

September 2009

**Guidelines for
Decommissioning, Abandonment and
Restoration of the Oil and Gas Industry Assets
in Brunei Darussalam**

September 2009

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GLOSSARY

Assets	- Includes installations and structures onshore or offshore and legacy disposal sites.
DAR (Decommissioning, Abandonment and Restoration)	- The dismantling and removal of offshore and onshore installations or structures, following facility shutdown, depressurisation and decontamination of vessels, piping and process equipment as well as the clean up and restoration of sites in accordance with the approved DAR program.
The Authority	- The Minister of Energy at the Prime Minister's Office or such other Government department or corporate entity to which is delegated the authority from time to time to administer and regulate the provisions under these Guidelines.
The Company	- The company that owns or operates oil and gas installations or structures as further specified in Annex E.

INTRODUCTION

The purpose of this document is to provide guidelines for Decommissioning, Abandonment and Restoration (DAR) of the oil and gas industry assets both onshore or offshore installations and structures. Such guidelines shall at all times be subject to the applicable Petroleum Mining Agreements.

This document is the result of a collaborative effort between the Government of His Majesty the Sultan and Yang Di-Pertuan of Brunei Darussalam and Brunei Shell Company Sendirian Berhad, following the latter's commitment to assist in developing a set of guidelines for DAR as per the side letter dated 17 December 2003 to the Onshore Consolidated First and Second Offshore Petroleum Mining Agreements dated 23 December 2003. It is the intent to review the Guidelines after two years following the date of issuance to assess its effectiveness and identify areas, if any, which would require further detailing.

The issue of decommissioning and abandonment of disused facilities that have ceased production or are at the end of their useful design life and restoration of sites will become increasingly important in the future. It is important to address the process of DAR in the most responsible environmentally sound, economically efficient and socially acceptable way possible.

This document provides guidelines in preparing programmes for DAR of offshore and onshore installations and structures. It provides a framework and is not intended to be prescriptive. It is recognised that circumstances will vary from case to case and that differing approaches may be required. This document covers decommissioning and site restoration of any disused:

- Offshore installation or structure, including wells, pipelines jackets and topsides;
- Onshore installation or structure, including wells, pipelines, production, processing and utility facilities, redundant buried structures, foundations and cables, concrete and steel structures (including foundations, cellars, workshops, offices, houses and bridges), earthworks, roads, airstrips, asphalt covered areas and bund walls; and
- Legacy disposal sites.

These Guidelines focus upon the environmental considerations and general technical issues of decommissioning and restoration. Whilst recognising that there are important engineering, safety, financial and other implications, these related issues are not addressed in detail.

1. GOVERNMENT POLICY, NATIONAL AND INTERNATIONAL OBLIGATIONS.

Policy Statement

- 1.1 The Government of His Majesty the Sultan and Yang Di-Pertuan of Brunei Darussalam is committed to maintaining a clean and healthy environment. This includes the duty to protect the Nation's vulnerable ecosystems, habitats and biodiversity as well as protecting its coastal and marine environmental resources.
- 1.2 In this regard, it is the wish of the Government of His Majesty that any decommissioning, abandonment and restoration activity conforms with the principles of sustainable development, taking into consideration environmental, socio-economic implications, and that such activity is carried out in accordance with applicable laws, and local and international obligations taking into account acceptable international petroleum industry standards and good practices and with proper regard for safety and other legitimate uses of the sea and land.

Guiding Principles

- 1.3 The set of Guiding Principles outlined in **Annex A**, and as applicable for each respective Company **Annex E**, provides a framework against which decisions on DAR can be taken.
- 1.4 There is no single 'across the board' DAR solution which will be best for all facilities. All options should thus be kept open for thorough case-by-case analysis. To deliver the most responsible solutions to society as a whole, each facility (or group of facilities) must be considered on its own merits. In this respect, no single installation need set a precedent for any other, though there are opportunities for generic approaches to be followed (e.g. for pipelines, batches of wells, or groups of offshore structures).
- 1.5 Reaching a decision on the best DAR solution (whether it be onshore or offshore) can be a complex, rigorous process demanding the highest degree of responsibility and care in order to balance protection of the environment with safety, health, technological and economic considerations. An open and transparent approach, in line with stakeholder expectations and the aspirations of Brunei Darussalam should be adopted.
- 1.6 DAR plans must take account of the interests of all stakeholders, including potential future users of the sea or land. Interested parties should be consulted during the Environmental Impact Assessment (EIA) process. EIA's shall be undertaken by the Company for all DAR activities.

National Obligations

- 1.7 It is mandatory under subsection (2) of section 132 of the Merchant Shipping Order, 2002 that any installations or structures which are abandoned or disused shall be removed to ensure safety of navigation, taking into account any generally accepted international standards established in this regard by the competent international organisation. Such removal shall also have due regard to fishing and the protection of the marine environment.
- 1.8 The Prevention of Pollution of the Sea Order¹ 2005 prohibits the unlawful discharge of oil, oily mixture, refuse, garbage, waste matter, plastics and marine pollutants.

International Obligations

- 1.9 Offshore DAR activities in Brunei Darussalam shall also refer to international conventions such as the UN Convention on the Law of the Seas (UNCLOS²), International Maritime Organisation (IMO) Guidelines and Basel Convention.

UNCLOS

- 1.10 Pursuant to Article 210 of UNCLOS, States that are parties to UNCLOS are legally obliged to adopt laws and regulations to prevent, reduce and control pollution of the marine environment by dumping, which must be no less effective than the global rules and standards. Article 210 also provides that such laws, regulations and measures must ensure that dumping is not carried out without the permission of the competent authorities of States.
- 1.11 Article 60.3 of UNCLOS states that any installations or structures that are abandoned or disused shall be removed as necessary to ensure safety of navigation, taking account of any generally accepted international standards established by the IMO³. Such removal shall have due regard to fishing, the protection of the marine environment, and the rights and duties of other states. Appropriate publicity shall be given to the depth, position and dimensions of any installations or structures not entirely removed.

IMO Guidelines

- 1.12 In October 1989, the IMO adopted guidelines and standards for the Removal of Offshore Installations and Structures on a nation's Continental Shelf or its Exclusive Economic Zone (Resolution A.672(16)). The IMO guidelines and standards provide that, in general, an abandoned or disused offshore installation or structure on a Continental Shelf or an Exclusive Economic Zone should be removed as soon as reasonably practical once it is no longer serving the prime purpose for which it was originally designated.

¹ Prevention of Pollution of the Sea Order 2005, entered into force 9th April 2005.

² Brunei Darussalam is party to UNCLOS, which it ratified in 1996.

³ IMO is the competent international agency within the United Nations concerned with maritime safety, navigation and the prevention and control of marine pollution.

- 1.13 The guidelines also provide for leaving offshore installations wholly or partially in place if complete removal:
- is not technically feasible;
 - would involve extreme cost; or
 - would pose an unacceptable risk to personnel or the marine environment, but should ensure in such cases that an unobstructed water column sufficient to ensure safety of navigation (and, in any event, of not less than 55 m.) is maintained above the partially removed installation.
- 1.14 The IMO Guidelines and Standards which were designed essentially to ensure the safety of navigation, are not intended to preclude a coastal state from imposing more stringent removal requirements for existing or future installations or structures on its continental shelf or in its exclusive economic zone.
- 1.15 The IMO guidelines also state that disposal options are to take into account:
- any potential effect on the safety of uses of the sea;
 - the rate of deterioration of the material and its present and possible future effect on the marine environment;
 - the potential effect on the marine environment;
 - the risk that the material will shift from its present position at some future time;
 - the costs, technical feasibility and risks of injury to personnel associated with removal; and
 - the determination of a new use or other reasonable justification for allowing the installation (or parts thereof) to remain on the seabed.

Basel Convention

- 1.16 The Basel Convention⁴ adopted in March 1989 is an international agreement for addressing the problems and challenges posed by hazardous wastes.
- 1.17 In order to protect human health and the environment, the Basel Convention requires all practical steps be taken to minimise generation of hazardous wastes and measures be in place to control hazardous wastes storage, transport, treatment, reuse, recycling, recovery and final disposal.
- 1.18 Because hazardous wastes pose such a potential threat to human health and the environment, one of the guiding principles of the Basel Convention is that, in order to minimise the threat, hazardous wastes should be dealt with as close to where such hazardous wastes are produced as possible. Only if a State does not have the capability of managing or disposing the hazardous waste in an environmentally sound manner, should transboundary movement be considered.

⁴ Brunei Darussalam is party to Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, which it ratified in 1996.

- 1.19 Under the Convention, transboundary movements of hazardous wastes or other wastes can take place only upon prior written notification by the State of export to the competent authorities of the States of import and transit. Each shipment of hazardous waste or other waste must be accompanied by a movement document from the point at which a transboundary movement begins to the point of disposal. Hazardous waste shipments made without such documents are illegal. In addition, there are outright bans on the export of these wastes to certain countries.

2. USEFUL REFERENCES FROM OTHER INTERNATIONAL STANDARDS

- 2.1 Brunei Darussalam is currently not party to London Convention⁵ and OSPAR Convention⁶, but these Conventions included in these Guidelines are for reference purposes and their applicability is subject to an assessment of their suitability for Brunei Darussalam.

London Convention

- 2.2 The 1996 Protocol to the London Convention requires contracting parties to prohibit the dumping at sea of any waste or other matter with the exception of dredged material; sewage sludge; fish waste; vessels and platforms; inert, inorganic geological material; organic material of natural origin; and bulky items primarily comprising iron, steel, concrete, and similarly non-harmful materials. Under the Protocol, the dumping of these items shall require a permit from the responsible national authority, under its environmental approval process.

OSPAR Convention

- 2.3 Annex II of the OSPAR Convention for the Protection of the Marine Environment of the North-East Atlantic deals with prevention and elimination of pollution by dumping or incineration.
- 2.4 Article 3 of Annex II states that offshore dumping of all wastes or other matter is prohibited, except:
- dredged material;
 - inert materials of natural origin, that is solid, chemically unprocessed geological material the chemical constituents of which are unlikely to be released into the marine environment;
 - sewage sludge until 31st December 1998;
 - fish waste from industrial fish processing operations; and
 - vessels or aircraft until, at the latest, 31st December 2004.
- 2.5 Article 4, Annex II of the OSPAR Convention provides that "The Contracting Parties" shall ensure that:
- no wastes or other matter listed in Article 3 shall be dumped without authorisation by their competent authorities, or regulation; and
 - such authorisation or regulation is in accordance with the relevant applicable criteria, guidelines and procedures adopted by OSPAR.

⁵ Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter.

⁶ Convention of the Protection of the Marine Environment of the North Atlantic.

3. DAR APPROVAL PROCESS

Role of the Authority

- 3.1 The Minister of Energy at the Prime Minister's Office will be the Authority for DAR process and its approval.
- 3.2 The Authority will act as a one-stop-agency whenever possible and will consult with other Government Departments and Agencies that have an interest in the consideration of DAR proposals. There may, however, be occasions when the Authority will ask the Company to make direct contact with a particular Government Department or Agency.
- 3.3 As part of this process, it may also be necessary in some cases for the Company to enter into a separate dialogue with other Government Departments or Agencies, if specific matters relating to their areas of responsibility arise. The outcome of any such discussions will be fed back into the overall assessment of the DAR proposals.
- 3.4 Before the Company can proceed with DAR, the Company must obtain approval of its programme from the Authority.
- 3.5 The Company shall submit a DAR programme for each offshore or onshore structure and installation.
- 3.6 Where the Authority approves a DAR programme, it is the duty of the Company to carry out the DAR programme.
- 3.7 A DAR programme should contain an estimate of the cost of the measures proposed, specify the times at or within which those measures are to be taken or make provision for determining those times, and, where an installation or pipeline (offshore) is to remain in position or be only partly removed, include provision for maintenance where necessary.
- 3.8 Certain preparatory works that do not influence DAR options should be able to be carried out before approval and during submission of a DAR programme e.g. removal of some equipment and cleaning. The Company is to discuss such details with the Authority.
- 3.9 At a mutually agreed time, following preliminary discussions, the Company shall submit to the Authority a specified number of copies of a first draft DAR programme. Submission in electronic form is the preferred method accompanied by one paper copy set. Ten paper copies will be required when the Company formally submits the DAR programme. The documents should be submitted to:

Minister of Energy
Office of the Prime Minister
5th Floor, Bahirah Building
Jalan Menteri Besar
Bandar Seri Begawan BB3910
BRUNEI DARUSSALAM

DAR Stages

- 3.10 A Flowchart setting out how the consideration of DAR proposals will operate in practice is provided in **Annex B**. There are six main stages of the process.

Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6
Preliminary discussions with the Authority	Detailed discussions, submission and consideration of a draft DAR programme	Stakeholders Consultation	Formal submission of a DAR programme and approval	Commence main works and undertake site surveys	Monitoring of site

Stage 1

- 3.11 Early discussions between the Company and the Authority will ensure that the Company takes timely action and that the DAR process is well understood. The Authority will involve other Government Departments and agencies as necessary. This includes preparatory work.
- 3.12 Discussions should commence well ahead of forecast cessation of operations. In the case of a large field with multiple facilities, this may be 2 (two) years or more in advance. The onus rests with the Company to initiate these discussions.
- 3.13 The Company shall provide an outline for the likely timetable of future events to form a basis for agreement on when more detailed discussions should commence and what documentation should be prepared in advance.

Stage 2

- 3.14 This stage involves more detailed discussion of the DAR proposals and the consideration by the Authority of the first draft of a DAR programme.

Stage 3

- 3.15 Stakeholder consultation is an important aspect of DAR under Stage 3. The Company will be required to carry out consultations with interested parties. The extent of these consultations will be determined by the particular circumstances of the case.

Stage 4

- 3.16 Following the completion of consultations, the Company will submit the final DAR programme to the Authority for approval.

Stage 5

- 3.17 This stage covers the implementation of the approved DAR programme that includes the completion of site surveys. The programme will specify the arrangements by which the Authority will be kept informed of progress and, where appropriate, will indicate the 'milestones' at which progress will be reviewed. Any revisions to the DAR programme will be subject to the Authority's approval.
- 3.18 At the conclusion of Stage 5, the Company will be required to satisfy the Authority that the approved DAR programme has been implemented.

Stage 6

- 3.19 The final stage will require the Company to implement arrangements for monitoring, maintenance and management of the decommissioned site and any remains of installations or pipelines that may exist. The scope and duration of the monitoring requirements will be agreed between the Company and the Authority in consultation with other Government Departments and agencies and details will be included in the DAR programme. The close out report needs to be submitted to the Authority.

Deferral and Phased DAR

- 3.20 Where it is proposed that an installation and structure might be taken out of service and left *in situ* to undergo DAR at a later date, the Authority should be consulted well in advance of such a step being taken. For example, where a single installation in a multi-installation field becomes redundant and the proposal is that it should be left in place until end of field life, or possibly until a re-use opportunity emerges, it may be appropriate to deal with the situation in this manner.
- 3.21 If it is agreed by the Authority that the DAR process may be delayed until a more appropriate time, the Authority will issue a formal letter setting out the conditions upon which it is prepared to defer until a specified date. The Authority may issue a direction to submit a DAR programme.
- 3.22 However, in most cases it is expected that a DAR programme will be required at the outset, particularly if the proposal relates to the phased DAR of an installation or structure or of a number of installations or structures in a field that may involve the removal of topsides and other equipment in advance of the jacket. Such phasing may be appropriate in order to take advantage of possible savings through synergy and advances in new technology. In these circumstances a programme would need to address the overall strategy for DAR of the installation or installations, although it may be agreed that the Company should seek approval initially only for the first activity, e.g. removal of topsides.

- 3.23 Amongst the factors to be taken into account in considering the case for deferral or phasing and the extent of any prior works will be the condition of the installation, the presence of any dangerous or potentially polluting substances and the need for accurate information about the nature and distribution of any such substances. The Authority will wish to be satisfied that the integrity of the installation will be maintained or that any deterioration will not be such as to compromise the safety or practicability of DAR operations.
- 3.24 The Company will need to make arrangements to ensure installations that are to be left in place are suitably marked.

4. DAR PROGRAMME

4.1 DAR involves the dismantling and removal of offshore and onshore installations or structures, following facility shutdown, depressurisation and decontamination of vessels, piping and process equipment as well as the clean up and restoration of sites. The major tasks are:

- Downhole abandonment of wells.
- Cleaning and purging of process equipment and piping of fluids and sludge.
- Treatment and/or disposal of process fluids and sludge.
- Removal of wastes and/or chemicals for disposal or re-use.
- Dismantling of wellheads, piping and plant facilities with re-usable items placed in laydown areas.
- Removal and cutting (if necessary for size reduction) of equipment and materials tagged for sale as scrap.
- Removal and cutting or sealing of contaminated equipment, tagged for disposal.
- Removal of transformers, instrumentation and electrical systems for re-use or disposal.
- Removal of structures, pads and foundations not destined for re-use.
- Isolation of underground piping, tanks and structures that are left in place.
- Removal of bridges, drainage culverts, roads and other civil works not needed for future access or erosion control.
- Installation of access controls and/or signposting (notification) for remaining structures.
- Clean up and restoration of sites.

Content

4.2 A DAR programme should identify all items of equipment and materials that have been installed (e.g. installations, sub-sea equipment, pipelines) or have been accumulated (e.g. drill cuttings) at the site.

4.3 A DAR programme may deal with the DAR of all of the facilities located on a field or part of the facilities including a single installation or pipeline. The precise content of the DAR programme may vary according to the circumstances. However, the following sections are likely to be necessary in most cases. For more detail information, refer to **Annex C**.

- a) Introduction
- b) Executive Summary
- c) Background Information
- d) Description of Items to be Decommissioned
- e) Inventory of Materials
- f) Removal and Disposal Options
- g) Selected Removal and Disposal Option
- h) Drill Cuttings
- i) Pipelines
- j) Integrated Impact Assessment
- k) Interested Party Consultations

- l) Costs
- m) Schedule
- n) Licences Associated with the Disposal Option
- o) Project Management and Verification
- p) Debris Clearance
- q) Pre- and Post-DAR Monitoring and Maintenance
- r) Supporting Studies
- s) Site restoration

- 4.4 If the above format is not appropriate in any particular case a modified version should be agreed in discussion with the Authority.
- 4.5 Where particular items of equipment or facilities owned by the Company and others on a field are to undertake DAR process together, it is important to distinguish clearly from the DAR programme with whom the DAR obligations rest and what those obligations are. Although it may be possible to present different programmes within a single document, it must be done in such a way as to allow the different programmes to be identified in order to isolate the liabilities of the different companies.
- 4.6 It should be noted that in all cases DAR proposals for pipelines should be included in a separate programme although, as indicated above, this may be presented within the overall DAR document.
- 4.7 It is recognised that in some cases accurate cost data and confirmation of the final DAR option are dependent on the outcome of a commercial tendering process.

5. BROAD STRATEGIES FOR OFFSHORE AND ONSHORE INSTALLATIONS AND STRUCTURES

- 5.1 Four broad strategies are considered possible for abandonment, each of which may need to be adapted for specific cases; however the base case is total removal. In determining which strategies to adopt for a particular feature, it is important to consider how to minimise liability in the most cost-effective manner.

Abandonment without Site Restoration

- 5.2 The entire facility or asset would be left without any attempt to restore the site if it is still in good condition.

Transfer of the Asset

- 5.3 If the Company decides that any producing assets are worth selling to other companies who have lower overhead cost, liability for abandonment and restoration in such cases would need to be assessed and agreed with the new company. For example, the new company might be able to carry out abandonment at a lower cost.

Partial Abandonment and Restoration

- 5.4 The degree of abandonment may take into account the environmental value of the area or resource that has been impacted by operations.

Total Removal and Site Restoration

- 5.5 Every remnant of the operation, both surface and sub-surface, would be removed and the site completely restored to its pre-development condition, to the extent that this is technically achievable.
- 5.6 The degree of abandonment may take into account the environmental value of the area or resource that has been impacted by operations. This option is likely to be favourable in terms of practicability and acceptability.
- 5.7 The Company will use its best endeavours, in accordance with good industry practice, to design future new structures or facilities to enable the restoration of the site to its pre-development condition.

OFFSHORE INSTALLATIONS OR STRUCTURES

6. PLANNING FOR DAR

- 6.1 There are various methods to remove and dispose of an offshore installation. However, the base case is total removal. Exactly which method is applicable to any individual installation will depend on a number of factors, such as type of construction, size, distance from shore, weather conditions, complexity of the removal operation, safety considerations of the workers, regulatory standards and stakeholder acceptance. Examples of the options that may be considered are shown in Annex D.

Topsides

- 6.2 DAR activities shall only be carried out after the platform is totally shutdown, clear of all hazardous materials and declared safe (including electrical systems) for removal work to proceed.
- 6.3 Hydrocarbon systems, including all separators, process vessels and piping are to be purged and flushed. Residual hydrocarbons are to be collected and transported for use or disposal onshore. Non-hazardous systems, including those for cooling water, fire water, utility and air systems will need to be depressurised, flushed, drained and isolated.
- 6.4 Toxic and hazardous chemical systems, including tanks with toxic and other chemicals will have to be purged, flushed and made inert. Any proposal for ocean dumping of the cleaning effluent must be submitted to the Authority for approval.
- 6.5 Integrity of structures will have to be verified prior to any cutting, removal and lifting of any package or modules. Centres of gravity of the topside loads will have to be established.

Jackets

- 6.6 Where jackets are to be removed and/or toppled, particular consideration needs to be given to residual protuberances on the seabed and ensuring sufficient water clearance to meet IMO guidelines⁷.

⁷ Special dispensation to IMO water clearance limits is permissible if Brunei Government authorises establishment of an artificial reef for the structure in question.

Floating Installations

- 6.7 Floating installations will include Floating Production Facilities (FPFs) or Floating Production Systems (FPSs), Floating Production, Storage and Off-take vessels (FPSOs), Floating Storage Units (FSUs), and Single Buoy Mooring facilities (SBMs). At the end of field life such installations will be floated off location and re-used elsewhere as a production or storage facility is likely to be a high priority. In those cases where re-use does not prove possible, it will be necessary to return the facility to shore for storage or dismantling in line with the hierarchy of waste disposal options.
- 6.8 Most floating installations will have associated sub-sea equipment. The approach to DAR sub-sea installations is dealt with in the following paragraphs.

Sub-sea Installations

- 6.9 Sub-sea installations include drilling templates, production manifolds, well heads, protective structures, anchor blocks and anchor points, anchor chains, risers and riser bases. Such installations must be completely removed for re-use or recycling or final disposal on land. Any piles should be cut below natural seabed level at such a depth to ensure that any remains are unlikely to become uncovered. The depth will mainly depend upon the prevailing seabed conditions and currents.
- 6.10 However, the exception to the above relates to any part of an offshore installation that is located below the surface of the seabed or any concrete anchor-base associated with a floating installation that does not, and is not likely to, result in interference with other legitimate uses of the sea. These may be left in place but this will be on a case-by-case basis depending on the circumstances and subject to approval from the Authority.

7. OFFSHORE PIPELINES

General Approach

- 7.1 DAR proposals for pipelines should be contained within a separate programme from that for installations. However, programmes for both pipelines and installations in the same field may be submitted in one document.
- 7.2 Base case is total removal. However, if alternative options are to be considered the following approach shall be used:
- all feasible DAR options should be considered and a comparative assessment made;
 - any removal or partial removal of a pipeline should be performed in such a way as to cause no significant adverse effects upon the marine environment and fishing;
 - any decision that a pipeline may be left in place should have regard to the likely deterioration of the material involved and its present and possible future effect on the marine environment; and
 - account should be taken of other uses of the sea.
- 7.3 Where it is proposed that a pipeline should be decommissioned *in situ*, then the DAR programme should be supported by a suitable study that addresses the degree of past and likely future burial/exposure of the pipeline and any potential effect on the marine environment and other uses of the sea. The study should include the survey history of the line with appropriate data to confirm the current status of the line including the extent and depth of burial, trenching, spanning and exposure.
- 7.4 Determination of any potential effect on the marine environment at the time of DAR should be based upon scientific evidence. The factors to be taken into account should include the effect on water quality and geological and hydrographic characteristics; the presence of endangered or threatened species; existing habitat types; local fishery resources; and the potential for pollution or contamination of the site by residual products from, or deterioration of, the pipeline.
- 7.5 Because of the widely different circumstances of each case, it is not possible to predict with any certainty what may be approved in respect of any class of pipeline. Each will be considered on its merits and in the light of a comparative assessment of the alternative options.

- 7.6 The decision regarding the degree of burial or trenching necessary will be undertaken on a case-by-case basis in the light of individual circumstances. The Authority needs to be satisfied that the pipeline is sufficiently buried below seabed level to avoid obstruction to other uses of the sea. Decisions on the appropriate depth of burial will take account of seabed conditions and other relevant factors, but it is expected that burial to a minimum depth of 0.6 metres above the top of the pipeline will be necessary in most cases.

Removal

- 7.7 Small diameter infield or inter-field pipelines and flexible flow-lines that are neither trenched nor buried, should normally be entirely removed.

Monitoring

- 7.8 Pipelines decommissioned *in situ* will be subject to a suitable monitoring programme agreed with the Authority in consultation with other Government Departments. Details should be specified in the DAR programme. The form and duration of the monitoring programme will depend upon the prevailing circumstances and, if necessary, be adapted with time. Inspection reports should be submitted to the Authority together with proposals for any maintenance or remedial work that may be required.

Deferral

- 7.9 In those cases where a pipeline reaches the end of its operational life before other facilities in the field, the Company should notify the Authority that the pipeline is no longer in use and submit its DAR programme.
- 7.10 Amongst the factors to be taken into account in deciding the approach to a redundant pipeline in these circumstances will be the length, diameter and construction of the pipeline; its location and the extent to which the pipeline is trenched or buried; and the stability and integrity of the pipeline including the presence of any spans.
- 7.11 If it is agreed after consultation with the Authority that DAR may be delayed until a more appropriate time, the Authority will issue a formal letter stating out the conditions of the approval. The Authority will wish to be satisfied that leaving the pipeline in place until end of field life will not prejudice any final DAR solution and that the pipeline will be subject to an appropriate survey and monitoring regime.

Other Considerations

- 7.12 All redundant pipelines must be flushed and cleaned. The lines are also to be purged and plugged with capped ends buried in the sea floor mud if the Authority approval is for it is to be left. Riser sections should be cut at seabed level and removed.
- 7.13 Consideration must be given to pipeline spanning, which is a particular risk in areas of high sediment movement, and where there are exposed pipe sections present. In such circumstances, sections of pipeline can break up, with the damaged sections protruding from the seabed, representing a significant danger to fishing activities. Options for burial and/or removal should be considered if this is likely.
- 7.14 Pipelines running close to coral reefs will require special attention to minimise environmental impacts associated with DAR activity (notably physical disturbance and damage to the reef) whereby external specialists may need to be consulted.

8. DRILL CUTTINGS

- 8.1 In drawing up DAR proposals, the Company will take account of the presence of drill cuttings and, on the basis of a comparative assessment of the options, consider whether any action should be taken. The volume, composition and dimensions of any cuttings present will need to be established and details included in the DAR programme. A history of the types of drilling fluids used during the life of the field should also be provided. Disposal of drilling mud and cuttings has to be agreed by the Authority.

ONSHORE INSTALLATIONS OR STRUCTURES

9. PLANNING FOR DAR

- 9.1 The four broad strategies mentioned in Section 5 are considered possible for abandonment, each of which may need to be adapted for specific cases; however the base case is total removal. In determining which strategies to adopt for a particular feature, it is important to consider how to minimise liability in the most cost-effective manner.

10. ONSHORE FLOWLINES AND PIPELINES

- 10.1 Onshore, redundant flow-lines and pipelines should be purged and flushed to remove residues. Flow-lines and pipelines either above ground or underground are to be totally removed and shall be sold as scrap for recycling, if re-use is not possible. The site shall also undergo restoration.
- 10.2 Depending on individual circumstances, underground flow-lines and pipelines may be left *in situ* subject to the approval of the Authority.
- 10.3 Specific consideration needs to be given to any residual site contamination (e.g. hydrocarbons in soil from past leaks and spills) from all redundant flow-lines and pipelines. Visual inspection and soil sampling will generally be required for onshore sites to determine presence of contamination. This may require removal and treatment.

11. WELL ABANDONMENT

Downhole Abandonment

- 11.1 Basic objectives for downhole abandonment should be to abandon each completed formation separately and protect groundwater (i.e. prevent migration of hydrocarbon bearing reservoir fluids). Activities shall include setting bridge plugs above perforations or open-hole sections, pressure testing and capping with cement. There is a need to ensure that risks associated with hydrocarbon migration are adequately managed.

Surface Abandonment

- 11.2 Surface abandonment activities should be undertaken shortly after downhole operations have been completed. Casing strings are to be typically cut off at a minimum of 1 metre below the final contour elevation (though some situations may dictate cutting lower than this e.g. future land uses, such as farming, or urban development or offshore). Production or intermediate casing is plugged at surface with cement slurry on top of a wiper plug or a steel plate welded across the casing.

12. SITE REMEDIATION AND RESTORATION OF LEGACY SITES

- 12.1 An important consideration for any onshore DAR activity is its remediation of soil contamination and appropriate site restoration.
- 12.2 Site specific risk assessments are to be carried out to determine appropriate clean-up level for soil and groundwater.

13. TREATING, KEEPING AND DISPOSING OF WASTE

- 13.1 The Company shall submit to the Authority on its proposal for treating, keeping and disposing of waste. Anyone who deposits, recovers or disposes of waste must do so in a way that does not cause pollution of the environment or harm to human health.
- 13.2 Fluids and sludge should be recovered from process vessels (separation / dehydration vessels etc) and tanks. Flow-lines, fuel gas lines and pipelines should be purged of fluids and the fluids recovered. Sludge materials and decontamination residues should be dewatered where possible to reduce bulk and disposal costs.
- 13.3 Particular emphasis should be given to the removal of:
- Mercury (and other heavy metals) in sludge
 - Polychlorinated biphenyls (PCBs) in oils from capacitors, transformers and other electrical switchgear
 - Hydrocarbon liquids / sludge and other hazardous materials
 - Lubricating oils from rotating equipment (pumps, compressors etc)
 - Asbestos containing materials in insulation, gaskets, packing, partition boards and cement roof sheets
 - Pyrophoric iron scale in vessels and pipes, containing iron sulphides prone to spontaneous combustion (important to keep these wet)
 - Low Specific Activity (LSA) contamination in scale and sludge, arising from Naturally Occurring Radioactive Material (NORM).

14. ENVIRONMENTAL SURVEYS

Environmental baseline

- 14.1 Surveys around an installation to establish an environmental baseline shall be undertaken before DAR if survey data does not already exist.
- 14.2 Precise requirements will differ according to individual conditions. Discussions on what may be required in an individual case should be held with the Authority before the Company develops this part of the survey strategy.

Debris clearance

- 14.3 Upon completion of each DAR operation, appropriate surveys should be undertaken to identify, recover and clear any debris located on the seabed or site that has arisen from the DAR operation or from past development and production activity.
- 14.4 For partial removal and *in situ* toppling methods, the remaining structures are to be surveyed and their positions recorded. This information shall then be submitted to the relevant authorities. Side scan sonar should be used to ensure no equipment clutters the sea floor.
- 14.5 The area to be covered will depend on the circumstances of each case. However, the minimum required will be a radius of 500 metres from the location of an installation.
- 14.6 Debris monitoring may be required up to 100 metres either side of a decommissioned pipeline over its whole length.
- 14.7 Following the removal of any debris, independent verification of seabed or site clearance will be required. The advisability of over-trawling will be considered on a case-by-case basis and will be dependent upon the extent of any cuttings piles and any other relevant circumstances.

Sampling post-DAR

- 14.8 In addition to debris surveys, a post-DAR environmental seabed or site sampling survey should be undertaken in particular to monitor levels of hydrocarbons, heavy metals and other contaminants in sediment and biota.
- 14.9 In each case, the Company will find it helpful to develop their survey strategy in consultation with the Authority who will take specialist advice from colleagues within other Government Departments or agencies.
- 14.10 Details of the survey strategy should be included in the DAR programme.
- 14.11 In some cases a second survey may need to be undertaken some time after the post-DAR sampling. Any further surveys will depend upon the results of earlier work and the circumstances of each case.

Reporting

- 14.12 The results of all surveys and a copy of a site or seabed clearance record should be submitted to the Authority.

15. POST DAR MONITORING OF REMAINS

- 15.1 If it is agreed that a concrete installation or the 'footings' of a steel installation should be left in place, the condition of the remains will have to be monitored at appropriate intervals by the owners. A suitable monitoring regime should be agreed with the Authority who will consult other Government Departments and Agencies with an interest. Details of the monitoring regime should be specified in the DAR programme.
- 15.2 The form and duration of the monitoring programme will depend upon the particular circumstances and if necessary will be adapted with time. Inspection reports should be submitted to the Authority together with proposals for any maintenance or remedial work that may be required.
- 15.3 The first step in any monitoring programme is for independent verification that the condition of the installation before the disposal operation commences is consistent with both the terms of the Authority approval and the information upon which the assessment of the proposed disposal is based. This will include details of the fate of any hazardous substances. It will be for the Company to propose a suitable organisation to carry out the independent verification.
- 15.4 It will also be necessary to submit to the Authority a post-disposal report indicating how the disposal operation was carried out, any immediate consequences of the disposal that have been observed and confirmation that the disposal has been implemented in accordance with the terms of the DAR programme. This report should be submitted to the Authority within 4 months of the completion of the disposal.
- 15.5 Any pipelines left in place will also be subject to a monitoring regime agreed with the Authority as part of the DAR programme.
- 15.6 A Closeout report (including before, during & after video and/or photos) should be prepared to maintain the audit trail and also for submission to the relevant authorities as a record of the DAR works completed.

16. MARKING OF OFFSHORE REMAINS

- 16.1 It is the Company's responsibility to ensure that at least 6 weeks advance notification of the change in status of decommissioned installations and pipelines is given to the Authority to enable it to inform other Government Departments and agencies in particular the Marine Department.
- 16.2 In those cases where it is agreed that an installation, the 'footings' of a steel installation or a pipeline should remain in place, the Company must ensure that the position (horizontal datum to be stated), surveyed depth and dimensions of the remains are forwarded immediately to the Marine Department for inclusion on admiralty charts.
- 16.3 It is the Company's responsibility to install and maintain navigational aids for any remains of installations or structures that project above the surface of the sea. The nature of the navigational aids to be employed should be discussed with the Authority and any other relevant authority. It is the Company's responsibility to ensure the maintenance of any such navigational aids. Details of the action to be taken to advise mariners and marking of any remains should be included in the DAR programme.

17. LIABILITY

- 17.1 Any residual liability arising from or in connection with DAR will remain with the Company in perpetuity and the Company will remain responsible for complying with any conditions attached to the Authority's approval of the DAR programme; provided, however, that such residual liability will not extend to any damages and losses arising out of acts or omissions from a third party. A "third party" will include but not limited to new owners, operators, licensees, but excluding the Government (not including the national oil companies). For the avoidance of doubt, in no event will the Company be held liable for losses or damages caused by third parties other than itself.
- 17.2 Any remains of installations or structures will be subject to monitoring at suitable intervals as specified in each DAR programme and may require maintenance or remedial action in the longer term by the Company.
- 17.3 The Company shall at all times indemnify every officer of the Government and the Authority against all actions, costs, charges, claims and demands whatsoever which may be made or brought by any third party in connection to or arising from any DAR activities.
- 17.4 Any claims for compensation by third parties arising from damage caused by any remains will be a matter for the Company and the affected parties and will be governed by the applicable law.

ANNEXES

GUIDING PRINCIPLES FOR DECOMMISSIONING, ABANDONMENT AND RESTORATION OF OFFSHORE AND ONSHORE INSTALLATIONS

Approach

- 1.1 There is a presumption that all offshore and onshore installations or structures will be re-used, recycled or disposed of on land.
- 1.2 Any exceptions to that general rule will be assessed individually.

DAR Programmes

- 1.7 A DAR programme will be required in respect of all offshore and onshore installations and pipelines.
- 1.8 A DAR programme will be in accordance with national laws and international obligations and have regard to:
 - the precautionary principle;
 - best available techniques and best environmental practice;
 - risk based approach;
 - waste hierarchy principles;
 - other uses of the sea;
 - health and safety;
 - proportionality;
 - cost effectiveness.
- 1.9 Each DAR programme will be subject to stakeholder consultations.

Offshore Installations

- 1.10 Decisions on DAR programmes will be consistent with the following:
 - the topsides of all installations must be returned to shore;
 - all steel installations with a jacket weight of less than 10,000 tonnes must be completely removed for re-use, recycling or final disposal on land;
 - for steel installations with a jacket weight greater than 10,000 tonnes it is possible to consider whether the footings of the installation may remain in place;
 - for concrete installations it is possible to consider whether they should be left wholly or partially in place;

Pipelines

- 1.11 DAR proposals for pipelines will be considered in the light of individual circumstances. All feasible DAR options should be assessed, including:
- removal;
 - burial or trenching to adequate depths;
 - leaving in place.
- 1.12 Where appropriate, suitable measures should be proposed to limit the potential for interaction with pipelines, e.g. from fishing gear.

Deferral

- 1.13 DAR of an installation or pipeline may be deferred if such action can be justified, for example, if re-use of the facility is a possibility.

Post-DAR Requirements

- 1.14 Subject to any applicable laws the Company will remain responsible for complying with any conditions attached to the Authority's approval of the DAR programme.
- 1.15 Any remains of installations or structures will be subject to monitoring at suitable intervals as specified in each DAR programme and may require maintenance or remedial action in the longer term by the Company.
- 1.16 The presence of any remains of installations or pipelines will be notified to mariners and appropriate hydrographic services and will be marked on nautical charts.
- 1.17 Any claims for compensation by third parties arising from damage caused by any remains will be a matter for the Company and the affected parties and will be governed by the applicable law.

Consultation

- 1.18 Those parties responsible for submitting a DAR programme for approval will be required to undertake consultations with specified persons.

FLOWCHART OF DAR PROCESS

Stage 1

The Company initiates discussions with the Authority (Up to 2 years in advance of Cessation of Production)
Timetable outlined

Stage 2

Detailed discussion between the Company and the Authority leading to submission of 1st draft of programme (within 1 month)

Consideration of 1st draft of Programme by the Authority and other Government Departments and Agencies (within 2 months)

The Authority sends written comments on 1st draft to the Company (within 1 week)

The Company submits 2nd draft programme incorporating comments (within 1 months)

Stage 3

Consideration of 2nd draft of programme by the Authority and relevant Government Agencies (within 1 month)

Stakeholder consultation with affected community (within 1 month)

The Authority sends written comments on 2nd draft (within 1 week)

The Company incorporates comments and outcome of consultations into the final DAR programme (within 1 month)

Stage 4

The Authority formally request the Company to submit in 1 week the final DAR programme / Remedial Action Plan* (within 1 week)

The Authority approves the DAR programme / Remedial Action Plan* (within 2 weeks)

YES

The Company to carry out DAR in accordance with the programme including debris/surveys and site/seabed clearance

The Authority to verify that the approved programme has satisfactorily been implemented (within 2 weeks)

YES

Stage 6

The Company carries out post-DAR monitoring as specified in programme. Reports submitted to the Authority

NO

NO

* Only if remedial action is required including additional consultations

THE CONTENTS OF A DAR PROGRAMME

Presentation

The draft DAR programme should be presented in a form that allows ready updating and change. Each draft should be dated, pages should be numbered, and any diagrams, charts etc should be annexed to the main text. The maximum use will be made of tabular presentation.

Separate programmes should be prepared for pipelines and installations although these can be contained within the same DAR document.

The format and content of the draft DAR programme should, where appropriate, accord with the following guidance:

Format and Content

1. Introduction

A brief introductory paragraph indicating that the DAR programme should be submitted for approval in accordance with the requirements of the DAR guidelines.

2. Executive Summary

A management summary outlining the background to the DAR proposals and highlighting the essential features of the proposed method of DAR.

3. Background Information

Relevant background information, supported by diagrams, including:

- the relative layout of the facilities to be decommissioned (installations, subsea equipment and pipelines);
- the relative location, type and status of any other adjacent facilities (telephone cables, other pipelines and platforms etc) which would have to be taken into consideration;
- information on prevailing weather, sea states, currents, seabed conditions, water depths etc;
- any fishing, shipping and other commercial activity in the area; and
- any other background information relevant to consideration of the draft DAR programme.

4. Description of Items to be Decommissioned

A full description, inclusive of diagrams, covering:

Installations

- support structures for fixed and floating installations (type, size, arrangement and weights);
- topsides for fixed and floating installations (type, size, configuration, equipment and weights);
- wells (including subsea and satellite wells);
- subsea equipment on or in the seabed (size, weight, height above seabed, whether piled or not, type of construction and material);
- offshore loading facilities;
- any other installed items.

Pipelines, flow lines and umbilicals

- lengths, diameters, type of construction.

Materials on the Seabed

- drill cuttings (amount, composition, dimensions);
- debris; and
- any other materials.

5. Inventory of Materials

For all items described under 4 above, include an inventory listing the amount, type and relative location of all materials including hydrocarbons, sludge, heavy metals, sacrificial anodes and LSA (Low Specific Activity) scale.

6. Removal and Disposal Options

This section will provide a general description of the alternative removal and disposal options for the items described in 4 above. It should include a short list of options and the reasons for rejecting those not short-listed.

Re-use and Phasing

Particular consideration should be given to the possibility for re-use and the potential for the beneficial phasing/integration of DAR activity between The Company, e.g. within a particular geographic area or specialist type of work, in order to realise any economies of scale that are possible.

Comparative Assessment

A detailed comparative evaluation of the alternative disposal options will be included in this section.

7. Selected Removal and Disposal Option

This section should describe the proposed DAR option and includes:

- the removal and disposal option, describing the removal method and the disposal route;
- an indication of how the principles of the waste hierarchy will be met, including the extent to which the installation or any part of it, including the topsides and the materials contained within it, will be re-used, recycled or scrapped;
- details of any cleaning or removal of waste materials, including cleaning methods; cleaning agents and disposal of residues;
- details of any materials and remains on the seabed after DAR;
- water clearances above any remains; and
- predicted degradation, movement and stability of any remains.

The DAR programme should include an outline of well abandonment plans.

8. Drill Cuttings

This section should demonstrate that careful consideration has been given to determining the presence of any drill cuttings. It should provide convincing evidence of the volume, composition and dimensions of any cuttings present, an assessment of how they will behave during removal operations and an assessment of the options for their disposal. The following information should be included:

- details of the wells drilled;
- details of the types of drilling fluids used during the life of the field;
- appropriate survey data, including samples (it should be noted that Remotely Operated Vehicle (ROV) surveys are unlikely to provide sufficient definition to determine the presence or not of drill cuttings); and
- suitable modelling in order to show the 'footprint' of any cuttings present and the extent of contamination.

A comparative assessment of the options for dealing with any drill cuttings should be undertaken with recommendations on what action should be taken.

If it is proposed that any drill cuttings present should be left in place, an appropriate monitoring regime should be developed in discussion with the Authority and presented in the DAR programme.

9. Environment Impact Assessment

This section includes an Environment Impact Assessment (EIA) of the selected DAR option. An assessment of the likely effects of the project on the environment should be undertaken and the measures envisaged to avoid, reduce and, if possible remedy any significant adverse affects should be indicated. The EIA should include the following:

- impacts on the marine environment, including exposure of biota to contaminants associated with the installation, other biological impacts arising from physical effects, conflicts with the conservation of species, with the protection of their habitats, or with marine aquaculture (mariculture), and interference with other legitimate uses of the sea;
- impacts on other environmental compartments, including emissions to the atmosphere, leaching to groundwater, discharges to surface fresh water and effects on the soil;
- consumption of natural resources and energy associated with re-use and recycling;
- other consequential effects on the physical environment which may be expected to result from the option; and
- impacts on amenities, the activities of communities and on future uses of the environment.

10. Pipelines

As previously indicated, DAR proposals for pipelines should be contained within a separate programme, although they may be presented in the same document, alongside the DAR proposals for the other facilities in the field. This is necessary in order to be able to clearly identify the specific DAR obligations that apply to the pipelines, which may have different owners from the installation(s). Pipeline DAR proposals will be considered on a case-by-case basis. A pipeline DAR programme will in most cases contain the following sections:

- *Introduction*
- *Items to be Decommissioned*

A description of the pipeline(s) and associated equipment to be decommissioned, including lengths, diameters and type of construction.

- *Status of the lines*

The current condition and status of the pipeline(s) including the extent of burial, trenching and details of any concrete mattresses or other materials used to cover the lines. Details of the seabed conditions including the stability of the pipeline(s) and any spanning or exposure. Survey data and history should be included to support the conclusions.

- *Identification of Options*

This will include a detailed comparative assessment of the alternative DAR options. The assessment should examine and compare each option on the basis of complexity and associated technical risk, risks to personnel, environmental impact, effect on safety of navigation and other uses of the sea and economics in order to arrive at the best DAR option.

- *Selected DAR Option*

A description of the proposed DAR option and how it will be undertaken.

- *Costs*
- *Timing*
- *Monitoring*

If it is proposed that any pipeline(s) should be left in place, details of an appropriate monitoring regime must be included.

11. Stakeholder Consultations

A description is required of the consultation process employed, including a summary of the statutory consultations with interested parties and the extent to which they have been taken into account in the programme. Relevant correspondence should be annexed to the programme. In those cases where it has been necessary to conduct a wide ranging public consultation/dialogue process, details of the approach taken and the outcome of the process should be included.

12. Costs

Cost estimates relating to the preferred DAR option, including post-DAR inspection and maintenance, should be included. Where it is considered that items of recovered equipment have a resale value this should be shown.

13. Schedule

Details of the DAR time scale for the proposed option, including a schedule showing the dates at which the various stages of the DAR are expected to start and finish, should be included.

14. Licences Associated with the Disposal Option

This should indicate any other licences or permits that are required in order to carry out the proposed DAR option.

15. Project Management and Verification

Information on how the Company will manage the implementation of the DAR programme and provide verification to the Authority concerning progress and compliance.

16. Debris Clearance

Proposals for identification and removal of seabed debris following DAR works, including the extent of the area to be covered, should be included. Verification of seabed clearance will be required from an independent organisation.

17. Pre and Post-DAR Monitoring and Maintenance

Proposals covering the post-DAR phase:

- seabed sampling surveys to monitor levels of hydrocarbons, heavy metals and other contaminants in sediments and biota. Where appropriate data is not already available against which to compare results, pre-DAR surveys will need to be carried out in order to establish a suitable base-line.
- inspection and maintenance where remains are to be left in place.

18. Supporting Studies

In the event supporting studies have been undertaken, they should be listed within the DAR programme.

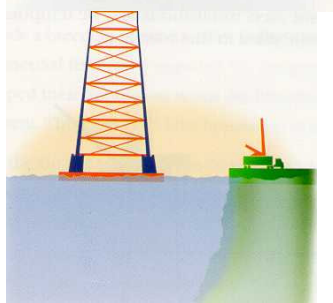
OPTIONS FOR DAR OFFSHORE INSTALLATIONS

The main alternatives that should be properly considered, but not limited to, for DAR offshore installations are briefly summarised below:



Recycling

Clean and bring installations (or parts of) onshore. Break them up into scrap for recycling. Recycling options are generally limited in Brunei Darussalam.



Disposing as Waste on Land

Clean and bring installations (or parts of) onshore. Dispose of them in licensed, permanent waste disposal sites. The limited availability of properly engineered landfill sites in Brunei Darussalam means that this option might be costly. Furthermore, the operation of dismantling and transport to shore needs careful consideration to ensure health & safety risks are controlled and well managed.



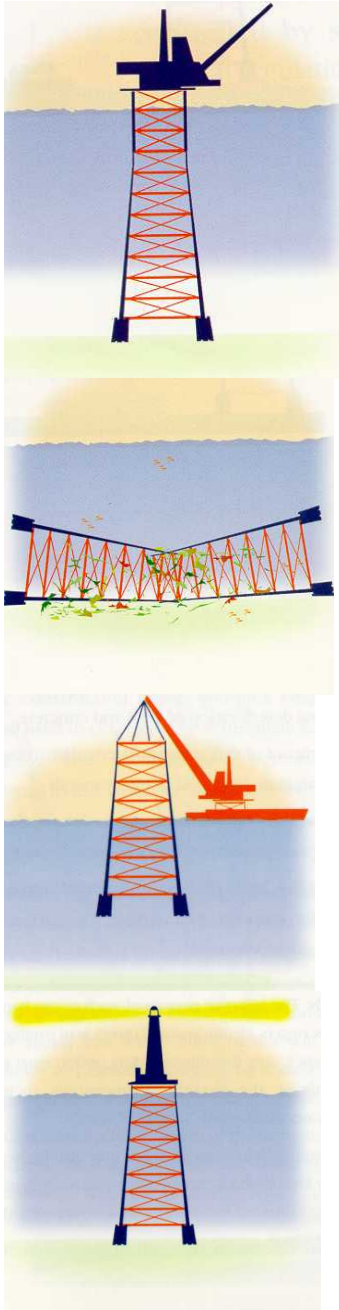
Emplacement / Toppling on Site

In this option, the topside can be stripped out and/or the jacket is toppled to the seabed at its piled location. It requires a high degree of confidence in the mechanism and control to ensure toppling occurs as planned. Clean the installation. Either place the sections removed from the installations on the seabed close to the lower part of the jacket; or topple part of the installation onto the seabed. Leave a minimum clear water depth of 55 m from the surface of the sea to the remains (unless designated as an artificial reef). Many structures offshore Brunei Darussalam are situated in water depths of less than 55m means that the creation of artificial reefs is generally preferable.



Disposal in the Deep Ocean

Clean the installation. Tow and dispose in licensed deep-water site. At least 2000 m deep, at least 150 nautical miles from land. Although deep-water disposal is cheap and technically simple, other alternatives are generally considered more suitable for Brunei Darussalam.



Leave in Place

This option is only to be practised for deferral cases and is not an option for permanent abandonment.

Clean the installation. Make safe and maintain it. Leave in place to enable future re-use at the site or at an alternative site after total removal. Some steel structures may be temporarily mothballed in this way, but sufficient maintenance is essential to ensure integrity.

Artificial Reefs

Clean installation offshore. Place on the seabed to form artificial reef to encourage marine life. The Brunei Fisheries Department has created a number of artificial reefs offshore Brunei. The future creation of artificial reefs when considered must take into account the issue of residual liability. If an artificial reef is created, the structure must be clearly marked on admiralty charts.

Re-use in the Oil & Gas Industry

Re-use installation (or parts of) for oil and gas production offshore in another location. Most of the jackets and structures are most likely to have reached the end of their design life upon DAR, thus making re-use unlikely. However, certain plant and equipment (e.g. compressors) may be available for sale and/or re-use.

Other Uses

Clean installation (or parts of) and use for other purposes, for example, as lighthouse, marine research centre, meteorological station, or possible site for alternative energy generation.

COMPANY SPECIFIC SCHEDULES

This Annex provides for Schedules to allow certain provisions and references required to address matters specific to each Company operating in Brunei Darussalam.

Schedule I – Brunei Shell Petroleum Company Sendirian Berhad

1. Applicable Petroleum Mining Agreements

To the extent that the provisions of these Guidelines are in conflict with any provisions of the Applicable Petroleum Mining Agreements (Consolidated First and Second Offshore Petroleum Mining Agreement, the Onshore Petroleum Mining Agreement of December 23, 2003 and Third Offshore Agreement of 10th April 1992), the Applicable Petroleum Mining Agreements shall prevail.

2. Cost and Funding of DAR Operations

All issues related to liability for costs of, and method of funding of DAR operations shall be governed by the provisions of the Petroleum Mining Agreements, as stated in Article 1, Schedule I as above, i.e. Article 33(3) and Schedule III of the Consolidated First and Second Offshore Petroleum Mining Agreement and Article 50(3) and Schedule III of the Onshore Petroleum Mining Agreement of December 23, 2003, between the Government of His Majesty the Sultan and Yang Di-Pertuan of Brunei Darussalam and Company .

3. Additional references to Annex D:

In addition the Company will also refer to the following guidelines:

- a. BSP-02-Guideline-008, BSP Decommissioning and Abandonment Guidelines, 2002.
- b. BSP-02-Guideline-007, Contaminated Site Management Guidelines, 2001.

Schedule II – Company X

REFERENCES

1. Guidance Notes for Industry Decommissioning of Offshore Installations and Pipelines under the Petroleum Act 1998, Offshore Decommissioning Unit, Department of Trade and Industry, UK, 2000.
2. Guideline for the Decommissioning of Offshore Petroleum Facilities: A Guideline in Relation to the Commonwealth of Australia's Petroleum (Submerged Lands) Act 1967, Commonwealth Department of Industry, Tourism and Resources, Australia, 2002.
3. Notice to Lessees and Operators of Federal Oil and Gas Leases in the Pacific Outer Continental Shelf (OCS) Region: Decommissioning of OCS Facilities, Minerals Management Service, Department of the Interior, USA, 2003.
4. Notice to Lessees and operators of Federal Oil, Gas and Sulphur Leases and Pipeline Right of Way Holders in the Outer Continental Shelf, Gulf of Mexico OCS Region, Minerals Management Service, Department of the Interior, USA, 2004.