairman

Project Controls & Support

Deputy Project Manager

Chevron

Technical Offshore

Govt. Review

K. Thongchai (Chevron)

Technical Onshore

Govt. Review

K. Luck (PTTEP)

Environmental

Govt. Review

K. Sarin (Chevron)

Financial

Govt. Review

K. Thanyaporn (PTTEP)

Legal

Govt. Review

K. Vittawat (Chevron)

Stakeholder’s Management

K. Vichai (PTIT)

External Consultants
## Project Deliverables

### Technical
- Well Plugging and Abandonment (P&A)
- Sub-sea Cutting Methods and Depth:
- Criteria for Onshore Facilities
  - Decommissioning and Environmental Remediation
- Reuse Possibilities
- Third Party Auditor
- Decommissioning Safety Standards
- Contents of Decommissioning Programs

### Environmental
- Pipeline Decommissioning
- Seabed Deposits Management
- Explosives Guidelines
- Environmental Policies and Management
- Onshore Dismantling, Disposal and Waste Management
- Reefing Policy
- Monitoring Requirements

### Legal
- Decommissioning Approval Committee
- Scale and Timing of Decommissioning in Thailand
- Decommissioning Process and Stakeholders’ Involvement
- Release of Liability

### Financial
- Security Arrangement
- Tax Instrument
Typical Onshore Installations

- Well Location
- Pipeline (Above & underground)
- Oil & Gas Processing Facility
- Oil & Condensate Storage
- Loading Facility
- Crude / Gas Metering
1. Steel jacketed platform (shallow water)
2. Concrete gravity structure
3. Steel gravity structure
4. Floating production system
5. Steel jacketed platform (deep water)
6. Compliant tower
7. Tension leg platform
Size Comparison of Offshore Installations
Typical Offshore Installations in Thailand
Legal Issues

- Most countries don’t have decommissioning laws
- Those that do - Just starting to use them
- Unknown territory in most jurisdictions
- Most experience in US Gulf of Mexico & North Sea
Decommissioning in Thai Law (Before)

- 1971 (B.E. 2514) Petroleum Act that requires the Concessionaire to take appropriate measures in accordance with good petroleum industry practice to prevent pollution. It also states that the Concessionaire shall execute all operations in accordance with sound technical principles for good petroleum industry practice.
- Ministerial regulations No. 12, 1981 is significant in that it requires the Concessionaires to restore the area to its former state.
- Under the Model Concession contract, any asset property deemed unusable by the government must be removed within three months at the cost to the Concessionaire.

Nonetheless, the concessionaire has general obligations under statutory law (Petroleum Act and Ministerial Regulations) in addition to contractual obligations under the Concession Agreement to protect the environment, preserve fishing and navigation rights, and to decommission assets.
Concerns About Thai Laws

- Duration of the decommissioning (3 months) is impractical.
- No instructions or guidance on how the decommissioning should be conducted or what should be considered and included in a decommissioning plan.
- Only a parent guarantee is submitted to the government to guarantee concessionaire’s performance.
- No clear liability re the transfer of assets (if transferred to government) or assets that are not removed.
- The requirement to “restore as far as possible to its original condition” is subjective and not practical.
Thai Law - Amendment

• Improvement on the Petroleum Act so as to be appropriate to and consistent with the present situation and to provide flexibility for implementation.
  ➢ To add Section(s) to state that concessionaire shall be responsible for decommissioning of petroleum facilities and required to submit the plan for approval
  ➢ While the rules, procedures, and conditions to submit the decommission plan will be prescribed in the Ministerial Regulations
• Improvement on Ministerial Regulations which will address,
  ➢ The decommissioning plan submit for approval need to have the following topics
    ➢ Decommissioning Technique
    ➢ Safety and Environmental Management Plan
    ➢ Estimation of decommissioning cost
  ➢ Time frame to submit and approval of the decommissioning plan
International Decommissioning Obligations

• Global conventions and guidelines for the decommissioning of disused oil and gas facilities have been developed over the last 50 years. Fundamental to this development has been the need to establish a balance between protecting the environment, the rights of other parties (e.g., local industries, local communities) and the cost, safety and technical feasibility of the decommissioning.

• Five global conventions and guidelines that address decommissioning:
  – 1958 Geneva Convention on the Continental Shelf
  – 1989 International Maritime Organization (IMO) Guidelines and Standards
  – 1972 London Convention (LC)
  – 1996 Protocol to the London Convention

• Most of the offshore acreage in Thailand’s Exclusive Economic Zone is a water depth of less than 100 meters, with installed facilities weighing less than 4,000 tonnes. Under the IMO Guidelines, these facilities will need to be completely removed, although it is envisaged that pipelines can remain on the seabed after having been suitably cleaned.
**Legal Issues**

- **Decommissioning Approval Committee**
  - An efficient and conflict-free process requires a clearly defined and single focal point for the approval of decommissioning plans. DMF should be the main regulatory body forms a ‘Decommissioning Approval Committee’ by including representations from the other departments.

- **Scale and Timing of Decommissioning in Thailand**
  - Current inventory in Gulf of Thailand is over three hundred platforms and this is estimated that another hundred platforms may be added in the next 15 to 20 years totaling to around five hundred platform. This may require more than two decades to decommission this many platforms.
  - Appropriate timing for decommissioning of a facility in the Gulf of Thailand could be driven by various factors, e.g., depletion dates of the reserves under the seabed, concession expiry dates, capacities of onshore receiving facilities etc.
  - DMF should estimate the combined decommissioning requirements, which can be used to prepare the decommissioning capability especially appropriate development of onshore infrastructure in Thailand.
• **Decommissioning Process and Stakeholders’ Involvement**
   - Stakeholders’ consultation should be conducted to inquire their perceived level of involvement and requirements. This data can then be used to develop a decommissioning process that satisfies needs of all stakeholders.

• **Release of Liability**
   - Two possible recommended arrangements: one is to have a post monitoring program for few years after decommissioning operations, which allow government to attain confidence that the remains are not an environmental or other hazard. Other way is to assess the potential environmental risk at the end of decommissioning operations and agreed upon some kind of financial arrangements in the form of a security, insurance or guarantee will be available when needed.
Decommissioning Legal Framework

Section 80/1 provides concessionaires responsibilities on decommissioning:

- To submit the decommissioning plan including removal expenses according to the rules, procedures, and conditions in the Ministerial Regulation for approval.
- To propose the revised removal plan or expenses if there are changes in technology, equipment, materials, etc.
- To complete the removal following to the approved plan.
- In case the removal cannot be proceeded or be delayed leading to the adverse impact, removal will be conducted on behalf of or jointly with the concessionaire by using the guarantee provided in Section 80/2.
Decommissioning Legal Framework

Section 80/2 provides concessionaire an obligation to deposit a guarantee for the removal of constructions, materials, equipment and facilities under Section 80/1 according to the Ministerial Regulations:

- The guarantee can be in form of cash, Thai government bonds, a bank guarantee, or any other form.
- In case of failing to fully deposit the guarantee, concessionaire has to pay the monthly surcharge at 2% of the entire amount.
- If the concessionaire still does not deposit the guarantee and surcharge, the petroleum concession may be cancelled.
Ministerial Regulation

DMF is drafting a ministerial regulation referred to under Section 80/1 & 80/2

Draft Ministerial Regulation will consist of:

- Submission Procedures
- Scale and timing of commission
- Decommissioning Plan
- Release of Liability
- Guarantee Mechanism
- Approval Process
Decommissioning Cost Issue

OFFSHORE STRUCTURE DECOMMISSIONING

SOUTH EAST ASIA
- Water depth: 60-68 m
- No. of piles: 4
- Structure weight: 1,400-2,500 tonnes
- Cost: $4,000,000.00

GULF OF MEXICO
- Cost: $3,000,000.00

UNITED KINGDOM CONTINENTAL SHELF
- Cost: $12,000,000.00

Details of Platform
- Water depth: 60-68 m
- No. of piles: 4
- Structure weight: 1,400-2,500 tonnes

TYPICAL COST OF DECOMMISSIONING A PLATFORM (USD)
**Decommissioning Cost Issue**

**Operating Cash Flow**

Before G&G & Exploration

-200.0
-100.0
0.0
100.0
200.0
300.0
400.0
500.0
600.0
700.0
800.0
900.0
1000.0
1100.0
1200.0
1300.0
1400.0
1500.0

(Bar chart showing cash flow in $000 BOPD)

**Production Profile**

- Concessionaire may not have budget for decommissioning
- Decommissioning liability is at risk

(Chart showing production profile from Q3 2009 to Q4 2013)

Brent $69.00
Brent $80.00
Brent $91.00
Decommissioning Guidelines Project

Decommissioning Environmental Assessment (DEA) Process
DEA Process

• The proposed DEA process is based on a regional approach and consists of two key development stages,

  ➢ Development stage consisting of a Decommissioning Environmental Assessment (DEA) report; and

  ➢ project development stage consisting of

    • Best Practical Environmental Option (BPEO);
    • Decommissioning Environmental Management Plan (DEMP);
    • Decommissioning Monitoring Plan; and
    • Third-party verification and audits
Decommissioning Environmental Assessment (DEA) Report

An environmental impact assessment report should be

- prepared by collaboration between concessionaires, authorities (e.g. DMF, ONEP, PCD, etc.), and academic institutes;
- considered different scenarios including worst-case scenario;
- considering regional level including cumulative effects;
- periodically updated when technology and environmental conditions changed;

Regional demarcations for regional studies and scopes (e.g. decommissioning options to be assessed) should be agreed between operators and the regulatory authority.
Best Practical Environmental Option (BPEO)

- This tool is widely used in UK and North Sea decommissioning for oil and gas industry;
- BPEO offers a systematic approach to decision-making in which the practicality of all reasonable options is examined;
- Comparing the relative merits of different options based on pre-defined assessment factors,
- 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.
Criteria and scores

Criteria
- technical feasibility;
- environmental concerns including waste management;
- risk and safety;
- costs; and
- public acceptance

Scores
- Applied to performance level are ranging from 5 to 1
- Score 5 represents high or best case, score 1 represents low or worst case.
Decommissioning Environmental Management Plan (DEMP)

- EMP should cover at least the followings:
  - Objectives and target
  - Activities and related impacts
  - Relevant regulatory requirements
  - Schedule
  - Responsible person
  - Controls and measurements
Decommissioning Monitoring plan

- Monitoring design will be based on selected decommissioning option, its related impacts, historical monitoring data
- The plan must be approved by designated authority
- Extension or reduction of the plan can be changed depending on monitoring results and authority decision
Decommissioning Environmental Assessment, DEA

Project planning phase

- DEA Report
- Mitigation measures of each available option
- Available options and potential impacts

Project execution phase

- BPEO
- Selected option
- Environmental Management Plan

- Third party audit
- Decommissioning execution
- Executed as plan
- Obligation fulfilled and security released

- Third party audit
- Post decommissioning monitoring execution
- results satisfaction
# Decommissioning Environmental Management Plan (DEMP)

**Available options and potential impacts**

- Mitigation measures for each available option

**Mitigation measures for each available option**

**BPEO**

**Selected option**

**Decommissioning Environmental Management Plan**

- Mitigation and Monitoring Plan
- Project Specific Waste Management Plan
- Project Specific Cleaning and Disposal Plan
- Project Specific decontamination and Disposal Plan
- Emergency Response Plan
- Etc.
Environmental Compliance Audit

Environmental Management Plan

- Mitigation and Monitoring Plan
- Project Specific Waste Management Plan
- Project Specific Cleaning and Disposal Plan
- Project Specific decontamination and Disposal Plan
- Emergency Response Plan

Decommissioning Execution

Post decommissioning monitoring execution

Audited by third party registered with ONEP
End of Concession Management
We need more gas

Demand (2010-2022) avg. 1.5%
Concession System = Exclusive rights and obligations for petroleum operation under given areas for a specific given time period

- Production period
  - Thai I 30 years + (10 years extension)
  - Thai III 20 years + (10 years extension)
<table>
<thead>
<tr>
<th>Concessionaire</th>
<th>Block</th>
<th>Status</th>
<th>End of Concession</th>
</tr>
</thead>
<tbody>
<tr>
<td>BG, Chevron</td>
<td>GOT, Block 7-8-9</td>
<td>Pending</td>
<td>OCA</td>
</tr>
<tr>
<td>PTTEP Siam</td>
<td>Onshore - S1</td>
<td>Production (Oil, Gas)</td>
<td>14 Mar. 2021 (Extension 2031)</td>
</tr>
<tr>
<td></td>
<td>GOT - B6/27</td>
<td>Production (Oil-Suspend)</td>
<td>5 Feb. 2023 (Extension 2033)</td>
</tr>
<tr>
<td>PTTEP, Total, BG</td>
<td>GOT -15-16-17</td>
<td>Production (Gas/ Condensate)</td>
<td>15 (23 Apr. 2012) Extended to 2022 16-17 (7 Mar. 2023) Extended to 2023</td>
</tr>
<tr>
<td>PTTEP, Chevron, Mitsui</td>
<td>GOT -14-15A-16A</td>
<td>Production (Gas/ Condensate)</td>
<td>2036 (Extension 2046)</td>
</tr>
<tr>
<td>Chevron, Mitsui</td>
<td>GOT -12-13</td>
<td>Production (Gas/ Oil/ Condensate)</td>
<td>23 Apr. 2012 Extended to 2022</td>
</tr>
<tr>
<td>Chevron, Mitsui, PTTEP</td>
<td>GOT -10-11-12-13</td>
<td>Production (Gas/ Oil/ Condensate)</td>
<td>23 Apr. 2012 Extended to 2022</td>
</tr>
<tr>
<td>Chevron, Mitsui, PTTEP</td>
<td>GOT -12-13</td>
<td>Pending</td>
<td>OCA</td>
</tr>
<tr>
<td>Chevron, Mitsui, PTTEP</td>
<td>GOT -10A-11A</td>
<td>Production (Gas/ Oil/ Condensate)</td>
<td>23 Apr. 2012 Extended to 2022</td>
</tr>
</tbody>
</table>

**Thai I : Concession under Petroleum Act No. 1 (1973)**

[Table with concessions and details]
## Thai I: Concession under Petroleum Act No. 1 (1973)

<table>
<thead>
<tr>
<th>Concessionaire</th>
<th>Block</th>
<th>Status</th>
<th>End of Concession</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chevron, Mitsui, PTTEP, Hess</td>
<td>GOT - B12/ 27</td>
<td>Production (Gas/ Condensate)</td>
<td>14 Jan. 2028 (Extension 2038)</td>
</tr>
<tr>
<td>Exxon, PTTEP</td>
<td>Onshore - E5</td>
<td>Production (Gas)</td>
<td>15 Mar. 2021 (Extension 2031)</td>
</tr>
<tr>
<td>Chevron</td>
<td>GOT - 5-6</td>
<td>Pending</td>
<td>OCA</td>
</tr>
<tr>
<td>Pearl Oil</td>
<td>GOT - B5/ 27</td>
<td>Production (Oil)</td>
<td>8 Aug. 2031 (Extension 2041)</td>
</tr>
</tbody>
</table>
### Thai III : Concession under Petroleum Act No. 4 (1989)

<table>
<thead>
<tr>
<th>Concessionaire</th>
<th>Block</th>
<th>Status</th>
<th>End of Concession</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chevron &amp; Others</td>
<td>GOT - B8/32</td>
<td>Production (Oil, Gas)</td>
<td>31 July 2020 (Extension 2030)</td>
</tr>
<tr>
<td>Pan Orient</td>
<td>Onshore - SW1</td>
<td>Production (Oil)</td>
<td>23 July 2016 (Extension 2026)</td>
</tr>
<tr>
<td>PTTEP Inter</td>
<td>Onshore - PTTEP1</td>
<td>Production (Oil)</td>
<td>4 Feb. 2017 (Extension 2027)</td>
</tr>
<tr>
<td>PTTEP Inter &amp; Others</td>
<td>GOT - B13/38</td>
<td>Exploration</td>
<td>Exploration period</td>
</tr>
<tr>
<td>Sino US</td>
<td>Onshore - NC</td>
<td>Production (Oil)</td>
<td>11 Apr. 2011 Extended 2021</td>
</tr>
<tr>
<td>SOCO</td>
<td>GOT - B8/38</td>
<td>Production (Oil)</td>
<td>Exploration period</td>
</tr>
<tr>
<td>Pearl Oil</td>
<td>GOT - B12/32 B11/38</td>
<td>Exploration</td>
<td>Exploration period</td>
</tr>
</tbody>
</table>

Exploration Blocks that follow by /32, /38, /43, /48, and /50 which are in exploration phase.
End of Concession vs. Decommissioning

• Petroleum Act B.E. 2514 (Thai I Regime)

Section 26: The petroleum production period under any concession shall not exceed thirty years from the day following the date of termination of the petroleum exploration period, notwithstanding any petroleum production undertaken during the petroleum exploration period.

If the concessionaire has been complying with all provisions of his concession and submitted an application for a renewal of his petroleum production period not less than six months prior to the termination of the petroleum production period, he shall be entitled to one renewal of his petroleum production of not exceeding ten years on terms, obligations and conditions generally prevalent at that time.
End of Concession vs. Decommissioning

• Petroleum Act B.E. 2522 (Thai I Regime) **Section 4**: The amendment of Section 26

The petroleum production period under any concession **shall not exceed thirty years** from the day following the date of termination of the petroleum exploration period, notwithstanding any petroleum production undertaken during the petroleum exploration period.

In the event that the concessionaires wishes to apply for a renewal of the petroleum production period, the concessionaire shall submit an application for renewal thereof not less than six months prior to the termination of such period.

A renewal of the petroleum production period may be made only when the concessionaire has, not less than fifteen days prior to the termination of the petroleum production period, complied with all provisions of the concession and has agreed upon provisions, obligations and conditions prevailing at that time.

**A Renewal of Petroleum Production Period shall be made only once and such renewal shall not exceed ten years**
End of Concession vs. Decommissioning

- Petroleum Act B.E. 2532 (Thai I Regime) Section 8: The amendment of Section 26

The petroleum production period under any concession shall not exceed twenty years from the day following the date of termination of the petroleum exploration period, notwithstanding any petroleum production undertaken during the petroleum exploration period.

In the event that the concessionaires wishes to apply for a renewal of the petroleum production period, the concessionaire shall submit an application for renewal thereof not less than six months prior to the termination of such period.

A renewal of the petroleum production period may be made only when the concessionaire has, not less than fifteen days prior to the termination of the petroleum production period, complied with all provisions of the concession and has agreed upon provisions, obligations and conditions prevailing at that time.

A Renewal of Petroleum Production Period shall be made only once and such renewal shall not exceed ten years.
Petroleum Rules & Regulations

End of Concession vs. Decommissioning

- Existing law states that the production period can be extended only one time so after the 10 years extension the concession is ended and cannot extend.
- When the concession ends, concessionaire need to give all facilities and installations to the government for free and any facilities and installations that government does not want to have. Then the concessionaire needs to decommissioning.

Area of Concern

- Even the concession still has more petroleum reserve to be produced but the concessionaires may not invest until the end of concession. They will not have time to recover their investment cost, since all the facilities and installations have to give for the government for free.
- The concessionaire have to give all the facilities and installations to government for free which the government can be use those facilities and installations to continue produce petroleum. However, at the cessation of production the government has to responsible for decommissioning all those facilities and installations.
Petroleum Rules & Regulations

Area of Concern

- If the concession is going to end, then the concessionaire may stop their investment and this will cause the production from that area to decline. Therefore, this will effect the country long term gas supply.

- Even DMF would like to open that concession for bidding in order to continue produce petroleum from that area but DMF has to wait until that concession to end.

- If DMF take the facilities and installations from the concessionaires and open a new bidding round from that concession block. There will be complicate issue on decommissioning liability transfer among the old concessionaires, DMF, and the new concessionaire on the facilities and installations

“Hence, what should we do to manage the end of concession properly, efficiently and provide the long term benefit to the country?”
Ministerial Regulations No. 17 Clause 15

(1) This concession shall terminate in any of the following events:

(a) upon the termination of the petroleum production period;

(b) when the effective concession area ceases to exist by virtue of the provisions of the Petroleum Act B.E. 2514, or through the voluntary relinquishment made by the concessionaire;

(c) upon the revocation of this Concession;

(d) upon the termination of the Concessionaire’s status as a juristic person.

(2) Upon the termination of the concession, all of the obligations between the Minister and the Concessionaire shall thereupon cease to exist except those financial or special advantage obligations which have not been discharged and those obligations which are required in the Concession to be performed after the termination hereof.

(3) During the last five years of the petroleum production period or the renewed petroleum production period, the Concessionaire shall not remove, sell, give away, dispose of or transfer any property mentioned in (4) except with a prior written consent of the minister;
Ministerial Regulations No. 17 Clause 15

(4) At the end of the petroleum production period or of the renewed petroleum period in any production area, or at the earlier relinquishment of any whole production area or at the revocation of the concession prior to the termination of the said periods, the roads, railways, petroleum pipelines, pumps, machinery, platforms, storage tanks, stations, sub-stations, terminals, plants, harbors, installations and other facilities which are necessary for the conduct of exploration, production, storage or transport of petroleum, or which are in the nature of public utilities such as electricity, gas, water, communication and telecommunication system in connection with the production area; and the properties which are not usable shall be removed by the Concessionaire in accordance with the Minister’s instruction within three months from the date of the instruction:
THANK YOU

www.dmf.go.th