Environmental management and the offshore petroleum lifecycle

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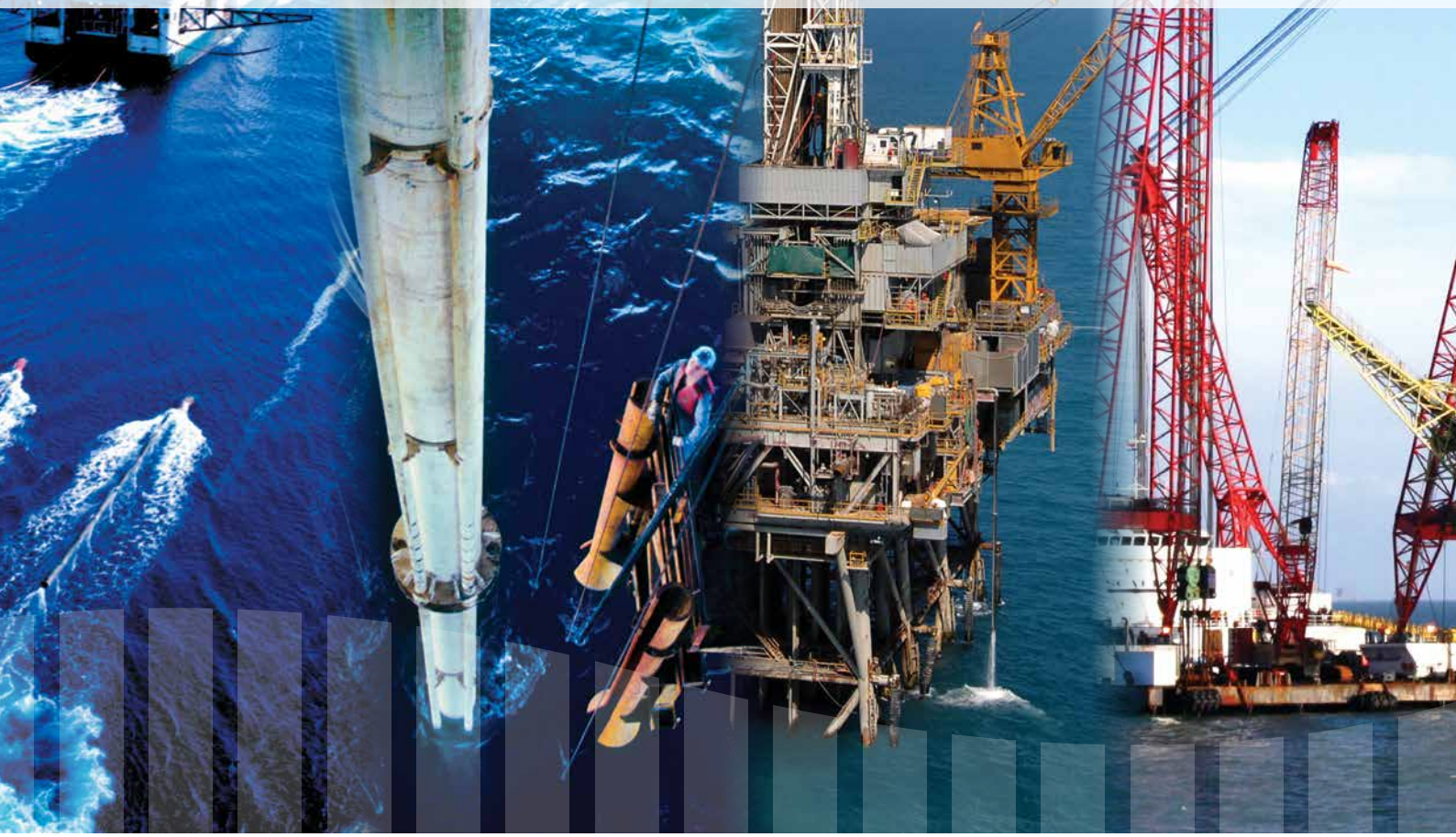
Companies may conduct a variety of petroleum activities throughout the lifecycle of a project beginning with resource assessment and exploration through to development, production and ultimately decommissioning.

This information is intended to provide an overview of offshore petroleum activities and clarify the role of the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) in relation to environmental management throughout the offshore petroleum lifecycle.



NOPSEMA

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Regulatory context

NOPSEMA is a Commonwealth Statutory Authority responsible for independently and professionally regulating occupational health and safety, well integrity and environmental management matters of petroleum activities in Commonwealth waters. The state/Northern Territory (NT) governments are responsible for regulating petroleum activities in coastal waters except where powers and functions have been conferred by the state/NT on NOPSEMA. It is important that stakeholders or organisations being consulted on petroleum activities understand which jurisdiction is responsible for regulating the activity in question, as different legislative provisions may apply.

Where a petroleum titleholder intends to undertake an activity in Commonwealth waters at any stage of the petroleum lifecycle, they must demonstrate that their planning for the activity meets the requirements of the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (Environment Regulations). The Environment Regulations outline the content requirements and criteria for acceptance of an environment plan, noting an activity may not commence before the plan has been accepted by NOPSEMA.

Pre-activity: Acreage release

The Australian Government encourages investment in petroleum exploration through the annual release of offshore petroleum acreage. Decisions about the release of new areas for exploration, bidding by companies, granting of titles and resource management for offshore petroleum in Commonwealth waters are jointly made by the Commonwealth and state/NT governments through a joint authority arrangement (comprising the responsible Commonwealth Minister and the relevant state or NT Minister or their delegates). All release areas are supported by general and special notices which detail third party rights (e.g. native title) or other considerations, including environmental values and sensitivities, that may be relevant to a release area.

The National Offshore Petroleum Titles Administrator (NOPTA) is responsible for the administration of offshore petroleum titles in Commonwealth waters under the *Offshore Petroleum and Greenhouse Gas Storage Act 2006*. Petroleum titles provide exclusive rights to the titleholder to carry out particular activities within their title area subject to gaining further approvals. The grant of a petroleum title does not mean that NOPSEMA will automatically accept an environment plan or offshore project proposal for a petroleum activity within a particular title area.

Offshore petroleum lifecycle

The Environment Regulations require titleholders to consult with stakeholders to clarify whether their functions, interests or activities may be affected throughout all stages of the offshore petroleum lifecycle. The following information is provided to assist stakeholders to understand some of the features of offshore petroleum activities to better inform their participation in consultation. For more information about consultation practices see the *Consultation requirements under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* information paper (IP1411) at nopsema.gov.au.

Exploration

Seismic exploration

Seismic surveys involve the generation of sound waves that travel through the ocean to the geological layers of the subsurface and returns to acoustic receivers as seismic data. This data is then processed and interpreted to identify where hydrocarbons may exist. There are many different configurations of sound sources and receivers, however, the most common in the offshore petroleum industry is a compressed air source towed behind a survey vessel which has a number of trailing 'streamers' holding the sound receivers.

Site surveys

Site surveys may be either geophysical (e.g. low level acoustic/electromagnetic) or geotechnical (e.g. seabed coring, grab samples). They are not generally undertaken for the purpose of hydrocarbon exploration but for determining the topography and composition of the seafloor for structural purposes prior to placement of a drilling rig or any other infrastructure including pipelines. These surveys are commonly undertaken using small vessels with minimal equipment and generally have a short duration.

Exploration and appraisal drilling

If after processing seismic survey data, the potential presence of a hydrocarbon reservoir is identified, exploration drilling activity may follow to confirm the presence and preliminary characteristics of the reservoir. There are different types of drilling facilities including jack-up rigs for shallower water exploration and anchored semi-submersible rigs, dynamically positioned rigs or drill-ships for deeper water exploration. Appraisal drilling may also be undertaken following discovery of a hydrocarbon reservoir to improve the understanding of the nature of the discovered reservoir and to determine how to develop the resource most efficiently. Drilling may include well testing to evaluate flow rates from the well and other reservoir properties.

Development

When a titleholder identifies a commercially viable way of developing a discovered hydrocarbon field, a range of activities are required to enable production of the hydrocarbons for processing and export. Before production can commence, development drilling and installation and commissioning of production facilities is usually required.

Production

Production facilities

Production facilities can include a variety of fixed, floating or subsea installations that allow for direct offloading of product or connect to pipelines for transportation to onshore plants for further processing. Due to the wide variety of production facilities and reservoir types, the duration and extent of production operations will vary significantly.

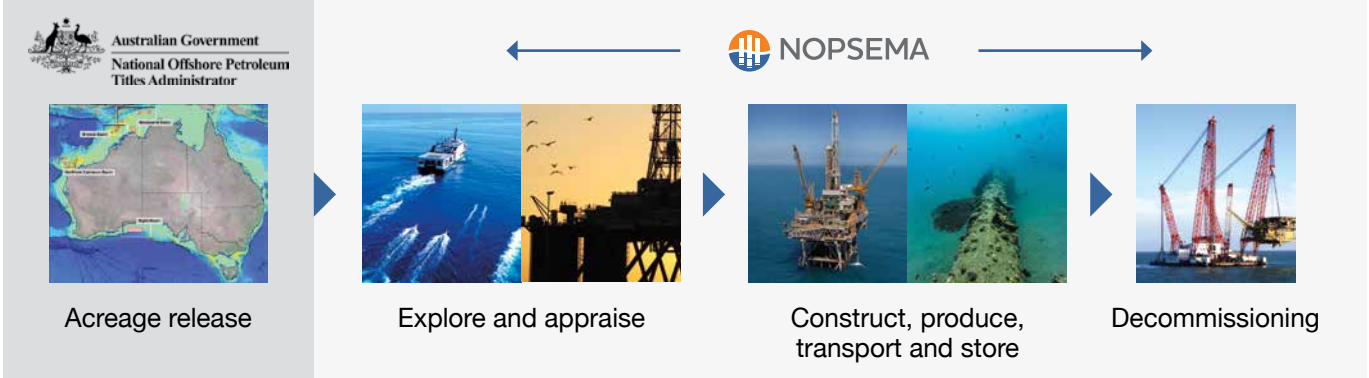
Pipeline transport

Petroleum pipelines may be a single pipe or a system of pipes that are used for transporting petroleum within and from the offshore area for processing or export. Pipelines are subject to inspection and maintenance activities during their operating lifespan.

Decommissioning

Decommissioning arises when the end of the economic life of a hydrocarbon reservoir is reached. Various decommissioning activities may be carried out depending on the nature of the petroleum production activities that have been undertaken.

This diagram depicts the various stages of the offshore petroleum lifecycle beginning with resource assessment and exploration through to construction and production and ultimately decommissioning.



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Resources

NOPSEMA publishes detailed policies, guidance and information at nopsema.gov.au.

Related NOPSEMA guidance:

Clarifying arrangements for environmental regulation of petroleum activities in Commonwealth waters (March 2014)

Requirements for effective consultation on petroleum activities in Commonwealth waters (July 2014)

Consultation requirements under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 information paper (IP1411)

Offshore project proposal public comment information paper (IP1351)

Further information:

For further information about the offshore petroleum exploration release process, see petroleum-acreage.gov.au.

For more information about NOPTA and petroleum titles see nopta.gov.au.