Marine Operations Manual UKCS-MAL-001

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Amendment Summary

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Issue 1 September 2001 First issue.
Issue 2 October 2002 This document has been updated to reflect the removal of Part 2 site-specific information, which is now issued as Level 4 documents.
Issue 2/AM01 September 2003 Section 2 Paragraph 35 Securing of Cargo amended to identify use of UKOOA Guidelines on Safe Packing and Handling of Cargo as mandatory.
Section 7 Appendix 7A Bulk Hose Guidelines amended to update contact, supplier, ordering and colour-coding details.
Issue 3 May 2005 Full review and update.
Issue 3/AM01 May 2006 Section 7, Appendix 7A updated to provide more clarity on hose slinging position and the need to stop the job if not so slung.

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04 Emergency Response Centre BP, Dyce
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06 OIM (CD Copy) Bruce
07 OIM (CD Copy) Clair
08 OIM (CD Copy) Cleeton
09 OIM (CD Copy) ETAP CPF
10 OIM (CD Copy) Harding
11 OIM (CD Copy) Lomond
12 OIM (CD Copy) Magnus
13 OIM (CD Copy) Miller
14 OIM (CD Copy) North Everest
15 OIM (CD Copy) Petrojarl Foinaven
16 OIM (CD Copy) Ravenspurn North
17 OIM (CD Copy) Schiehallion
18 OIM (CD Copy) West Sole Alpha
19 OIM (CD Copy) Unity
20 AFP MarCo (CD Copy) Petrojarl Foinaven
21 Central LogCo (CD Copy) Montrose
22 EoS MarCo/LogCo (CD Copy) Murchison
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57 MODU Deepsea Bergen
58 MODU TO Rather

Virtual Copyholders

Copy Copyholder

01 Document Technical Authority
02 G ABZ SMS Notifications
03 AFP MarCo, Petrojarl Foinaven
04 OSC Harding, Harding
05 LogCo SNS, Ravenspurn North
06 DBU Logistics, BP, Dyce
07 MBU Logistics, BP, Dyce
08 SNS Logistics, BP, Dyce
09 Subsea, BP, Dyce
10 Aviation, BP, Dyce
11 G ABZ MARP, BP, Dyce

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Preface

Review and Update

This document will be subject to 24-monthly review and update, when document holders will have the opportunity to express opinions and suggest improvements.

However, the document control system allows for continuous update of this document. As such, any user may at any time identify an error or suggest an improvement using an Amendment Proposal proforma which is available electronically on the UKCS SMS website, from the Data Control Centre (DCC) Supervisor or from the Technical Authority.

All holders of this document are registered so that they can be sent updates and be kept informed of changes or reviews.

Responsibility of Copyholders

It is the responsibility of the registered copyholder of controlled hard copy versions to maintain the accuracy of the document by ensuring that all updates are promptly incorporated and acknowledged.

Furthermore, the registered copyholder of controlled hard copy versions must at all times maintain custody of this document unless prior approval is given by the relevant Technical Authority.

The roles and responsibilities of copyholders and 'virtual' copyholders are detailed in Section 1 of the Document Control Procedure (UKCS-DCM-001).

List of Abbreviations

AHV Anchor Handling Vessel
ALARP As Low As Reasonably Practicable

BCH Bulk Chemical Handling
BL Breaking Load
BP Static Bollard Pull
BU Business Unit
BUL Business Unit Leader

CATS Central Area Transmission System
cfu Colony Forming Units
CoS Chamber of Shipping
COSHH Control of Substances Hazardous to Health
CSS Co-ordinator Surface Search

DC Daughter Craft
DCR Design and Construction Regulations
DGPS Differential Global Positioning Satellite
DNV Det Norske Veritas
DoT Department of Transport
DP Dynamic Positioning
DPV Dynamically Positioned Vessel
DPVOA Dynamic Positioning Vessel Operators Association
DSV Diving Support Vessel

DTI Department of Trade and Industry

EED Electro-explosive Device
EOA Emergency Onboard Accommodation
ERC Emergency Response Centre
ERRV Emergency Response and Rescue Vessel
ERP Emergency Response Plan
ETA Estimated Time of Arrival
ETAP Eastern Trough Area Project

Fi-Fi Firefighting
FMEA Failure Modes and Effects Analysis
FPSO Floating Production, Storage and Offloading
FRC Fast Rescue Craft

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List of Abbreviations (cont'd)

GBT Gravity Case Tank
GCD Gas Compression Deck
GFU Greater Forties Unit
GHSER Getting HSE Right
GMDSS Global Maritime Distress and Safety System

HAZID Hazard Identification
HAZOP Hazard and Operability
HIRA Hazard Identification and Risk Assessment
HSE Health, Safety and Environment

IALA International Association of Lighthouse Authorities
IMCA International Marine Contractors Association
IMDG International Maritime Dangerous Goods
IMO International Maritime Organisation
INLS International Noxious Liquid Substances
ISM International Safety Management

LEL Lower Explosive Limit
LogCo Logistics Co-ordinator
LOLER Lifting Operations and Lifting Equipment Regulations

MA Master Agreement
MarCo Marine Co-ordinator
Marlog Marine Logistics
MBC Microbiological Contamination
MERSAR Merchant Ship Search and Rescue Manual
MOB Man Overboard Boat
MODU Mobile Offshore Drilling Unit
MRCC Maritime Rescue Co-ordination Centre
MSA Marine Safety Agency
MSDS Material Safety Datasheet

NDT Non-destructive Testing
NNMI Not Normally Manned Installation
NPZ Normal Patrol Zone

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List of Abbreviations (cont'd)

OCC Operations Control Centre
OCES Operator's Co-operative Emergency Response
OCIMF Oil Companies International Marine Forum
OIM Offshore Installation Manager
OOE Offshore Operations Engineer
OPITO Offshore Petroleum Industry Training Organisation
OSC On-scene Co-ordinator
OSO Offshore Services Operator
OSV Offshore Support Vessel
OWE Offshore Well Engineer

PA Public Address
PFEER Prevention of Fire and Explosion, and Emergency Response
PLB Personnel Locator Beacon
POSCON Position Control
ppb Parts per Billion
PPE Personal Protective Equipment
ppm Parts per Million
PSV Platform Support Vessel
PTW Permit to Work

RCCU Refrigerated Cargo Carrying Units
RESCo Rescue and Recovery Services Co-ordinator
RGPS Relative Global Positioning System
ROV Remotely Operated Vehicle

SAR Search and Rescue
SBV Standby Vessel Now known as ERRV
SIMOPS Simultaneous Operations
SITREP Situation Report
SMS Safety Management System
SNS Southern North Sea
SOLAS Safety of Life at Sea
SRB Sulphate Reducing Bacteria
SSCV Semisubmersible Crane Vessel
STCW Standards of Training, Certification and Watchkeeping
SWL Safe Working Load

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List of Abbreviations (cont'd)

TEMPSC Totally Enclosed Motor Propelled Survival Craft
TMS Tug Master System
TVC Total Viable Count

UKCS United Kingdom Continental Shelf
UKOOA United Kingdom Offshore Operators Association
UTG Upstream Technology Group

VCG Vertical Centre of Gravity

w/w Weight-by-weight

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Section 1

Introduction

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Section 1

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Implementation

1.1 General
This manual contains instructions, and information relevant to all offshore marine activity within UKCS waters. It does not apply to crude oil and oil handling terminals, and their related marine activities, where specific port procedures apply. The document has been

produced by BP Marine Logistics Department which is the custodian, and any queries regarding its content should be directed to the Director of Marine Services.

1.2 Manual Structure
This manual is divided into 13 sections and has online links to both site-specific marine and UKOOA reference documents, as shown in Table 1.1 and Addendum 1.

1.3 Instructions
An instruction requires mandatory compliance. It may be based on current legislation, other BP policy statements or where a previous experience has highlighted the requirement for strict controls to reduce the exposure to risk, and will have been discussed fully with all senior marine personnel before being included in this document.

1.4 Contravention of an Instruction
An instruction may only be contravened with the express permission of the Director of Marine Services or his nominated delegate. This permission shall be sought following completion of a risk assessment and hazard analysis to identify the risks and the measures taken to mitigate them.

1.5 Information
The information included in this document gives additional background knowledge which will assist in complying with these instructions and guidelines.

1.6 Limitations
Nothing in this document shall supersede the spirit or letter of legislation covering the authority of Masters of vessels, or supervisory staff responsible for offshore Installations, diving and project activity.

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Foinaven Marine Operations
Clair Marine Operations
Magnus Marine Operations
Lomond Marine Operations
North Everest Marine Operations
ETAP Marine Operations
Andrew/Cyrus Marine Operations
Harding Marine Operations
Miller Marine Operations
Bruce Marine Operations
North West Hutton Marine Operations
SNS Marine Operations
UKOOA Reference Documents
UKOOA/CoS Guidelines for the Safe Management and Operation of Offshore Support Vessels
UKOOA Guidelines for the Safe Packing and Handling of Cargo to and from Offshore Locations
UKOOA Emergency Response and Rescue Vessel Management Guidelines
UKOOA Emergency Response and Rescue Vessel Survey Guidelines

Table 1.1 Manual Structure

Introduction

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1.7 Requirements
All personnel engaged in offshore marine operations in UK waters must be familiar with the content of this document which shall be used as a reference manual to ensure that a specific marine activity is being conducted in compliance with an established standard. All Masters, bridge Watchkeeping Officers, Offshore Installation Managers (OIMs) or marine authorities, together with any BP Representative shall complete the form included at the front of this document to verify that they have read and understood the content. Where this document is issued in CD format, a record should be kept available for inspection by BP.

Organisation

2.1 Location
The Marine Consultancy Branch is part of the Logistics Section of BP situated in Dyce, Aberdeen.

2.2 Purpose
The branch is established to manage BP’s marine business, both commercially and technically, ensuring that operations are conducted safely and cost effectively.

The responsibilities of personnel are to:

(1) Provide the Business Units (BUs) with an assurance service, ensuring that both legal responsibilities and Company policy are met at all times through the use of HAZOP and HAZID for projects, and suitable and sufficient risk assessments where applicable for marine operations.
(2) Act as BP’s UKCS centre of marine expertise, ensuring that the marine provider conducts its business in accordance with BP’s Health, Safety and Environment (HSE) policy, appropriate legislative practices and as outlined in this document.
(3) Maintain a presence on various UK industry committees ensuring that BP has input into any proposed changes to marine legislation and industry practices.
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2.3 Organisation
2.4 Marine Consultancy Branch
The Marine Consultancy Branch will:

• Develop, agree and implement an annual marine strategy in conjunction with logistics provider and BUs
• Track and report to BUs on performance and spend
• Provide marine expertise, covering a wide spectrum of activities, to the BUs and Resource Groups
• Interface with regulatory authorities, eg the Health and Safety Executive, the Department of Transport (DoT)
• Provide the interface between BP Exploration and BP Shipping for all offshore-related marine activities
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Legal and HSE Management

3.1 Applicable Legislation
All vessels contracted by, or on behalf of, BP for work at a BP site shall obey all current UK offshore and health and safety legislation, flag state and International Maritime Organisation (IMO) marine legislation. Appendix 1A lists current health and safety legislation. However, this is not a definitive list and is provided for guidance only.

3.2 Exemptions
Flag State and IMO Marine Legislation

Exemption from compliance with the Health and Safety at Work etc Act 1974, SI 1995/No 263 exists within that SI for emergency response and rescue vessels and vessels engaged in towing, transporting or navigating the Installation. However, BP expects that all vessels shall comply with the principles of SI 1995/No 263.

3.3 Safety Management Systems
BP Logistics (UKCS) will be distinctive in the pursuit and attainment of health, safety and environmental performance. As part of our commitment in this respect we shall ensure that arrangements and processes that are required for vessels being employed by, or on behalf of, BP are in place for marine plant management. Our goals are simply stated – ‘No accidents, no harm to people and no damage to the environment’.

3.3.1 Getting HSE Right (GHSER)
Getting HSE Right is the system and standard applied to all BP Group companies.
BP is committed to conducting its business in a manner which:

• Ensures that all BP facilities are designed and maintained to high and consistent standards
• Complies with all relevant laws and regulations
• Is compatible with the balanced economic and environmental needs of the community

3.3.2 BP Safety Management System
BP Marine and Aviation Safety Management Plan (UKCS-MAL-006) identifies specific responsibilities, requirements and procedures relative to the safety of marine operations. The Safety Management System document directs users to the BP Marine Operations Manual (UKCS-MAL-001) for detailed information on marine operations. The Safety Management System applies to all UK Business Units.

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3.3.3 Vessel Safety Management
Any vessel or barge contracted by, or on behalf of, BP shall have a structured and documented Safety Management System (SMS) to enable Company personnel to effectively implement the Company safety and environmental policy.

All systems should demonstrate that quality management and quality system elements meet the requirements of the IMO regulation on the International Management Code for the Safe Operation of Ships and for Pollution Prevention, more commonly known as the International Safety Management Code or the ISM code. The ISM code has been added to Chapter IX of the international convention for Safety of Life at Sea (SOLAS) and is now mandatory. BP expects this to be complied with.

SOLAS Chapter IX, IMO Resolution A788(19) and Merchant Shipping Notice M1616 refer to the ISM code.

SI 1998/No 1561 The Merchant Shipping International Safety Management (ISM) Code Regulations, require vessels to have a valid Document of Compliance or a Safety Management Certificate.

Owners’ SMSs should contain the following key elements of the ISM code.

· General definition, objective and application
· Safety and environmental protection policy
· Company responsibility and authority
· Designated person(s) ashore with access to senior management and resources
· Master's responsibility authority
· Resources of personnel
· Development of plans for shipboard operations
· Emergency preparedness
· Report and analysis of non-conformities, accidents and hazardous occurrences
· Maintenance of the ship and equipment
· Documentation
· Company, review, verification and evaluation
· Certification, verification and control

3.4 Marine Plant Contracting Process

The BP Business Unit Leader (BUL), or his delegate, eg the Marine Consultancy Branch, is responsible for ensuring that any vessel contracted by, or on behalf of, BP is to an acceptable minimum standard. It is a requirement that marine competence is included within the process. Marine Logistics has in place a comprehensive chartering selection and assurance process, and should be used in the first instance for all offshore vessel needs.

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3.5 Marine Plant Management Process

3.5.1 Interface Document

Any vessel or barge contracted to complete specialist and project activities will be required to have an interface document onboard to 'bridge' the Safety Management Systems of all units for the duration of the project.

This does not apply to supply, anchor handling and emergency response and rescue vessels, which are managed through audit and completion of 'Vessel Entry into the 500m zone of an Installation' (refer to the relevant site-specific marine operations documents listed in Addendum 1 for specific information).

Bridging is required to ensure that all aspects required for safe operation have been adequately addressed, and to illustrate how this has been undertaken through the SMS of the participants. It shall include the following:

• The names, roles and responsibilities of the key project personnel
• The channels of communication to be used throughout the project for routine and emergency situations
• The vessel/barge scope of work as part of the project
• How the platform/vessel/barge emergency procedures are properly integrated for the duration of the project
• The monitoring, audit and review procedures which will be undertaken throughout offshore works phase of the project
• Reference to the task risk assessment process that has taken place, and a statement that all residual risk is accepted by the BU

3.5.2 Audit and Monitoring Plan

An audit plan is used that includes audits of:

• Contractors' organisation – Safety Management Systems
• Vessel safety to include hull machinery, personnel etc
• Project-specific equipment
• Dynamic positioning system
• Diving systems – where applicable

Audits are to be completed to recognised industry standards by competent auditors on an annual basis. All non-conformancies to be closed out to a satisfactory conclusion prior to operations.

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3.5.3 Hazard Identification and Risk Assessment (HIRA)

All marine hazards whether generic or task specific must be identified, with associated risks assessed and accepted by or on behalf of the BP Business Unit Leader. Safeguards against 'all identified risks' shall be implemented and included within task-specific procedures. Risks will be addressed during Hazard and Operability (HAZOP) and Hazard Identification (HAZID) audits, procedures, toolbox talks, safety meetings and Failure Modes and Effects Analysis (FMEA) of equipment etc.

Any asset-specific marine hazard is identified within the relevant site-specific marine operations document, a listing of which is provided in Addendum 1, and within the Asset Information Dossier for subsea operations.

3.5.4 Competence

It is a requirement that competence shall be demonstrated for all key personnel involved in marine activity.

A competent person is a person who, by reason of training, knowledge, experience and judgement, is considered by management to be capable of adequately assessing health and safety risks for the activity in question.

The provision of external qualifications and competency is not enough to ensure that personnel are competent, and vessel owners need to demonstrate assurance that competency of personnel is being effectively managed.

3.5.5 BP Group Ship Vetting Policy
For tanker operations, the BP Group Ship Vetting Policy applies to all ships engaged in the carriage of bulk crude oil, refined products, chemicals or liquefied gas on charter to, or on behalf of, BP and it is the responsibility of each BP business or associate to comply with this policy. In the UKCS for offshore marine operations, vetting is carried out using safety performance and technical ability as the hurdles to be crossed before considering commercial impact.

Definitions, Titles and Responsibilities

The information in Paragraphs 4.1 to 4.5 contains titles or abbreviations mentioned in the text of this manual. Following each title is a brief definition and, where appropriate, an outline of the responsibilities of that title.

4.1 BP
For ease of reference, the term BP has been used throughout to encompass the interests of both BP, Britoil plc, Amoco, Arco and other associated companies.

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4.2 The Operator
‘Operator’ is a term meaning the party (normally acting on behalf of a group of companies, all of whom have proportionate interests in the licensing block, fixed/floating Installation etc comprising the field) who is responsible for the exploration and production of hydrocarbons from, and the management of, the Installation(s) in the oil/gas field.

The Operator is similarly responsible for compliance with all UK Continental Shelf (UKCS) legislation.

4.3 Contractor
This describes any company contracted by any Operator to work in a BP area of operations.

The contractor is responsible for complying with all relevant merchant shipping and offshore legislation.

4.4 Onshore
4.4.1 Business Unit Leader
The Business Unit Leader is the person who has contracted the marine service and who must ensure that an appropriate marine assurance process is in place.

4.4.2 BP Job Leader
The Job Leader reports to the BP Business Unit Leader and has primary responsibility for ensuring that the contract is properly managed, and is ultimately accountable for its successful and timely completion. In particular, the Job Leader will provide or make available to the contractor all relevant information on health, safety and environmental matters so that the contractor may meet all his legal obligations. While day-to-day issues may be resolved at site level by the BP Representative, the Job Leader is the focal point and authority for all contact between BP and the contractor’s organisation.

4.4.3 Pipeline Responsibilities
Responsibilities for SNS, CATS, Ninian, Andrew/Cyrus, Miller and Clair oil pipelines lies with TAPS within the MBU.

The Forties pipeline lies with the FPS within PIMS.
The EoS gas pipeline, Clair gas, Magnus and Bruce oil lies with the pipelines section of the DBU.

ETAP and ELE pipelines lie with CNS pipelines in the MBU.

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4.5 Offshore

4.5.1 OIM

The OIM is a person appointed by the Owner and registered with the Health and Safety Executive as the principal authority for managing an offshore Installation, having the overall general responsibility for matters affecting safety, health or welfare and the maintenance of order and discipline, and for the discharge of that responsibility shall exercise authority over all persons in or about the Installation.

Upon the Installation, and up to a distance of 500m from it, the OIM has the authority to authorise, cancel, suspend or prevent the commencement of any operation which may affect the safety of that Installation and must also be kept informed of all work to be undertaken.

When a floating Installation is operating within 500m of a fixed Installation, the OIM of the fixed Installation has the authority to authorise, cancel, suspend or prevent the commencement of any barge operation which could endanger the safety of that production Installation.

The OIM of the floating Installation has similar authority to authorise, cancel, suspend or prevent the commencement of any production Installation operation which could affect the floating Installation. Responsibility for operating the floating Installation in a safe manner rests entirely with the OIM.

4.5.2 OIM – Multi-Installation

In a multi-Installation field, the OIM appointed by BP is to act as the combined OIM. The OIM is the point of contact for any accident/incident occurring within the field but outwith the 500m zone around a Platform (OIM West Alpha in the West Sole Field, OIM Cleeton in the Ravenspurn Field).

4.5.3 Barge Master

The Barge Master is:

• The principal marine authority on a barge, who in some cases may also be the OIM
• Responsible to the OIM for position keeping, stability and compliance with all marine legislation pertaining to the barge

4.5.4 Vessel Master

The Vessel Master is the principal authority on a vessel and, as such, is responsible for the safety of the vessel and crew working on and from that vessel. No instruction or procedure contained in this document diminishes the Vessel Master’s responsibility for the vessel or from results of the action taken; or relieves the requirement to comply with the International Rules for the Prevention of Collisions at Sea, relevant marine legislation and, in particular, any action to save life.

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4.5.5 BP Representative
The BP Representative is BP's principal authority on a Platform, barge or vessel which is not owned or managed by BP. The BP Representative is the 'eyes' and 'ears' of the BP Business Unit Leader.

The BP Representative's responsibilities include:

• Ensuring that the contractor is observing local regulations and procedures, that their staff are adequately trained in local safety practices, emergency procedures and the use of associated equipment, and that they are all informed of any special or unusual hazards which their workplace may present
• Liaising directly with the contractor onsite to ensure work is carried out with proper regard to health, safety and environmental protection and legal obligations and will monitor performance through regular inspections of the worksite
• Monitoring contractor's activities and, if considered unsafe, requiring them to stop work
• Reporting on all aspects of the contractor's performance to the BP Contract Representative
• Informing the BP Contract Representative of all accidents and incidents
Professional advice on health, safety and environmental issues will be available to the BP Representative from the BP Site Safety Officer, where one is present, or from the Field Group/Department Safety Officer.

4.5.6 BP Marine Representative
The BP Marine Representative is BP's principal marine authority on a barge or vessel which is not owned or managed by BP.

The BP Marine Representative has identical responsibilities to those described for the BP Representative. However, those responsibilities are applicable to the marine aspects of the operation or contract.

Note: Where a BP Marine Representative is carried, he is the senior authority until such time as the marine operation is handed over to the BP Representative.

4.5.7 Marine Controller
Each field has a 5km controlled area for which a Marine Controller is identified and given responsibility. Outwith this area, eg a drilling rig at a remote location, the

BP Representative's designated deputy assumes this responsibility as far as local control of the vessel is concerned. If a mobile offshore Installation or vessel is working within 5km of any other Operator's field, then the Marine Controller will be required to liaise with the Operator's OIM on all matters affecting operations. In a controlled area, the Marine Controller is broadly responsible to the Installation OIM for protecting the offshore Installation(s) and subsea Installation(s) from marine activity.

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4.5.8 Diving Superintendent
The Diving Superintendent is the senior representative of the diving contractor onsite, and is responsible to the BP Representative on diving and contractual matters.

4.5.9 Diving Supervisor
The Diving Supervisor is the person appointed in writing by the management of the diving contractor to oversee the diving operation and, as such, is responsible for the diving operation, including safety, and for compliance with all relevant diving legislation.

4.5.10 Offshore Installation
This describes any Installation or part of an Installation, whether floating or not, which is maintained within the UK Sector of the Continental Shelf in connection with the exploitation of mineral resources or with the exploration with a view to such exploitation.

Note: This includes accommodation vessels and mobile offshore Installations in transit

(SI 1995/No 738 The Offshore Installations and Pipeline Works (Management and

Administration) Regulations 1995).

4.5.11 Subsea Installation
For the purposes of this document the term subsea Installation shall include pipelines, wellheads, subsea completions, power cables and any other associated equipment.

4.5.12 Controlled Area
The controlled area is an area within 5km of any of BP's offshore production Installations (manned or unmanned) or their associated subsea Installations.

4.5.13 Safety Zone

Under the Petroleum Act 1987, Section 21, a safety zone is automatically established around every offshore Installation.

Any vessel/barge wishing to operate within this 500m zone must ask the Offshore Installation Manager for permission to enter.

4.5.14 Marine Control Point
The marine control point is the offshore location through which communications with the Marine Controller are established.

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4.6 Vessels
For the purposes of this document, the term vessel includes every description of watercraft including mobile drilling rigs, construction vessels, flotels, non-displacement craft and any other floating structure. Additionally, they may be considered as offshore Installations if they fall within the Health and Safety Executive requirements.

Barge

A barge is considered to be a vessel. However, if it falls within the definition of Paragraph 4.5.10, it shall also be considered as an offshore Installation and must comply with both offshore and maritime legislation.

Cargo Barge

A cargo barge is considered to be an unpowered ‘flat-top’ vessel which is primarily used to carry cargo. It is towed from location to location by tug or anchor handling vessel.

Note: This is not a barge or offshore Installation.

Field Support Vessel

The field support vessel incorporates the role of Emergency Response and Rescue Vessel (ERRV) with additional intervention facilities.

Diving Support Vessel (DSV)

The DSV is a specialised vessel capable of undertaking diving operations.

ERRV

The ERRV is a specialised vessel certificated to undertake safety operations at offshore Installations. Its prime role is to provide a good prospect of rescue and recovery for survivors.

Survey Vessel

The survey vessel is a specialised vessel to undertake survey positioning, hydrographic investigations and Remotely Operated Vehicle (ROV) operations.

Seismic Vessel

The seismic vessel is a specialised vessel for seismic surveys and investigations.

Dynamically Positioned Vessel (DPV)

The DPV is a vessel which automatically maintains position using a computer-assisted manoeuvring system.

Flotel

The flotel is an accommodation vessel used to support construction and maintenance activities. Flotels may be either column stabilised or jack-up type.

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Pipelay Vessel

Pipelay vessels are designed to fabricate and lay subsea pipelines. Dynamic positioning or anchors are used for positioning.

Floating Production, Storage and Offloading (FPSO)

The FPSO is a mobile production Platform normally moored using a turret mooring system which allows the vessel to swing through 360°.

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UK Offshore Health and Safety Legislation

(1) Offshore Safety Act 1992.

(2) Mineral Workings (Offshore Installations) Act 1971.

(3) Health and Safety at Work etc Act 1974.

(4) The Health and Safety at Work etc Act 1974 (Application outside Great Britain) Order 1995 (SI 1995/No 263).

(5) Health and Safety, The Diving at Work Regulations 1997 (SI 1997/No 2776).

(6) Health and Safety, The Offshore Installations and Pipeline Works (Management and Administration) Regulations 1995 (SI 1995/No 738).

(7) Health and Safety, The Offshore Installations (Prevention of Fire and Explosion, and Emergency Response) Regulations 1995 (SI 1995/No 743).

(8) The Submarine Pipelines (Inspectors etc) Regulations 1977 (SI 1977/No 835).

(9) Health and Safety, The Offshore Installation and Wells (Design and Construction, etc) Regulations 1996 (SI 1996/No 913).

(10) The Submarine Pipelines Safety Regulations 1982 (SI 1982/No 1513).

(11) Health and Safety, The Management of Health and Safety at Work Regulations 1999 (SI 1999/No 3242).

(12) Health and Safety, The Offshore Installations (Safety Case) Regulations 1992 (SI 1992/No 2885).

(13) Health and Safety, The Construction (Design and Management) Regulations 1994

(SI 1994/No 3140).

(14) The Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995 (SI 1995/No 3163).

(15) The Pipeline Safety Regulations 1996 (SI 1996/No 825).

(16) The Chemicals (Hazard Information and Packaging for Supply) Regulations 1994 (SI 1994/No 3247).

(17) The Asbestos (Prohibitions) Regulations 1992 (SI 1992/No 3067).

(18) The Offshore Installations and Pipeline Works (First Aid) Regulations 1989 (SI 1989/No 1671).

(19) CAP 437 Offshore Helicopter Operations.

(20) The Provision and Use of Work Equipment Regulations 1998 (SI 1998/No 2306).

(21) The Control of Substances Hazardous to Health Regulations 1999 (SI 1999/No 437).

(22) The Noise at Work Regulations 1989 (SI 1989/No 1790).

(23) The Offshore Noise and Electricity Regulations 1997 (SI 1997/No 1993).
(24) The Electricity at Work Regulations 1989 (SI 1989/No 635).
(25) The Lifting Operations and Lifting Equipment Regulations 1998 (SI 1998/No 2307).
(26) The Health and Safety (Consultation with Employees) Regulations 1996 (SI 1996/No 1513).
(27) Review of BP Exploration Standing Instructions and Guidelines for Offshore Marine Operations.
(28) The Offshore Installations (Safety Representatives and Safety Committees) Regulations 1989 (SI 1989/No 971).
(29) The Personal Protective Equipment at Work Regulations 1992 (SI 1992/No 2996).
(30) The Manual Handling Operations Regulations 1992 (SI 1992/No 2793).
(31) The Health and Safety (Display Screen Equipment) Regulations 1992 (SI 1992/No 2792).
(32) The Health and Safety (Safety Signs and Signals) Regulations 1996 (SI 1996/No 341).

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1 Introduction

These instructions and guidelines apply to:

• All rigs/barges/vessels chartered by BP, or on behalf of BP
• All offshore Installation supervisory staff who are involved in, or responsible for, marine activities
• All barges/vessels which require to work within the 500m safety zone of a BP-operated offshore Installation or close to BP-operated subsea equipment and pipelines
They are issued to formalise and control the marine aspects of offshore operations and are not intended to conflict with the normal duties and responsibilities of a Master with regard to the safety and handling of his vessel, or to conflict with the established standards of good marine practice and seamanship.

Nothing in this document shall diminish total responsibility of the Offshore Installation Manager (OIM) for all operations being carried out within the 500m zone around the Installation.

These are general instructions and guidelines and as such shall, where appropriate, be read in conjunction with other sections in this document which are more specific to a particular marine operation.

2 Controlled Area

Where there is a presence of remote subsea production Installations, it is sometimes necessary to exercise close control over marine activity outwith the 500m safety zone. This is known as a controlled area.

For the purposes of this document, a controlled area is an area within 5km of any BP production Installation (manned or unmanned) or any associated subsea Installations.

Within a controlled area the movements of all vessels/barges on charter to BP are subject to control by a Marine Controller (refer to Section 1 Paragraph 4.5.7).

Masters/OIMs of all vessels/barges shall attempt to contact the appropriate marine control point for further instructions prior to entering the controlled area.

3 Limitations and/or Defects Affecting
Barge/Vessel Performance

OIMs/Masters of all barges/vessels approaching an offshore Installation shall read and understand the relevant field section and satisfy themselves that they are in possession of the latest marine information. This is available from the Marine Controller and shall, where appropriate, include:

• The names of all vessels operating in the area
• The VHF channels in use
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· The position of any buoys or underwater obstructions
· The nature and locality of any diving/survey/seismic operations
· Entry to the 500m vessel/Installation checklist
· An up-to-date field chart
The OIMs/Masters must be aware of any prohibited zones around the Installation and must complete any relevant risk assessments.

Prior to being granted permission to enter the 500m safety zone of an Installation, the Master of the vessel will be required to complete a pre-entry checklist to confirm that all power generation, control and distribution systems onboard the vessel are fully

operational. The checklist will also advise the Master of any particular marine hazards, restricted zones and operational requirements at the location.

Note: Risk assessments may be required for certain operations, eg weather-side working, etc.

The Vessel Master and the OIM shall ensure that the vessel is fully operational before the commencement of any operation within the 500m safety zone.

Any defects occurring after the initial report must be immediately reported to the Installation. Continued operation will be subject to a risk assessment performed by the OIM and Vessel Master.

Safety Zones and Infringements

4.1 Safety Zones
The requirement for safety zones around offshore Installations and subsea Installations is established by the Offshore Installations (Safety Zones) Regulations 1987, SI 1987/No 1331 under Section 22 of the Petroleum Act 1987.

A safety zone established around an offshore Installation shall extend to every point within 500m of any part of the Installation (ignoring moorings) and to every point in the water which is vertically above or below such a point.

The marking by a buoy of a safety zone around a subsea Installation in water depths exceeding 45m is discretionary.

Any vessel approaching any safety zone around an offshore Installation will set an offset course which avoids sailing directly at the Installation and prevents unauthorised entry in the safety zone.

Vessels wishing to operate within the 500m safety zone will do so under the jurisdiction of the Installation OIM and shall be required to be granted permission to enter. Entry will be authorised only on completion of a ‘vessel pre-entry’ checklist. In the case of a Not Normally Manned Installation (NNMI) or unmanned Installation, the vessel must obtain this permission from the designated authority. Deviation from this practice should only be made on the grounds of safety and with the express permission of the OIM.

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To comply with the assurance given to the Health and Safety Executive during adjudication of the Installation Safety Cases, particularly in regard to the control of vessels within the 500m zone of any Installation, the following procedure shall be adhered to:

'No third-party vessel or unit is to be granted permission to enter or operate within a 500m zone until its intended operations have been reviewed and accepted as being safety-assured, and until confirmation from the Marine Logistics (Marlog) Department has been given. In giving such confirmation, Marlog may issue certain operational procedures which must be adhered to by the third party and its vessel or unit.'

Any third party which does not comply with the foregoing procedure shall be refused entry and referred to the Government and Public Affairs Department, BP, Dyce on 01224 832014.

Smoking on the deck of any vessel within the 500m safety zone of any Installation is prohibited (refer to Paragraph 14).

4.2 Completion of Pre-entry Checklists
The Vessel Master shall complete the pre-entry checklist relevant to the field being visited. Where the checklist requires testing of vessel equipment, the correct operation shall be confirmed by functional tests of all appropriate systems, eg engines should be tested ahead and astern from main operating positions and control readouts verified as being the same. The Vessel Master should ensure that the selected control position and that achieved by the thruster/propeller matches.

Any defects or faults which could affect the manoeuvrability or station-keeping ability of the vessel shall be reported to the Installation before entry into the 500m zone.
The Master shall assess the risks, report to the Installation the affect on operability of the vessel and ability to conduct the proposed operation. The BP Marlog Department should be contacted if the Installation is in doubt as to whether the vessel should be allowed to enter the 500m zone.

Where no checklist exists for an Installation then either:

• The vessel shall request the Installation to fax, where possible, a copy of their checklist
or

• The vessel shall use an appropriate checklist (refer to the relevant site-specific marine operations documents listed in Addendum 1 for individual checklists) and confirm to

the Installation the level of checks conducted
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4.3 Infringements of Safety Zones
The Emergency Response and Rescue Vessel (ERRV) Master/Radar Operator shall immediately inform the Installation OIM of any infringement and follow this up with a written report.

Infringements shall be reported in accordance with the Health and Safety Executive Offshore Safety Division Operations Notice No 11. The Infringement of Safety Zone Report Form (OIR 13) should be completed. For the form to be of use in court it is imperative that it is completed accurately in accordance with the guidelines contained within the operations notice. Where possible, statements shall be obtained from at least two witnesses. Any radar recording and radio records should be included. Reports shall be completed by the OIM and returned to the Health, Safety and Environment (HSE) Adviser of the relevant Business Unit (BU).

Communications

All vessels shall be equipped with the appropriate Global Maritime Distress and Safety System (GMDSS) communications equipment. In addition to any GMDSS requirements, when within a controlled area, the Watchkeeper on the vessel must maintain a continuous radio watch on the designated radio frequency for that area.

Details of working frequencies are contained in the relevant site-specific documents listed in Addendum 1.

Masters of all vessels/barges shall attempt to contact the appropriate marine control point on channel 16 prior to entry into the controlled area.

Any vessel requiring entry into the 500m zone of an Installation is required to complete a ‘pre-entry’ checklist (refer to the site-specific documents listed in Addendum 1) to confirm vessel capability and communications, and to ensure that the vessel is made aware of any particular marine hazards such as exposed risers, discharges, etc (refer to Paragraph 3).

Vessels engaged in cargo handling operations are to comply with the instructions laid down in Section 7.

Prior to departure from an offshore location, vessels will advise the OIM/Marine Controller of their destination, Estimated Time of Arrival (ETA) and future requirements.

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6 Vessel Work Programme

6.1 General
All vessels shall be informed of the general operation programme including advice on any expected breaks due to helicopter shuttles, crane utilisation by other offshore Installation requirements, meal breaks, etc, and the probable duration of such interruptions.

Excessive waiting time, whilst the vessel is alongside an offshore Installation shall be avoided. If this is not possible, in certain circumstances, then consideration must be given to standing-off to a safe distance until the Installation is again ready to work the vessel.

6.2 Infield Maintenance Operations
Whilst inside the 500m zone, maintenance operations should only be carried out with the agreement of the OIM. The use of any burning, welding or spark potential equipment will be subject to the Installation's Permit to Work requirements.

7 Working Conditions

Any vessel operating within the 500m zone shall have onboard, as a minimum, two persons who are individually competent and certified to control and manoeuvre the vessel.

The Master of any barge/vessel manoeuvring alongside an offshore Installation or any other vessel, shall remain on the bridge or within close proximity at all times. This does not preclude suitably experienced and qualified persons with a rank of no less than Mate actually handling the vessel to relieve the Master at the controls.

Furthermore, while manoeuvring near to or alongside an Installation, the barge/vessel bridge shall be manned by two persons. The second person should be able to manoeuvre the vessel away from the Installation should the Master/Mate

be incapacitated.

Whenever the Master of any barge/vessel manoeuvring alongside an offshore Installation or any other vessel is not on the bridge, the Master shall leave sufficient Instructions which will ensure that the vessel is operated in a safe and proper manner at all times during his absence.

These instructions must include the requirement for the Master to be advised of any alteration in plans or instructions received from the Installation during his absence from the bridge.

Requirements for bridge manning of Dynamically Positioned (DP) vessels, supply vessels, anchor handling vessels, drilling units, survey vessels, etc are detailed in the relevant section of this document.

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Prior to any project or survey activity within the 500m zone, the relevant BP BU shall complete a risk analysis/hazard identification and issue task-specific procedures for the operation. In addition, the BU shall prepare a document to interface the Safety Management Systems (SMSs) of the vessel and the Installation.

Vessel Masters are warned that some high volume underwater discharges and rig propulsion systems may cause water aeration to such an extent that the vessel may suffer lack of thrust from the propulsion system. Masters shall make a cautious approach to unfamiliar offshore Installations.

Where an overboard discharge is deemed to affect the safe operation of a vessel, the Master will be justified in standing the vessel off until such time as the discharge has ceased or changing environmental conditions keep the discharge clear of the vessel. Where an emergency supply is required by the Installation, the Master must liaise with the OIM in order to continue discharge operations.

Vessel Handling Parameters

The OIM/Marine Controller and Vessel Master shall each have the power of veto over the commencement or continuation of any operation.

It is emphasised that generally the criteria applicable to vessels operating alongside an offshore Installation will vary considerably from Installation to Installation, vessel to vessel, and Master to Master. Thus, no hard and fast rule can be expressed. However, having a good appreciation of the various factors, continuous monitoring of the operation in progress will assist to ensure that it is carried out with the least possible risk to personnel, Installation and vessel.

In a situation where the prevailing weather conditions have deteriorated since the commencement of operations, it shall be the Vessel Master's responsibility to give notice to the offshore Installation that operations may have to be suspended at short notice. At this time, the OIM/Marine Controller shall ensure that staff are immediately available to release the vessel if required. In addition, the Vessel Master and OIM/Marine Controller shall agree to the criteria upon which the operation may continue.

In marginal weather situations, unless in exceptional circumstances and bearing in mind the potential loss which could result from an accident, it is always better to err on the side of caution should either the Vessel Master or OIM be in any doubt.

It is not the policy of BP to bring any pressure to bear on Vessel Masters to attempt to work for operational reasons in weather they would otherwise consider unworkable unless an emergency situation exists.

Vessel setting-up procedures, prior to moving alongside, shall be conducted at a distance of not less than 50m from the Installation. Additionally, the position of the vessel relative to the Installation shall ensure that, in the event of failure of its power generation, control or distribution systems, prevailing conditions will not take the vessel onto the structure of the Installation.

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When performing the moving alongside manoeuvre, the final approach speed of the vessel shall not exceed 0.5 knots.

To reduce the risk of severe structural damage in the event of a collision, weatherside working must be avoided whenever possible. However, it is recognised that this may not always be achievable due to operational constraints. When weatherside working is an operational necessity, the Master must use personal judgement and experience, in conjunction with knowledge of the vessel's handling characteristics,

to identify limitations.

Weatherside Working

Reference should be made to the UKOOA/Chamber of Shipping (CoS) Guidelines for The Safe Management and Operation of Offshore Support Vessels for the procedures referring to weatherside working.

Weatherside working will be allowed only following a risk assessment conducted jointly by the Installation OIM/management and the Master of the vessel. Responsibility for establishing upper limits for working vessels on the weather side shall rest with the OIM or Installation management. For all weatherside marine operations above 3m Sig, it is strongly recommended that the OIM, not his delegate, confirms the need for such work with input from the Master of the supply boat and the duty ERC Mariner, contactable via the DCR. The Duty ERC Mariner will act as the experienced/competent marine representative for the risk assessment.

Factors which must be considered during such a risk assessment should include:

• Prevailing wind direction and speed
• Sea height, and its effect on the vessel's station-keeping
• Tidal/current conditions over the anticipated working period
• Weather forecast, eg imminent changes in windspeed and direction, and/or sea height/direction, visibility, etc
• Vessel's power management configuration and the effect on station-keeping in the event of loss of power generation, distribution or control system, eg loss of one main propulsion unit
• Peak loads on generating capacity, required to maintain station
• Confidence in the reliability of power generation and propulsion systems
• Manning of the bridge and engine room areas
• Any towed equipment from survey vessels
• Deck cargo layout on supply vessels which could limit vessel working beam-on to the weather
• Type of cargo to be discharged
• Crane capacity and reach (main block or whip line)
• Exposed risers or other particular marine hazards

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· Period of time that the vessel will be operating on the weather side
· Safety of the vessel crew operating on exposed decks
When a vessel is required to relocate to another position alongside an Installation, the vessel's movements are to be carefully planned. Such planning must take into account the prevailing environmental force (wind, seastate, current, tide and visibility), the vessel's manoeuvring and propulsion systems and the arc of visibility from the vessel's manoeuvring console.

Significant changes, eg moving from one face to another or a 180° change of heading, should be effected by the vessel pulling well clear of the Installation and making a fresh approach to the new location.

10 Limited Visibility

The offshore Installation/vessel foghorn shall be activated when visibility decreases below 2 miles.

The ERRV shall commence fog patrol duties and monitor all vessel movements on radar. Any such vessel approaching a 2-mile radius of the offshore Installation shall be warned off.

The standby vessel shall inform the offshore Installation if any vessel enters the 2 mile zone, and shall supply details of its proximity and heading. This information must be relayed immediately to the OIM/Marine Controller who shall bring all parties to the appropriate state of readiness.

11 Collision/Contact with Structure

Every possible precaution must be taken to avoid physical contact between a vessel and the Installation. Any contact must be immediately reported by the vessel to the Installation OIM, BP Representative (if onboard) and logistics provider (supply and ERRV). The Installation OIM is to contact BP Marlog Department to allow for any investigation to be commenced. Marine contact details are:

· Email: GABZ LOG
· Telephone: 01224 833999 Dyce Control Room at any time
Should physical contact occur, the vessel must not be allowed to continue operations within the 500m zone until the Installation OIM and the Marine Logistics Department are satisfied that the cause of the incident has been identified and remedial action has been taken to make the vessel fully operational. Furthermore, to ascertain the basic cause of the incident will require a formal investigation.

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12 Wide Berth for Diving and DP Vessels

All vessels shall give any other vessel/barge operating on DP, or with divers in the water, as much sea room as possible and ensure, by reducing speed when necessary, that such a vessel/barge is not affected by wash.

Any vessel needing to close another vessel/barge which is either operating on DP or with divers in the water, shall not do so until direct communication has been established and permission granted.

Note: A vessel/barge operating on DP alongside an offshore Installation may conduct supply vessel operations if the criteria stated in Paragraph 30.2 is complied with.

13 Radar Interference with DP Vessels/Barges

All vessels approaching within 2 miles of a vessel/barge operating on DP shall ensure that their 3cm radar is switched off. Any exception to this requirement will only be made with the agreement of all parties involved (refer to Section 6).

14 Fire Hazards on Vessels/Barges
Alongside Offshore Installations

Whilst any barge/vessel is within the 500m zone of an offshore Installation, the use of burning or welding plant, or any naked lights shall not be allowed on the open deck. If such operations are required to be conducted, the approval of the production Installation OIM must be gained, and the issue of a hot work permit confirmed. Approval to conduct hot work operations is automatically revoked when fire or gas alarms are sounded.

Where arc-welding is carried out on the deck of any vessel/barge outwith the 500m zone, the vessel shall be manoeuvred (weather permitting) so as to effect a barrier between the worksite and the ultraviolet flame detectors on the offshore Installation.

Every vessel/barge which is required to close within 500m of an offshore Installation shall have spark arrestors fitted to all exhaust stacks, or shall use a Permit to Work (PTW) system. It is the Master’s responsibility to ensure that they operate efficiently.

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15 Distress Call Situation (Saving of Life)

The following is an extract from Regulation 10 of Chapter 5 of the Safety of Life at Sea (SOLAS) convention:

‘The Master of a ship at sea, on receiving a signal from any source that a ship or aircraft or survival craft thereof is in distress, is bound to proceed with all speed to the assistance of the persons in distress informing them, if possible, that he is doing so, if he is unable or, in the special circumstances of the case, considers it unreasonable or unnecessary to proceed to their assistance, he must enter in the logbook the reason for failing to proceed to the assistance of the persons in distress.’

Masters of vessels chartered by or on behalf of the Operator shall be responsible for deciding whether or not to respond to a distress call.

In determining whether or not to respond to a distress call, the Master shall take into account the following:

• The location of the distress and the time taken to arrive at the scene of the distress
• The operational constraints placed on the vessel
• That even the temporary absence of the vessel from its present activity may expose another vessel or offshore Installation to a potential distress situation

Should the Master of a vessel decide to respond to a distress call, preparations shall be made to proceed with all speed to the scene, advising the Coastguard of intentions and ETA. The Coastguard shall confirm whether or not the vessel’s assistance is required. Where the withdrawal of the vessel could put at risk personnel on the workscope in which it is engaged, the Master shall liaise fully with the Installation OIM and the Coastguard.

If the Coastguard confirms the requirement, and the vessel is engaged in field support activities, the Master will advise the OIM or, in the case of a multi-platform field, the designated field OIM, of intentions giving all relevant details.

The OIM will relay the details of the vessel’s release to his management and the local Operations Control Centre (OCC) who shall advise the ERC Duty Manager and ERC Duty Mariner.

All distress call messages that are received must be entered in the vessel's official logbook, as must any circumstances preventing response to an incident.

When the ERRV departs the field in response to a distress call, the OIM will conduct operations on the Installation bearing in mind that suitable cover is not immediately available. The Operator is responsible for advising the relevant authorities.

Note: In some circumstances the OIM may be able to arrange 'shared' cover with an adjacent offshore Installation.

If the vessel is providing ERR cover, the marine department will arrange for a replacement vessel as soon as possible. If the vessel is providing non-statutory marine support. The Marine department will confirm the requirement for a replacement vessel with the affected installation Leader.

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16 Emergency Call Situation (Saving of Property)

Assistance to a neighbouring offshore Installation in an emergency situation, where the saving of property is the prime objective, is afforded within the Operators Co-operative Emergency Response (OCES).

A formal request shall be made to BP, via the local OCC by the company experiencing the emergency, for the release of the vessel. It is envisaged that the release of the vessel will be agreed locally at offshore Installation OIM level, pending authorisation from the local ERC Duty Manager.

The Operations Control Centre shall contact the ERC Duty Mariner and the ERC Duty Manager who shall arrange for and authorise the release of the vessel.

On release of the vessel from the offshore Installation the OIM/BP Representative will immediately inform the OCC of the situation. It is important that the exact time of release or commencement of demobilisation and the nature of the callout is recorded in the logbook of the offshore Installation and vessel providing the emergency assistance. The ERC Duty Mariner shall also liaise with the logistics provider Operations Duty Mariner who will be responsible for mobilising a replacement vessel if necessary.

When the vessel departs the field in response to a distress call, the OIM will conduct operations on the Installation bearing in mind that ERR cover is not immediately available. The Operator is responsible for advising the relevant authorities.

If the vessel is providing ERR cover, the marine department will arrange for a replacement vessel as soon as possible. If the vessel is providing non-statutory marine support. The marine department will confirm the requirement for a replacement vessel with the affected field leader.

17 Barge/Vessel/Installation Emergencies

17.1 Fire on Barge/Vessel Whilst Within an
Offshore Installation's Safety Zone
In the event of a fire occurring, the initial action of the person discovering the fire must be to inform the Duty Bridge Watchkeeper.

Upon receiving information about a fire onboard, the Duty Bridge Watchkeeper shall:

(1) Sound the General Alarm.
(2) Inform the Installation by radio.
(3) Stop all 'hot work' activities.
(4) Start the firepumps.
(5) Make a tannoy announcement giving clear and concise details of the incident.
(6) Fight/contain the fire in accordance with the barge/vessel emergency procedures.
The Barge/Vessel OIM/Master shall bring the barge/vessel to a state of readiness to initiate withdrawal of the barge/vessel from the immediate area of the offshore Installation to outside the 500m zone.

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17.2 Prepare to Abandon Barge/Vessel Whilst
Within an Offshore Installation's Safety Zone
If any incident occurs upon the barge/vessel which warrants instructing personnel to prepare to abandon, the Duty Bridge Watchkeeper shall, after alerting the barge/vessel personnel, inform the Installation by radio. The Control Room Operator shall then alert the OIM and ERRV of the situation.

The Installation OIM shall then inform the ERRV of the emergency status and confirm

who is to act as On-scene Co-ordinator (OSC). The OSC shall co-ordinate the actions of all rescue vessels and instruct these vessels to stand by its barge/vessel prior to its evacuation.

If necessary, the barge/vessel will be abandoned according to its own emergency and safety procedures.

17.3 Blackout
This applies to total failure of power generation, control and distribution systems while within the 500m zone.

In the event of total electrical failure, the Duty Bridge Watchkeeper shall immediately inform the Installation OIM by radio and maintain regular updates on the situation.

The OIM and Master will discuss emergency towing, areas for emergency anchoring etc.

17.4 Vessel/Barge Emergency Whilst Outwith the Safety Zone but Within a Controlled Area
Procedures outlined in Paragraphs 17.1 to 17.2 inclusive, shall be followed except that initial contact will be through the Marine Controller.

17.5 Installation Emergencies
In the event of an emergency on an Installation the OIM shall make arrangements for the notification of vessels/barges/Installations engaged in activities connected with the Installation, eg accommodation support, diving, heavy lifts, supply etc.

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18 Regulations Governing Transfer of Personnel Offshore

18.1 General
18.1.1 Regulations
The Lifting Operations and Lifting Equipment Regulations (LOLER) SI 1998/No 2307 came into force in December 1998. These regulations cover all lifting equipment, including that for lifting persons.

The collapsible type of personnel transfer basket does not comply with Regulation 5 of

LOLER on three counts:

• It does not prevent a person from being crushed while being carried
• It does not prevent a person from falling from it
• It puts a person in danger if they become trapped in the carrier, particularly if in the water

Where personnel transfers are a planned event ie maintenance inspection of mooring buoys, tanker hoses etc, then the lifting equipment must be in compliance with LOLER and a suitable alternative form of carrier should be available. Please note that this includes situations where the collapsible type of basket has been identified as the means of transferring persons in the Installation Emergency Response Plans.

The use of any non-LOLER compliant baskets shall be restricted to emergencies only and more suitable carriers be provided for day-to-day transfer of personnel.

In any event the procedures contained in this paragraph (Paragraph 18) shall be complied with.

Regulations relating to the transfer of personnel offshore are included in the Health and Safety Notice 10/80. This notice has been revised and was reissued in March 2001.

Regulations relating to the transfer of personnel offshore is included in the Health and Safety Executive Safety Notice 10/80.

18.1.2 Policy, Authorisation and Permission

Offshore transfers by small boat or basket shall be undertaken only where no other means is available, and then with the express permission of the relevant responsible persons.

Depending on the circumstances of the case, such persons will include the following:

• Installation OIM
• Master(s) of vessel(s)

The permission of the relevant BP Representative(s) must also be obtained before undertaking such transfers.

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In every case, all factors relating to the transfer shall be fully reviewed and assessed for risk before authorisation or permission is issued. Such factors will include:

- Reasons for the transfer
- Fitness and training of personnel to be transferred
- Environmental conditions, actual and forecast
- Suitability of equipment to be employed
- Competence and experience of personnel operating equipment
- Communications arrangements
- Landing position

18.1.3 Safety Arrangements

Personnel to be transferred shall wear the following:

- Suitable warm clothing
- Lifejacket, complete with light or buoyancy aid of an approved type
- Requirements for other protective clothing, or immersion suits, shall be assessed by the relevant responsible person(s)
- Where appropriate facilities have been installed and commissioned, personal locator beacons shall be worn

18.1.4 Communications Arrangements

Radio and visual communications between personnel conducting the transfer shall be established prior to and during the operations.

18.1.5 Transfer of Personnel at Night

Except where it is deemed imperative by all the parties involved, the operation shall not take place during the hours of darkness. Where transfers are undertaken at night, illumination of the transfer areas must be adequate.

18.1.6 Records

Full particulars of the transfer shall be recorded in the relevant logbooks.

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18.2 Personnel Transfers Between Installations and Vessels

18.2.1 Specific Instructions

Personnel transfers between Installations and vessels shall normally involve the use of personnel baskets.

Under normal circumstances personnel transfers involving the use of baskets shall not be undertaken when the following environmental criteria are exceeded:

• Windspeed in excess of 20 knots at 10m
• Sea height in excess of 2.5m significant wave height
• Visibility horizontal less than 500m, vertical less than 100m

18.2.2 Training and Experience

Personnel who have not received adequate training shall be accompanied by an experienced colleague.

18.2.3 Duties

OIM

In addition to the relevant instructions included in the first part of this section, the OIM shall ensure that:

• Environmental criteria are suitable
• The vessel involved is suitable
• The crane proposed for use is suitable for the purpose
• The crane driver is competent and experienced in operations of this nature
• All participating personnel are adequately briefed
• All equipment to be employed has been tested and/or inspected in accordance with statutory requirements
• The ERRV has been notified, and that immediate Fast Rescue Craft (FRC) cover will be provided

In the event of transfers being undertaken at night, the OIM or his designated deputy, shall personally supervise operations.

Master of the Vessel

In addition to the relevant instructions included in the first part of this section, the Master of the vessel involved in the transfer shall ensure that:

• Procedures for undertaking the transfer are understood
• The vessel’s station-keeping capability is satisfactory
• The deck area to receive the basket has been prepared as required
• All participating personnel are adequately briefed

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Crane Driver

The crane driver shall ensure that:

· The crane is fully operational in all respects
· Environmental criteria are suitable
· Procedures for undertaking the transfer are understood
· Visibility of the transfer area is adequate

Banksman and/or Deck Supervisor

The Banksman and/or Deck Supervisor shall ensure that:

· Procedures for undertaking the transfer are understood
· Their functions are clearly identified
· A view of the transfer areas and basket can be maintained throughout the operation

Master of Emergency Response and Rescue Vessel

The Master of the ERRV shall ensure that cover is provided as required throughout the operation.

Personnel to be Transferred

Individuals to be transferred shall:

· Ensure that procedures for undertaking the transfer are understood
· Confirm that they are agreeable to be transferred in this manner
· Familiarise themselves with the safety equipment provided
· Observe the instructions from the personnel in charge of the operation

18.2.4 Operational Practices

Wherever possible the basket shall be positioned over the sea.

Any landing area will be clear, unobstructed and possess no hazard to personnel from falling or crush injury, eg an elevated cargo hatch with no railings is unacceptable.

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18.3 Personnel Transfers Between Vessels

18.3.1 General
The general instructions included in the first part of this section shall be observed at all times.

Personnel transfers between vessels shall utilise craft of the rigid-hull inflatable (or similar) type.

Note: The use of inflatables for personnel transfers in BP operations is forbidden.

18.3.2 Environmental Criteria
Prior to any transfers being implemented, the Masters of the vessels involved shall agree that prevailing and forecast conditions are suitable for the safe conduct of the proposed operations.

18.3.3 ERR Cover
Where transfers are to be undertaken at night, the vessel providing ERR services in the vicinity shall be notified.

Masters of Vessels

In addition to the relevant instructions included in the first part of this section, the Master of the vessel involved in the transfer shall:

• Confirm that satisfactory communications between the vessels and the craft to be employed have been established
• Ensure that the vessels take up suitable positions with respect to the weather to facilitate operations
• Confirm that craft to be employed during the transfer are outfitted and manned in accordance with current regulations
• Confirm that boarding arrangements have been prepared as required
• Ensure that all participating personnel are adequately briefed
• Obtain permission of the relevant Offshore Installation Manager in the event of transfer operations being carried out in a controlled area
Coxswain

The Coxswain of the craft shall ensure that:

• The craft is fully operational in all respects
• Emergency equipment has been placed onboard the craft
• Procedures for undertaking the transfer are understood
• There is a minimum crew of three including himself
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Launching Supervisor

The Launching Supervisor shall ensure that:

• Procedures for undertaking the transfer are understood
• The persons to be transferred understand the precautions to be taken whilst onboard the craft
• A view of the launching area and craft can be maintained throughout the operation
Personnel to be Transferred

Individuals to be transferred shall:

• Ensure that procedures for undertaking the transfer are understood
• Confirm that they are agreeable to be transferred in this manner
• Familiarise themselves with the safety equipment provided
• Observe the instructions from the personnel in charge of the operation
18.3.4 Operational Practices
Wherever possible, personnel being transferred shall remain seated at all times, except where otherwise instructed by the Coxswain of the craft. Personnel shall be directed to sit in such a manner that bodily shock loadings due to the motions of the craft will be minimised.

19 Dumping at Sea

All vessels/barges and offshore Installations either owned or on charter to BP are required to comply with the Food and Environment Protection Act 1985 and the Merchant Shipping (Prevention of Pollution by Garbage) Regulations SI 1998/No 1377. In this context, adequate arrangements must be made to retain all wastes which cannot be dumped at sea until such time as they can be safely disposed of onshore.

Dry bulk, such as barytes, bentonite and cements, left onboard any vessel as a result of a rig/Installation not taking either the full quantity manifested or the full quantity in a tank must not be discharged into the sea.

The Merchant Shipping (Prevention of Pollution by Garbage) Regulations SI 1998/No 1377 apply to all vessels, including offshore Installations, irrespective of size and date built.

The purpose of this above regulation is to:

• Prohibit the dumping of all plastics
• Prohibit the dumping of garbage in special areas
• Control the dumping of garbage in other areas
• Prohibit the disposal of garbage into the sea within 500 metres of fixed or floating Installations

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It is BP Policy that no solids, with the exception of ground waste, sewage and washroom waste, be discharged overboard to the sea from any vessel/Installation. The only exceptions to this are discharges permitted by other legislation.

20 Oil Pollution

20.1 Reporting of Pollution Incidents

In addition to the Master's statutory obligations, any pollution incidents must be reported as follows:

• Within the 500m zone of an Installation to the OIM and BP Representative
• At sea, directly to BP DCR on 01224 836666
• In port, immediately to the Supply Base Supervisor, or BP's Agents, as appropriate, for on-passing. The local harbour authority regulations and bye-laws must additionally be consulted to identify the appropriate reporting authority

20.2 Oil Spill Procedures

The procedures for the control and cleanup of oil spills occurring from BP drilling and production offshore Installations on the UK Continental Shelf (UKCS) are contained in the Supporting Information Document for BP UKCS Offshore Exploration and Production Oil Spill Contingency Plans (UKCS-EM-002).

Note: Some exploration licences issued by the Department of Trade and Industry (DTI) require the provision of individual oil spill precautions/procedures for special and/or inshore works. These procedures will be detailed and promulgated as required.

20.3 Ship-to-ship Bunkering

Ship-to-ship bunkering is generally not allowed at sea due to the high risk of pollution. Should a vessel require bunkers then a suitable risk assessment and procedure should be agreed with Marine Logistics in sufficient time.

21 Third-party Work

Due to the variance in indemnities provided by other Operators, a vessel on charter to BP, or on behalf of BP, shall not deviate to another Operator's Installation/vessel, except in the case of an emergency, without prior consultation with the relevant BP BU.

Similarly, a vessel not on charter to BP shall not be allowed to approach a BP Installation/vessel, except in an emergency, without prior consultation with the relevant BP BU and the Marine Department.

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22 Anchoring

These instructions shall apply to supply and anchor handling type vessels which wish to anchor for whatever reason.

Instructions and guidelines for multi-anchor spreads are contained in Section 3.

Restrictions are imposed on the use of anchors mainly as a means of reducing the risk of accidental damage to subsea Installations.

Vessels will only be permitted to anchor within a controlled area with the permission of the Marine Controller, and subject to the strict observance of any conditions by the Marine Controller which may be imposed. Details of recommended anchorage areas are contained in the relevant 'field' section of this document.

Where vessels must cross pipelines or any other underwater Installation, either in the ordinary course of their duties or when approaching an anchor drop position, the anchors must always be in the housed and secured position until clear of such pipelines or Installations.

Once a vessel has been anchored, an efficient watch must be kept on the anchor(s) and any sign of dragging must be reported to the Marine Controller and remedial action taken.

Once an anchor has been placed on the seabed within the controlled area, it shall not be

moved for any reason without the express permission of the Marine Controller.

Any vessel which loses an anchor, equipment or cargo, shall immediately report details of the loss to the Marine Controller.

ERRVs are not normally permitted to anchor, as this practice means that the vessel is not immediately available to render assistance (refer to Section 9).

23 Substance Abuse

BP has a policy barring the use of alcohol and unprescribed drugs offshore. All vessel owners or operators are required to ban the use of alcohol and unprescribed drugs on their vessels when at or transiting from or to an offshore Installation. This prohibition shall be incorporated in a written policy on drug and alcohol abuse. The policy shall be based on the Oil Companies International Marine Forum (OCIMF) guidelines.

When in port, all duty seagoing personnel must remain in a fit and competent state to carry out their duties and responsibilities.

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24 Accident/Incident Reporting

All accidents and incidents occurring onboard a vessel/barge within the 500m zone of an offshore Installation shall be reported to the Installation OIM. Any accident or incident which occurs at any time must be reported to the Dyce Control Room on 01224 836666 or 01224 833999. A BP incident form may need to be completed in addition to the contractor’s form.

All accidents and incidents occurring onboard a vessel/barge whilst berthed at a BP supply base shall be reported to the Supply Base management onsite.

25 Unsafe Marine Practices

Observance of an unsafe practice (offshore or at a BP supply base) shall be reported immediately to the supervisor in charge of the operation.

The purpose of reporting and, where necessary, investigating an unsafe practice or act is

to establish the immediate and basic causes of the occurrence and identify the actions necessary to prevent a recurrence. The purpose is not to attribute blame.

A copy of the report shall be forwarded to the Installation OIM, BP Representative or logistics contractor.

26 Safety Notices/Circulars

All vessels shall comply with the relevant law relating to the posting of safety notices. However, where the flag state has no relevant law, then adequate safety notices shall be posted to highlight all aspects of safety onboard, ie no smoking, wearing of the correct clothing, muster lists and other emergency procedures, emergency escape routes, etc.

All safety notices shall be easily understood and written in English and the indigenous language of the crews or specialist operators employed on a long-term basis.

Supply and ERRV crews shall be aware of all safety notices and safety circulars provided by BP and its marine assurance contractors.

27 Use of Laser Range Finding Equipment

Laser range finding units are used as a quick, reliable and accurate method of fixing an object’s position relative to the fixing station. They are therefore ideal for use offshore when operations are taking place in the vicinity of fixed or mobile Installations.

Vessels normally positioned in this manner are those involved in anchoring close to subsea Installations such as wellheads or pipelines, laying barge anchors close to, or over, such pipelines, and vessels which may be involved in providing diver support.

The laser system is usually manually operated but with automatic data transfer via hard wire or telemetry to the host computer/control point. This avoids unnecessary VHF radio traffic.

A sighting telescope is combined with the optical receiver. Under normal conditions, the range finder is able to detect any target that will produce an image covering a

small 1 mm open area in the centre of the reticule. Ranges between 200m and 9km can be determined with a resolution of 5m.

The operation of laser equipment is the subject of a Permit to Work.

WARNING: CORRECT USE OF THE EQUIPMENT WITH REGARD TO THE PROPER PROCEDURES AND APPROPRIATE SAFETY PRECAUTIONS IS ESSENTIAL IF THE RISK OF EYE DAMAGE, PARTICULARLY TO PERSONNEL ON ATTENDANT VESSELS, IS TO BE AVOIDED. FOR THIS REASON THE TARGET VESSEL MASTER MUST BE GIVEN ADEQUATE WARNING SO THAT THE VESSEL'S CREW MAY BE BRIEFED. DAMAGE TO THE EYE IS RELATED TO THE INTENSITY OF THE LASER PULSE MEASURED AT THE INCIDENT SURFACE, WHICH IN THIS CASE WOULD BE THE CORNEA OF THE EYE, AND IS SIMILAR TO THAT CAUSED BY LOOKING AT THE SUN WITHOUT PROPER EYE PROTECTION. SUCH DAMAGE IS IRREVERSIBLE.

ON NO ACCOUNT SHALL THE INSTRUMENT BE VIEWED THROUGH BINOCULARS FROM ANY RANGE WHILST IT IS OPERATING. BINOCULARS HAVE THE EFFECT OF MAGNIFYING THE LASER PULSE AND ASSUMING THE EFFECTIVE EYEPIECE EXIT PUPIL ON THE BINOCULARS USED AS 7mm AND THE AVERAGE BINOCULAR OBJECTIVE DIAMETER TO BE 50mm, THEN THE CALCULATED INCREASE OF IRRADIANCE AT THE EYE RESULTING FROM THEIR USE WILL BE APPROXIMATELY 50 TIMES.

The minimum distance from the range finder where emitted energy will not cause damage to the naked eye is called the nominal ocular hazard distance. This distance can be reduced considerably by fitting attenuation filters of differing strengths to the exit window of the range finder thus reducing the intensity of the laser beam, and they shall be used whenever possible. In any event the potential hazard due to the laser beam is considerably reduced when the equipment is operated at a range in excess of 250m.

Laser operators are instructed to avoid targeting areas where persons may be viewing the instrument and shall always aim the instrument at the ship's hull or other designated safe points for specific positioning operations.

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28 Radio Transmissions Within the 500m Zone

Vessels operating within the 500m zone of Installations involved with the production of oil and gas are instructed not to use their ‘high’ and ‘medium’ radio frequencies within 500m of the Installation.

Where practical, VHF radio transmission should be limited to 1 watt power output.

BS 6656, The Guide to Prevention of Inadvertent Ignition of Flammable Atmospheres by Radio Frequency Radiation 1991, recommends the foregoing limitations as radiations from these transmissions may impinge on Installation structures and may give rise to incentive levels of extractable power. Structures form efficient antennae, and include loops formed by lifting wires on cranes, lifting tackle, pipe configuration and derrick support members.

29 Radio Silence

29.1 General

Periods of radio silence are imposed by offshore Installations from time to time to reduce the risk of triggering explosive charges being used in the area.

These explosive charges are known as Electro-explosive Devices (EEDs), and are normally used on well perforation operations. Inadvertent initiation of EEDs can, in principle, be caused by radio frequency fields, stray ac and dc voltages, and voltage surges and transients.

29.2 Notice of Radio Silence

Normally 1 hour’s notice will be given by the Marine Controller/OIM before the imposition of a radio silence period. The Marine Controller/OIM shall ensure that all vessels/barges have been informed and that vessels en route are advised of the restrictions in force.

29.3 Marine Precautions

Immediately prior to radio silence all vessels/barges which are able to comply, will be ordered outside the 500m zone.

Vessels/barges within 1km of the Installation must silence all MF/HF transmissions.

During all periods of radio silence, all vessels/barges shall maintain a watch on channel 16 and the working channel of the offshore Installation.

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Vessels/barges which for any reason are unable to withdraw to a position outside the 500m zone shall be required to cease all radio, radar and beacon transmissions during the radio silence period. To guarantee total compliance, the BP Representative or, in his absence, the Vessel/Barge Master/OIM will be responsible for the recall of all portable radios and bleepers prior to the start of the silence period. The BP Representative will also be held responsible for their subsequent retention and non-operative state for the duration of the silence period. Additionally, all electric welding must be stopped and equipment isolated.

29.4 Responsibilities
During the period of radio silence, the OIM/Marine Controller shall delegate certain responsibilities to the ERRV or other nominated vessel. These include:

• Positioning the vessel so as to best enable it to intercept any other vessel which may pass within 1km of the offshore Installation
• Maintaining a radar watch to monitor approaching vessels
• Monitoring and respond to all marine and aviation traffic directed to the offshore Installation
• Warning/advising marine/aviation traffic routed to the Installation that it is in radio silence and that all traffic shall remain outside a 1km radius of the Installation until the radio silence period is over

30 Crane Operations

30.1 General
BP lifting equipment shall only be used if it has the correct BP colour code.

Third-party lifting equipment shall only be used if it has a valid ‘test certificate’ which is dated within the previous 6 months.

All lifting equipment must be in good condition and registered. Full certification must be held onboard of the Safe Working Load (SWL) of all such equipment must be displayed. Pre-slung loads shall be inspected prior to use.

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30.2 Cargo Operations
Particular precautions shall be taken when operating barge/vessel cranes on overside lifts, so as not to put the safety of divers and the integrity of subsea Installations at risk.

Supply boat operations may be conducted with a vessel/barge operating on DP, or with an Installation with a vessel/barge operating on DP alongside it provided that:

• The wash from the supply vessel does not impinge on the station-keeping ability of the DP vessel/barge
Note: Propeller wash has a greater effect on a monohull vessel than on a semisubmersible vessel working at its operating draft.

• The DP Vessel's Master and the BP Marine Representative agree to the cargo operations taking place
Supply boat loading and unloading operations may be conducted simultaneously with diving operations provided that:

• If simultaneous containerised/cargo diving operations take place, there is a safe horizontal separation between the overside lift and the diver's work area
• If simultaneous tubular cargo/diving operations take place, the diving activity is outwith the envelope of a 90° cone. The apex of the cone is to be sited beneath the crane hook and the cone base radius will be no less than the water depth
Note: The apex of the cone shall be that point in the crane's transverse which is nearest to the diver's work area.

• The diving vessel's Master, the BP Marine Representative and the Diving Supervisor agree
Note: Individual Installations may apply their own specific conditions provided that they do not involve any weakening of the foregoing conditions.

30.3 Crane Hooks
All crane pendant hooks shall be of the 'closed' type safety hooks. The closed type hook has a smooth profile which will not easily become snagged during lifting operations, and incorporates an offload release trigger mechanism together with an onload automatic latch.

All crane hooks shall be of a type provided with a mechanism designed to prevent the load inadvertently slipping off.

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31 Fuel Management and Quality Monitoring

The incidence of Microbiological Contamination (MBC) in fuel, both onshore and offshore, is the result of poor fuel management. All vessel owners/operators shall implement a system to monitor MBC within fuel.

A satisfactory monitoring system includes:

• Samples from all fuel tanks being taken on a circa 3-monthly rotational basis and tested using a recognised fuel testing method
• Fuel tanks being rotated to reduce storage time in any one tank
• All fuel tanks which carry fuel being inspected as they empty and mopped out or cleaned and sterilised if required
Note: BP's Marine Team may take fuel samples for analysis during pre-charter and routine technical inspections.

It is BP policy that fuel will only be taken from term supply vessels that have been inspected and tank contents checked. If a spot hire vessel is to be used to deliver fuel to a BP Installation, the Logistics personnel should make every effort to take samples in sufficient time for analysis or they run the risk of introducing contaminated fuel into the Installation system. Any deviation from this should only take place with the full agreement and understanding of the OIM.

32 Fuel Oil Cargo

The following procedures should be practised to ensure that quality fuel oil cargo is supplied to offshore Installations.

32.1 Vessel Cargo Tank Maintenance
It is the responsibility of the vessel owners and Masters to ensure that fuel oil cargo tanks are kept to a high standard. Fuel oil cargo tanks must be inspected at intervals not exceeding 36 months. If maintenance is required it must be conducted on completion of inspection or next available opportunity. All work carried out on any tanks must be recorded in the vessel's planned maintenance system.

32.2 Monitoring Fuel Oil Quality

For the purpose of monitoring fuel oil quality, Promarine Ltd will arrange for an independent chemist to sample all BP term chartered vessels on a quarterly basis. Once samples are taken it is important that the vessel does not internally transfer the cargo. The results will be issued with a limit guideline/table based on Code of Practice IP 385/88.

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Testing and Test Results

Analysis Target Limits Result
Time
Treatment (if limits are
exceeded)
Viable bacteria Less than
10cfu per ml
7 days Biocide treatment (refer to Note)
Viable mould Less than
10cfu per ml
7 days Biocide treatment (refer to Note)
Viable yeast Less than
10cfu per ml
7 days Biocide treatment (refer to Note)
Moisture content Less than
200ppm w/w
7 days Notify Installation to drain settling
tanks
Fibre count Less than
5,000 per litre
7 days Notify Installation for filter checks
Clear and bright Visual N/A

Note: A risk assessment and conversation establishing the party responsible for cargo treatment must be conducted, bearing in mind that some supply vessels may not be able to conduct the treatment of cargo while at sea due to tank access arrangement and heightened risk to vessel crew from handling chemicals and vessel movement.

32.2.1 Test Results
If any of the result limits are found to be elevated, one of the following treatments will be required. The Promarine Duty Mariner will notify the vessel of which treatment is required; this notification will be given verbally then followed up by an email at the first opportunity. The Promarine Duty Mariner will also contact the vessel's owners, Marine Co-ordinators (MarCo), individual Installations and base operators of suspected fuel oil contamination or increased levels.

Any samples taken that have a result between 10 to 20cfu should be given to the ship's Master and the necessary treatment applied prior to delivering the shipment.
The Installation receiving the fuel should also be informed and further samples taken once the fuel has had time to settle and tank bottoms drained.

Should any sample results be over 20cfu, the cargo should not be accepted at any Installation prior to being treated and further sampling results show it is in the acceptable range.

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32.2.2 Treatments
Shock Treatment: Add biocide at a ratio of 500ppm for tank volume. This should be added when the tank is a third full of fuel oil and then the tank should be filled to capacity. Please note that shock treating is an extreme measure and this is only required when technical problems occur, such as filter blockages.

Biocide Treatment: Add biocide at a ratio of 200ppm to the quantity of fuel oil present in the tank. Please note that this treatment can be conducted either by the vessel supplying cargo or the Installation receiving the cargo.

32.2.3 Risk Assessments
Ensure that a risk assessment has been conducted prior to using the chemical treatment. Refer to Material Safety Datasheets (MSDSs) for safety information. Always refer to the manufacturer's instructions to achieve the ratios required.

32.2.4 Other Requirements
It is not BP's intention for vessel crews to conduct fuel sampling, but on occasion this

may be required and Promarine will supply sterilised bottles for this purpose.

The person taking the sample should wear clean clothing and appropriate Personal Protective Equipment (PPE) as per the risk assessment. It is very important that no contact is made to the inside of the bottle by hand. The sample should then be labelled with the vessel's name, tank identification, date and time of the sample. All samples should be kept in a cool environment prior to uplift by the chemist.

33 Freshwater Storage Systems

Vessel Masters are reminded of the recommendations contained in M Notice M1214.

In addition to the above recommendations, Vessel Masters shall ensure the following precautions are taken after undertaking repairs to freshwater tank coatings:

• The tank shall be hosed down and superchlorinated when emptied
• The tank shall be flushed through at least once with freshwater before being filled for use
• The tank shall be filled and the contents analysed before being used onboard or discharged to offshore Installations
Note: Vessels visiting BP Installations are required to have tank contents analysed at intervals not exceeding 3 months.

It is BP policy that potable water will only be taken from term supply vessels that have been inspected and tank contents checked. If a spot hire vessel is to be used to deliver potable water to a BP Installation, the Logistics personnel should make every effort to take samples in sufficient time for analysis or they run the risk of introducing contaminated water into the Installation system. Any deviation from this should only take place with the full agreement and understanding of the OIM.

Refer to Paragraph 34.

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34 Potable Water Cargo

The following procedures should be practised to ensure the supply of wholesome potable water, free of bacteria, bright and clear, to offshore Installations.

34.1 Vessel Cargo Tank Maintenance
It is the responsibility of the vessel owners and Masters to ensure that freshwater cargo tanks are maintained and inspected at intervals not exceeding 12 months.

Prior to inspection it is recommended that these cargo tanks are emptied, opened up and ventilated. A Permit to Work must be issued prior to tank entry.

The person responsible for conducting the inspection must be competent and should ensure that he/she is wearing clean clothing and footwear, and not suffering from any skin infection or communicable disorders.

Any maintenance work required in the cargo tank, such as cleaned and recoated, must then be conducted. On completion of maintenance work, it is recommended that the cargo tank be completely filled with a super-chlorinated solution at a concentration of 50ppm for a period of not less than 4 hours, and then completely flushed out.

All work carried out on any tanks must be recorded in the vessel's planned maintenance system.

34.2 Quayside Maintenance
It is the responsibility of the base supplier/Operator to ensure that all equipment used for the transfer of potable water is maintained to the highest standard. Hoses and standpipes used for the transfer of water are only used for this purpose and should be marked accordingly.

At intervals not exceeding 6 months, or if contamination is suspected, standpipes and hoses should be cleaned with a solution of 50ppm residual free chlorine. Hoses should be thoroughly flushed through and completely filled with a solution of 50ppm residual-free chlorine, which should then be allowed to stand for a period of at least 1 hour before the hoses are emptied, end caps replaced and then restowed.

34.3 Monitoring Potable Water Quality
Promarine Ltd will arrange for an independent chemist to sample all BP term chartered vessels on a quarterly basis. The results will be issued with a limit guideline/table to European Communities standards EC 80/778 (as given below).

It is not BP's intention for vessel crews to conduct water sampling, but on occasion this may be required and Promarine will supply sterilised bottles for this purpose.

The person taking the sample should wear clean clothing and disposable gloves.
It is important that no contact is made to the inside of the bottle by hand. The sample should then be labelled with the vessel's name, tank identification, date and time of

sample. All samples should be kept in a cool environment prior to uplift by the chemist.

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On completion of sampling, potable water must not be internally transferred for a minimum of 24 hours.

Testing and Test Results

Analysis	Target Limits	Result Time	Treatment (if limits are exceeded)
Legionella	0cfu per 100ml sample	24 hours for culture	Super chlorinate and dump
E. coli	0cfu per 100ml sample	24 hours for culture	Super chlorinate and dump
Coliforms	0cfu per 100ml sample	24 hours for culture	Super chlorinate and dump
Enterococci	0cfu per 100ml sample	24 hours for culture	Super chlorinate and dump
Hydrocarbon	<10ppb	12 hours for culture sample	Dump and physically clean
Total viable count at 37°C	Less than 10cfu/ml	48 hours for culture sample	Chlorination treatment

Total viable count
at 22°C
Less than
100cfu/ml
72 hours for culture
sample
Chlorination treatment

If any of the result limits are elevated, one of the following treatments will be required. The notification of the required treatment will be given by the Promarine Duty Mariner verbally, then followed up by an email at the first opportunity. The Promarine Duty Mariner will also contact the vessel MarCo, individual Installations and base operators of suspected water contamination or increased levels of Total Viable Count (TVC).

34.3.1 Treatments
Super Chlorination: Add a chlorination solution at 50ppm ratio to tank volume and fill both tank and pipeline to capacity. When the tank and line are full, leave for a minimum of 4 hours then discharge the contents overboard (DO NOT REUSE).
Potable water can now be loaded and the tank retested.
Please note that prior to test results, cargo must not be transferred or discharged for a period of 24 hours.
Chlorination Add a chlorination solution at 0.2ppm ratio to quantity of Treatment: potable water. The potable water is now treated and ready for discharge. Please note that this treatment can be conducted either by the vessel supplying or the Installation receiving the potable water.
Refresh Cargo: Connect to shore water supply and overfill the tanks for a period of 10 minutes or dump 10% of the tank contents

and refill.

Please always refer to manufacturer’s instructions to achieve the ratios required.
Please also refer to MSDSs for safety and storage information.

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34.3.2 Other Requirements

Prior to connecting the potable water hose to the vessel, the standpipe and hose must be thoroughly flushed through before loading. This should also be practised when discharging to an offshore Installation; pipelines shall be flushed through before connecting the hose.

It is not the Charterer's intention to store potable water onboard vessels for long periods of time. If cargo has been kept onboard for more than 10 days, tanks containing potable water should be refreshed at the next port visit.

35 Precautions to be Taken Using Spot Hire Vessels for the Carriage of Potable Water and Fuel

It is good operating policy not to take fuel or potable water from a spot hire vessel. This paragraph is written to provide assistance should such a requirement arise.

Note: Anchor handlers are more likely to have a less than satisfactory record on water handling and as such should not be used for water supply.

35.1 BP Asset Logistics Contacts
On receiving a request from an Installation for a spot hire vessel to carry cargo fuel and water:

• Challenge if the request is absolutely necessary
• Advise the Installation of the risks inherent in taking fuel or water from spot hire vessels (inability to provide assurance on quality)
• Make a note on sailing schedules that include spot hire vessels that fuel and water should only be taken from these vessels as a last resort

35.2 Seabrokers
On receiving a request from an authorised BP Asset Representative for the charter of a vessel from the spot hire, please ensure that the following is added to the checklist:

• Ascertain whether the vessel is likely to be used for the transportation of fresh water or fuel oil to a BP location

If
no, then this should be stated on your Confirmation of Fixture EM to the BP Asset Representative

If
yes, then advise (and obtain written confirmation from) Swan & Co and Promarine that the vessel is likely to be loaded with cargo fuel and water. Advise quantities if known

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35.3 Swan & Co
On receiving information from Seabrokers of the requirement for the spot vessel to carry fuel and water for BP, ensure that the following is undertaken by the surveyor:

• Identify and record tanks that are required for the quantity of potable water/fuel requested
• Obtain loading history for potable water and fuel, and tank. Include date and port/berth
• Consult with Master regarding internal transferral of fuel and/or water for stability purposes during the voyage
• Obtain a tank history of all tanks. This should include but not be limited to the following:
Has
the vessel been tested (within the last 3 months)? If so, look at the results.
If the results are clear, advise BP. If the results are not clear:

(1) When was the tank last cleaned?
(2) When were the water tanks last chlorinated/superchlorinated?
(3) When were the fuel tanks last biocided?
If less than 6 months for either, advise Seabrokers/BP Asset Representative/ Promarine.

If more than 6 months, inform Seabrokers/BP Asset Representative that the vessel should not be used.

• Instruct the Master to dump any potable water overboard that has been in any tank for more than 10 days or any part tank, and reload with fresh water. (If there is sufficient water onboard, make less than 10 days to meet the Installation request. All tanks to pump out 10% of the contents and refresh). If in any doubt, dump all overboard and reload fresh water
35.4 Promarine
On receiving information from Seabrokers/Swan & Co that a vessel is to load fuel and water for BP locations, the following information should be passed on to the Master during the safety briefing.

• Instruct Master to record tanks into which water/fuel is loaded, or if water is less than 10 days old, record those tanks which are to be used. This information is to be passed

to ASCO (Albert Quay) for inclusion on manifest
• Advise Master of number of internal transfers of potable water or fuel from/to tanks once loaded
• Only discharge manifested fresh water to BP Installations
• Advise the Master to challenge any requests for unmanifested water from BP Installations or mobile offshore units
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35.5 Guidance for Installations
Vessel water and fuel lines are totally segregated. Any contamination is normally attributable to extended storage on the vessel so expect to find bacteria and solids in fuel and water. To test properly for these takes 24 to 120 hours. Installations should therefore have a robust treatment regime in place for water and fuel.

Additional precautions are recommended to test the water at the start of loading and whenever the vessel tanks are being drained. This should be confirmed with the vessel before commencing water pumping. As a minimum this should be to confirm water is clear and bright with no offensive odour.

36 External Firefighting Installations Onboard Vessels

These are to be regularly tested where installed on vessels chartered to, or on behalf of, BP. Wherever practicable, the tests shall be performed on location, and witnessed by the Marine Controller or BP Representative.

37 Fishing

Fishing by any means is prohibited by any person or persons from any BP offshore Installation, from any vessel within the 500m zone of any BP offshore Installation, or from any BP-operated vessel within any controlled area, as defined in these instructions and guidelines.

38 Securing of Cargo

The vessel’s Master is responsible for ensuring that all cargo is properly secured prior to sailing. A cargo securing manual will be held on all vessels and complied with. BP has adopted the UKOOA Guidelines on Safe Packing and Handling of Cargo as mandatory for all cargo transported to and from offshore locations. A risk assessment shall be

conducted before a decision is taken not to secure cargo. The assessment and decision shall be recorded. In particular, the Master is reminded that winter weather will require more attention to cargo securing arrangements.

A copy of the UKOOA Guidelines shall be made available onboard all supply vessels and Installations.

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39 North Sea Lifting Rules

The North Sea Lifting Rules were compiled following a series of fatalities offshore. A copy of the rules is provided to each vessel during the on-hire briefing. The following extract summarises the rules affecting Banksmen on vessels.

‘Where the deck cargo operation is controlled from the deck, the Banksman must be readily identified, be in contact with the Installation crane and not, at any time, be involved with the hooking on or off of the load, nor positioning.

Where the deck crew is not in control of the load then the vessel Bridge Officer will act as the Banksman and the deck crew can be reduced to two persons. The bridge will be in close communication with the deck crew. The crane operator should have clear sight of the operation throughout.’

40 Golden Rules

BP Golden Rules are issued to each vessel during the on-hire briefing. Any operation the vessel is required to carry out when within the 500m zone should be discussed with the Installation and the task assessed for risk and for compliance with these rules.

41 Helideck Operations

Where a vessel is to be chartered and the helideck is expected to be used whilst on hire to BP, the following checks should be made prior to hiring:

- All helideck crew are suitably trained and experienced
- They have exercised together before the first helicopter operation
- The helideck is certified for use in the UK

• The helideck net (if fitted) is suitably tensioned
• If refuelling is to be carried out, the equipment is certified and the crew competent to use it

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Section 3

Anchoring Instructions and Guidelines

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1 Purpose

These instructions and guidelines apply to all BP and third-party operations which involve the handling of anchors which are intended to be placed within 5km of any BP offshore Installation, subsea equipment or pipeline.

2 Application

These written instructions and guidelines comply with The Pipeline Safety Regulations SI 1996/No 825.

Although SI 1996/No 825 specifically applies to pipelines, these instructions similarly apply to any offshore installation, subsea completion, wellheads, control cables and/or any other associated equipment.

3 Notification

Requirements for the notification of the movements of Installations is contained in the Health and Safety Executive, Offshore Safety Division, Operations Notice No 6.

Requirements for anchoring are contained in the Submarine Pipelines Guidance Notes (1984) and IMO Circular 737 Guidance on Anchoring Systems (1995). BP, as a licencee, is required to submit various applications to the Department of Trade and Industry (DTI) in order to obtain consents prior to undertaking certain operations.

4 Anchoring Instructions and Guidelines

4.1 General
These instructions and guidelines shall be followed by any vessel/barge, operated by, chartered to, or on behalf of, BP. Further information is contained within the UTG document Guidelines for Subsea Well Operations.

4.1.1 Limitations and/or Defects Affecting Barge/Vessel Performance
Any incident or breakdown involving any barge/vessel within a 5km radius of a production Installation or associated subsea Installation must be reported to the BP Representative and the marine control point immediately. Work shall be suspended until such time as effective remedial action has proven to have been taken to make the barge/vessel fully operational.

4.1.2 Anchor Placing
When working within a 5km radius of a production Installation or associated subsea Installation, the BP Surveyor or BP Marine Representative, in conjunction with the responsible authority, if applicable, will monitor the positioning of anchors. No anchor shall be placed on the bottom until approval has been given by the BP Marine Representative. In a controlled area, the responsible authority will endorse the approval prior to final placing of each anchor.

4.1.3 Anchor Handling Restrictions
Introduction

This subparagraph lists the general physical limitations to be imposed on anchor placement close to existing offshore Installations and subsea Assets. It is appreciated that there may be occasions when these restrictions are impractical, and in these cases BP will be consulted regarding alternative arrangements, and BP’s approval in writing obtained.

Anchor Placement

(1) As a general guideline, moorings shall never be permitted to be laid in such a way that they could be in contact with any part of a subsea Asset.
In addition, moorings shall never be run over the top of a subsea completion or wellhead.

This guideline may be relaxed when the touchdown point of the mooring lies between a trenched pipeline and the barge/vessel, a procedure has been provided and approved by BP, to ensure the mooring will not cause frictional abrasion or damage submitted.

(2) When anchors are being run, sufficient tension must be kept on the anchor line/chain to ensure it does not come into contact with any part of a pipeline, flowline or umbilical. The approved procedures for the mooring operation will identify the minimum tension to be maintained in order to ensure the approved vertical clearance is maintained. To ensure such bottom clearance is maintained, tension meters shall be continuously monitored.
(3) Special care shall be taken when repositioning anchors, the cable being hove far enough prior to rerunning to eliminate the possibility of a bight forming due to change of bearing and possibly fouling underwater obstructions.
(4) Whenever an anchor is run out over a pipeline flowline or umbilical, the anchor shall be decked on an open-sterned anchor handling vessel and secured with a second (preventer) wire of the same diameter as the main pennant or an acceptable mechanical stopper.
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(5) When the anchor is to be placed on the same side of a subsea Asset to that where the vessel/barge is lying, the anchor shall not be placed closer to the subsea Asset than 200m (refer to Appendix 3A Paragraph 2). BP may give a dispensation for a specific anchor or anchors for closer approach where the procedures clearly ensure that the subsea Asset is not placed at an unacceptable risk.
(6) Where a subsea asset lies between a vessel and its anchor, the anchor shall not be placed closer than 200m to the subsea asset with a minimum pull towards the pipeline of not less than 400m (refer to Appendix 3A Paragraph 2). BP may give dispensation for a specific anchor or anchors where the procedures clearly ensure that the subsea asset is not placed at an unacceptable risk.
(7) All anchor handling operations near to pipelines or other subsea Assets must be

closely monitored using a survey package.
(8) When it is suspected that an anchor has been placed on, or has made contact with, a pipeline all associated operations must cease until the exact location of the anchor has been established. The relevant Asset Offshore Installation Manager (OIM) must be informed immediately.
(9) Where, as in Item 6, mooring chains/wires cross over a pipeline, flowline or umbilical, the anchor pattern shall be such that a vertical clearance of the mooring above the pipeline, flowline or umbilical is maintained at all envisaged tensions and for all envisaged positions of the vessel.
In Northern and Central North Sea operations where water depths exceed 100m, a minimum vertical clearance of 20m shall be maintained for mooring, operational standby and unmooring phases of the operation. Should this not be achievable, a specific mooring procedure must be agreed and approved by all responsible parties. This procedure will ensure that no physical contact will occur. With water depths of less than 100m this minimum vertical clearance may be reduced but will be based on, but not limited to, the following criteria:

• Type of mooring wire/chain and anchor system
• Weight per metre of the mooring
• Pipeline details (surface or trenched)
• Type of seabed and location
• Duration and period of year

Actual minimum vertical separation will be approved by BP, upon review of the submitted procedures, which must ensure that no additional dangers to the subsea Asset will be created. For guidance, in water depths of less than 40m, a vertical clearance of half water depth shall be aimed for.

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(10) Where, during the running or recovery of the mooring system across a pipeline, flowline or umbilical, the clearance in Item 9 cannot be assured, one of the following measures may be taken:
This chasing hook shall be attached to a good heavy-duty wire, at least 50m above the pipeline, umbilical or flowline. In areas where the water depth is less than 100m this minimum vertical separation may be reduced dependent on the pipeline, umbilical or flowline and anchoring equipment noted in Item 9.

When running anchors over a pipeline, umbilical or flowline using a secondary

chasing hook, the anchor line tension and position of the anchor handling vessel must be continuously monitored (refer to Appendix 3A Paragraph 1).

(11) Catenary support may be provided by using buoyancy aid(s). When soft mooring buoys are used for this purpose the following requirements shall be met:
• The buoy and associated fittings shall be certified 'fit for purpose' at the proposed water depth
• An alternative mooring and unmooring procedure in circumstances where the above cannot be achieved may be considered by BP Marine Department where there is no other satisfactory method of anchor mooring deployment or recovery. In such circumstances, this alternative procedure must be approved by BP Marine Department and fully risk assessed before commencement
(12) Chain chasing systems, where fitted, must never be run where there is a risk that the chaser may come into contact with a pipeline, flowline or umbilical.
Where an anchor mooring crosses a pipeline, flowline or umbilical, the following procedure shall be adopted:

(a) Anchor to be transferred to an anchor handling vessel deck and secured as per Item 4.
(b) Chasing collar to be removed and a wire riser system attached to the crown of the anchor. Run anchor to deployment position in accordance with previous paragraphs.
(c) Deploy the anchor, with the complete riser system attached, and either attach a surface buoy (short stay) or laydown system on the seabed (prolonged stay). Where a laydown system is used it should be laid down at 90° to the mooring and away from any subsea asset.
(13) When a barge/vessel is moored close to an offshore Installation, mooring lines shall at no time be run in such a way that they shall ever come within 10m of the Installation.
Anchoring Within Another Anchor Pattern

No anchor shall be placed within the anchor pattern of another barge/vessel without a full risk assessment and hazard analysis being completed. Detailed, task-specific procedures for these anchor placements must be developed to mitigate any risks, and must be approved by the Master/OIM onboard both vessels/barges together with the relevant Business Unit (BU) representatives.

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It is recommended that anchors are not placed within 100m of another anchor, and that risk assessments address the accuracy of the original anchor position and the anchor being deployed.

As a general rule, cross-mooring situations shall be avoided but, where a barge/vessel is to be moored in a cross-mooring situation, the anchor pattern shall be developed to ensure minimum vertical clearance of 30m at all times between moorings which cross. The limitations shall be met when the barge/vessel(s) is/are on working and stand-off position(s). In water depths of less than 100m this vertical separation may be reduced and will depend on the criteria mentioned in Item 9 above.

When moorings are being run out over the mooring pattern of an anchored barge/vessel and, whenever practical during the operation, the moorings of the anchored barge/vessel shall be slackened off in order to achieve or increase the vertical clearance mentioned above. On completion of the operation, both barge/vessel(s) will develop working mooring tensions at which time the vertical clearance of 30m shall be met.

Anchor Recovery

When recovering an anchor near a subsea obstruction, the anchor handling vessel position shall be accurately monitored at all times by surveyors onboard the vessel. The position of the anchor handling vessel will be monitored until the anchor is seen at the vessel’s stern roller.

When recovering across a pipeline, the anchor must be brought on deck and secured.

When a vessel/barge is moored close to an offshore Installation the vessel/barge must be winched to the ‘stand-off’ position prior to the recovery of anchors.

Grappling

As a general guideline, grappling shall not be conducted within 200m of a subsea Asset. In certain circumstances, BP may allow grappling within 200m provided that it is no closer than 100m, and that a full hazard identification and risk assessment has been carried out. Recovery procedures shall demonstrate that the integrity of the subsea Asset is not put at an unacceptable risk.

Anchor Dragging

Whenever an anchor drags, or is placed accidentally in a prohibited zone, no remedial action shall be taken without the prior approval of the marine controller unless there is an emergency situation. In any event, the integrity of the subsea Asset is paramount.

4.2 Prohibited Zones
BP will provide the contractor with plans of the area(s) on which will be shown any prohibited zone. As a general guide these prohibited zones cover the areas extending 200m each side of existing pipelines, and within circles of 200m around offshore and subsea Installations. The relocation of an anchor may be permitted, where necessary, provided the approved procedures clearly identify that any subsea Installations will not be placed at additional risk.

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4.3 Mooring Systems
4.3.1 Objectives
Mooring failures lead to additional marine operations and, therefore, to increased costs and operational delay. Serious mooring failures may also involve unacceptable Health, Safety and Environment (HSE), cost and schedule exposure. It is therefore essential that the integrity of station-keeping and mooring proposals are carefully reviewed to ensure that all BP exposures are As Low As Reasonably Practicable (ALARP).

4.3.2 Verification
The capability of mooring systems shall be reviewed in accordance with the requirements of the UK Design and Construction Regulations (DCR) to demonstrate that the system as a whole can provide adequate integrity to withstand relevant operating conditions, extreme storm conditions and any relevant accidental or temporary conditions (single component failures etc). Integrity and reliability standards shall be based upon the potential consequences of failure.

Particular attention shall be given to:

• Risk of damage to marine risers and wellheads following single line failure(s)
• Risk of collision with adjacent Installations following single line failure(s)
• Risk of damage to BP subsea assets due to anchor drag, line failure and/or system failure
• Risk of collision grounding, stranding etc following total system failure
Acceptance may be based upon review of generic mooring analyses and operating procedures contained within the unit operating manuals, provided that they have already been independently verified and are applicable to the intended operations. However, where there are significant changes to environmental conditions, water depth,

mooring pattern, operating procedures, consequential risks etc, additional analyses will be required.

4.3.3 Mooring Design Codes

Mooring system design and analysis for all mobile offshore Installations shall be in accordance with The Offshore Installations (Design and Construction) Regulations SI 1996/No 913 and Operations Notice ON27, and the Det Norske Veritas (DNV) Posmoor Code. Consideration may be given to the use of other recognised codes of practice provided that it can be shown that they will result in an equivalent standard of integrity.

The mooring design codes should be carefully examined to determine whether they are applicable to the intended operations, and additional guidance should be developed by competent persons where required.

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4.3.4 Anchor Selection

Where drag embedment anchors are used, they should be carefully selected to ensure that they can be handled and installed efficiently without risk to personnel and/or subsea assets. The ultimate holding capacity should be assessed based upon site-specific soils information and, where such data is not available, the expected capacity should be conservatively adjusted to take account of uncertainty.

Target holding capacities should be determined based upon the mooring analysis, and adjusted in accordance with the mooring design codes to take account of the consequences of anchor drag.

4.3.5 Anchor Dressing

All outfit supplied for the dressing of temporary/replacement anchors shall be specified with a minimum break load which is at least as large as that of the mooring line to which it will be connected.

The default specification of all 76mm chain shall therefore be K4 RIG or equivalent.

Outfit which has not been manufactured and certified in accordance with DNV Certification note 2.6, or the equivalent IAAC joint classification code, shall not be accepted for deployment in the anchor chasing zone.

4.3.6 Maintenance
The barge or vessel owner shall ensure that all mooring and station-keeping equipment is kept in good working order, and that the reliability of mooring lines, winches, thrusters, power generation, line tension monitoring equipment, etc is monitored and shown to be adequate to meet the top level mooring integrity requirements.

Increased line tension factors of safety may be required where mooring equipment reliability levels fall below those assumed in the derivation of the design codes.

Valid certificates, maintenance, inspection and failure records should be kept for each part of the mooring system in such a way that they can easily be referenced when required.

4.3.7 Procedures
Particular emphasis shall be placed upon the development and implementation of practical procedures for active control of winches and thrusters, and for the definition of operational limits. The procedures should be simple, clearly written and regularly reviewed to ensure that they are practically achievable in the field. A clear link should be developed between the assumptions made in the mooring analyses and the procedures adopted in the field.

4.3.8 Equipment Rental
All anchor handling equipment required by BP for specific operations is hired from a specialist contractor. Each item of contractor’s equipment is checked, certified and tracked during offshore operations.

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4.4 Vessel/Barge Acceptability
The BP Business Unit Leader (BUL), or nominated delegate, is responsible to ensure that any vessel contracted by, or on behalf of, BP is to an acceptable minimum standard. Refer to Section 1 Paragraph 3.

BP reserve the right to conduct a technical evaluation on every vessel/barge involved with anchoring operations within 5km of a BP site.

4.5 Hazard Identification and Risk Assessment (HIRA)
Where anchors are to be placed within 5km of any BP Installation, subsea equipment or

pipelines, all marine hazards whether generic or task-specific shall be identified and associated risks assessed and accepted. The acceptance criteria is ALARP. Safeguards against all identified risks shall be implemented and included within task-specific procedures (refer to Paragraph 6.3).

Third-party anchoring procedures shall be issued and reviewed by BP to ensure compliance with the above BP requirements.

4.6 Offshore Operations

4.6.1 Operator Representative

Whenever any barge/vessel is engaged in mooring/unmooring, or any other associated operation adjacent to or in close proximity to BP-operated Installations, subsea equipment or pipelines, the identification of hazards must address any requirement for offshore representation by BP. Under normal circumstances BP would appoint a suitably qualified and competent mariner for the duration of these operations to safeguard the integrity of structures and to ensure that all operations are expedited. On third-party operated vessels/barges, BP reserve the right to station representatives on the vessel to monitor anchor deployment and to witness that any agreed procedures are adhered to.

4.6.2 Survey Equipment and Representatives

The contractor may be required to provide their own surveyor(s) onboard any offshore Installation/vessel to assist in positioning the anchor handling vessel whenever anchors are being run, in which case a survey package technically acceptable to BP Survey Branch shall be provided. This shall include equipment for the accurate measurement of the barge and attending vessel’s positions using Differential Global Positioning Satellite (DGPS) as a minimum position reference. With complex operations in deep water locations, preference shall be given to a tug management system with displays available on each vessel.

4.6.3 Communications

Contact with the appropriate marine control point shall be made by the barge/vessel as soon as it comes within VHF range. Details of the radio frequencies of the Marine Controller are provided in the appropriate site-specific marine operations documents listed in Addendum 1.

No barge/vessel shall enter the 5km controlled area until the Marine Controller has

granted permission and advised that the area is clear (refer to the relevant site-specific marine operations documents listed in Addendum 1).

4.6.4 Anchoring in Extreme Water Depths
Anchoring in deep or shallow water depths may require special mooring procedures. In some circumstances, 'Classification Society' approval may have to be granted.

4.7 Anchor Watch
Once any barge/vessel has anchored, an efficient watch must be kept on the mooring system(s) and any sign of dragging must be reported immediately to the designated marine control point and, where appropriate, the production OIM.

Regular checks of anchor line tensions (peak and average) and weather must be recorded, eg every 4 hours.

4.8 Move to Stand-off Position
When a vessel/barge is close alongside an offshore Installation and any of the environmental limits with respect to mooring tensions, wind or seastate is approached, then the vessel/barge shall be moved out to the 'stand-off' position as soon as possible. The environmental limits that determine when a vessel/barge moves to a stand-off position, shall be established in the Combined Operations Manual.

Before the barge/vessel 'offset' or 'mooring tension' limits are reached, the unit shall initiate the use of thrusters, where fitted, to extend the operating capability of the unit.

When thrusters are used to reduce the environmental loadings, they shall not be run at over 50% load/power in order to extend the operating time of the unit. When a 50% load factor is reached, the unit shall stop all appropriate operations and move to the stand-off position and be ready to take further action should weather conditions continue to deteriorate.

At all times, the unit shall be operated within the limits defined within the mooring analysis approved for the location.

Also, whenever bad weather is forecast with the possibility of wind speed or seastates approaching the limiting criteria, the vessel/barge shall move to the stand-off position in good time. In this stand-off position, if practical, consideration shall then be given to recovering anchors and proceeding well clear of the field. Alternatively, if no further deterioration in the weather is envisaged and if conditions are forecast to improve, the Vessel/Barge Master/OIM may decide to remain in the stand-off position. In this latter case the decision whether or not it is safe for the vessel/barge to remain in the stand-off position shall be considered by both the Vessel/Barge Master/OIM and the production Installation OIM.

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4.9 Recovery of Moorings in Bad Weather
Where, due to equipment failure, any moored vessel/barge requires to recover anchors in bad weather, the vessel's/barge's own ability or that of the designated anchor handling vessel(s) to hold the moored vessel/barge to windward during the recovery of moorings shall be taken into account prior to commencing the operation. In the event that there is insufficient power or time available, depending on circumstances, slipping moorings may be the most appropriate action to safeguard existing structures or pipelines.

4.10 Test of New Moorings
When a vessel/barge is to be anchored up for operations close alongside an offshore Installation or associated structure, the initial setting up and pre-tensioning of anchors shall normally take place with the vessel/barge standing-off at least 100m from the nearest point of the Installation.

When the vessel/barge is being winched to a position approximately 30m from the Installation (to facilitate the use of a gangway, etc), the 'payout' anchor tensions must be carefully monitored to avoid bights forming in the wire/chain. Any excursion of the vessel/barge whilst the gangway is connected could have serious consequences.

When positioning jack-up rigs alongside structures in the Southern North Sea it may be necessary to position closer than 100m. Authorisation for initial setting-up and running anchors closer than 100m can only be authorised in writing by BP.

4.11 Records
Vessel/Barge Masters/OIMs shall maintain conventional logbooks in English, where appropriate, for a period of 1 year after completion of the work and they shall be made available to BP on request.

The time, position and make-up of each anchor laid or recovered shall be recorded.

Mooring Buoys

Where there is a requirement to use crown anchor buoys or any large buoy in the course of offshore operations, the buoys shall be designed and constructed in accordance with

statutory legislation and the requirements of the ‘Consent to locate’.

Any requirement to lay any type of buoy within a field development area must be notified to Marine Branch Logistics.

All buoys other than small plastic type ‘Dan’ buoys, used for whatever purpose, shall be clearly marked with either the name of the unit to which they are attached or the name ‘BP’ or an easily identified shortened name, in letters as large as the size of the buoy allows and painted in a contrasting colour to the buoy which shall be painted in dayglo yellow.

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Buoys used as navigational marks shall be painted in the colour, and have the appropriate light characteristics, which comply with International Association of Lighthouse Authorities (IALA) specifications.

Buoys are to be inspected each day at sunrise and sunset. Particular attention is to be paid to buoyancy, position and light characteristic if fitted. Results of inspections must be entered into the Installation Logbook.

In the event of a buoy being lost, the BP Representative, and where appropriate the Marine Controller and OIM, shall be advised immediately. The OIM shall advise relevant authorities (Coastguard) and BP Marine Department.

Information Required from the Contractor
Prior to Commencement of Operations

BP will formally inform the contractor when the following information is required. Should BP provide the relevant calculations etc then the contractor will be advised as soon as practicable as he will be required to provide the data to support the calculations.

6.1 Mooring Analysis
Whenever any vessel/barge requiring an anchored mooring system is proposed for work in a controlled area, or over or near to a subsea Installation, the contractor must submit drawings of all proposed anchor patterns and procedures to BP for approval at least 8 weeks prior to the commencement of the work. Where for any reason such

timescale may not be met, the plans must be submitted as soon as possible. These procedures and proposed anchor patterns will be reviewed and finally approved by BP prior to endorsement by the relevant field group or department.

The works may not commence until such approvals have been obtained in writing.

Such procedures and plans shall, where appropriate, include a full dynamic mooring/quasi-static analysis designed and prepared in accordance with The Offshore Installation (Design and Construction) Regulations 1996, SI 1996/No 913, unless otherwise agreed between BP and the field group or department.

Mooring analysis assessment criteria and analysis methodology can be supplied by BP Marine Department, and include:

• Line factors of safety in accordance with the requirements of DNV Posmoor Code
• Sufficient mooring line deployed to ensure that uplift loads are not generated at the anchors due to line tensions in either the intact or transient conditions, unless otherwise agreed by BP
Whenever the requirements of the aforementioned document need not be met in full, the contractor will be advised of the revised parameters at the time of the tender or, in the case of long-term contractual plant, in sufficient time to conduct an analysis and obtain approval prior to the commencement of the works.

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The contractor shall also be required to provide the relevant data upon which the mooring analysis was completed in order for BP to conduct a separate check on this dynamic/quasi-static mooring analysis. This information will include the following items:

• Anchor line make-up, strength and anchor pattern
• Thruster capacities and control system designation
• Calculated environmental loads on rig in survival condition (most onerous loading direction)
• First and second order rig motions in survival conditions (most onerous loading direction)
• Survival mooring analysis results giving maximum line tensions, associated factors of safety and vessel excursions
• Anchor loads

• Description of computer programs used, with particular reference to the methods used to calculate dynamic line tensions
• Assumptions and detailed methodology used in analyses, eg winching policy, combination of motions/tensions, etc
• Calculations demonstrating that the rig's existing line lengths are sufficient to avoid anchor uplift. Where they are not, the following information should be supplied:
- Uplift angle and vertical load at anchor for each line with insufficient length
- Minimum additional line length required to avoid uplift forces at the anchor

6.2 Details of Barge/Vessel Spread and Equipment

All barges/vessels shall have in their Operations Manual a description of the mooring system and its condition including types, weights and rated holding power of each anchor, size and type of mooring wire/chain and, where combination moorings are employed, length of each component. This shall include catenary curves for each condition to ensure any minimum clearances required are maintained in both horizontal and vertical directions. The descriptions will include details of chasing systems or of buoy and pennant systems which are to be deployed. Additionally, the manual must include the following information:

• Towing Arrangements

Must include towing methods, emergency towing, recovery systems and handling methods.

• Minimum Bollard Pull for Towing

Bollard pull is to be identified as per design criteria or Towage Certificate of Approval. Bollard pull to be subdivided to allow for one or more towing vessels, but a practical balance of power between the vessels must be achieved.

As a general guideline the requirement would be to hold the unit at both transit/operational drafts against a 1 knot current, 40 knot wind and 5m sea, all active in the same direction, both beam-on and end-on to the vessel/barge.

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• Positioning Systems

A description of all positioning systems onboard the vessel. This information is to detail any restrictions on equipment, such as minimum/maximum operating ranges, water depths, physical obstructions, blind sectors, etc.

• Propulsion Systems
Details of any propulsion indicating output of each unit along with redundancy of equipment.

• Communications Systems
Details of equipment and systems.
• Other Vessels
Details of any other vessels in the spread, eg surveying, diving, anchor handling, standby, etc.

6.3 Detailed Procedure
The contractor shall furnish BP with a detailed 'step-by-step' procedure of all the proposed operations to be carried out by the barge/vessel from the initial position to the final position. These procedures must be to a standard that meets BP's approval, and must be supported by the following information:

• Hazard identification
• Description of rig move, including order and method of running anchors
• Responsibilities and accountabilities of personnel
• Charts and drawings to show the anchor patterns, together with all known subsea obstructions
• Details of anchor handling equipment and methods to be used
• Details of positioning systems proposed
• Details of mooring analysis, pre-tensions and working tensions
• Minimum line clearances over subsea equipment, line tensions, etc
• Anchor selection, anchor fluke settings and soils analysis data
• Stability and draughts of the vessel/barge for the working conditions
• Communications and emergency procedures
The foregoing description shall be supported by drawings on an appropriate scale giving the 'step-by-step' operation showing the positions of the vessel, anchors and anchor wires/chains, and the associated subsea Installations for all positions of the barge/vessel during mooring, operational, standby and unmooring phases. Any other vessel being used in an operation shall be shown therein.

The contractor shall also specify the appropriate maximum weather limitations for the mooring/unmooring operation.

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The contractor shall furnish BP with an organisation chart (organogram) indicating name and position of all responsible persons offshore and all ‘callout’ procedures.
This organogram shall be supplemented by a communications chart.

For UK operations, all communications between vessels/barges and production Installations will be conducted in the English language. At all times there shall be a sufficient number of responsible persons onboard able to communicate in English.

The contractor shall submit to BP extracts from the Barge/Vessel Procedures Manual stating what contingency actions will be taken in the event of:

• Mooring failure
• Mooring winch failure
• Damage to barge/vessel
• The weather parameters or other criteria, eg mooring line tensions for normal operations, and the procedure to be adopted in the event of such parameters being reached
Anchoring Instructions and Guidelines

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Appendix 3A

Procedure for Deploying
Wire Moorings Across Pipeline

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1 Procedure for Deploying Wire Moorings Across Pipeline 1

2 Safe Distance from Underwater Equipment 2

Procedure for Deploying Wire Moorings Across Pipeline
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Procedure for Deploying Wire
Moorings Across Pipeline

AHV AHV

PIPELINE

AHV AHV

50m MINIMUM PIPELINE

20m MINIMUM
PIPELINE
WIRE AT WORKING TENSION
AHV
UKCSMAL001_005.ai

Procedure for Deploying Wire Moorings Across Pipeline
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Safe Distance from Underwater Equipment

400mRADIUS
200m 200m
PIPELINE
UKCSMAL001_006.ai

Procedure for Deploying Wire Moorings Across Pipeline
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Section 4

Towage

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Section 4
Towage (cont'd)
Appendix 4A Typical Barge Towing Arrangement
Appendix 4B Emergency Barge Towing Arrangement

Towage

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1 Application

This section contains general guidelines which shall be used as an aid to maintaining the highest standards of seamanship on any tow undertaken on behalf of, or for, BP.

The towing operation shall be in the charge of a competent Towing Master.

2 Tow Vessel Selection

2.1 General
It is the charterer's responsibility to ensure that the intended towing vessel(s) are adequate for the tow in the worst weather conditions which can be envisaged.

A Warranty Surveyor shall normally be involved and give approval to the tow vessel selection. The responsibility for ensuring a Warranty Surveyor is appointed depends on the tow operation: BP will normally appoint a surveyor for special tow-outs; the rig Owner will normally appoint a surveyor for jack-up drilling units.

In general, the minimum bollard pull for any towing vessel(s) will be sufficient to move

the tow ahead against a 1 knot current, 40 knot wind and a 5m sea all acting in the same direction.

The specification for the number, type and bollard pull of suitable vessel(s) can only be decided once the workscope has been properly defined.

Any tow vessel selected shall be ‘fit for purpose’ of the intended workscope whenever practicable and dependent on the exposure to risk, this shall be confirmed by a technical inspection.

Each tow vessel shall have a suitable motorised workboat to enable an inspection crew to board an unmanned cargo barge, without the necessity of manoeuvring the tow vessel alongside.

2.2 Towing Gear
(1) Each tow vessel shall have a spare tow wire. It shall be either spooled onto a working drum or spooled onto a storage drum and ready, or available for use, at all times during the tow.
(2) Tow wires shall have a Breaking Load (BL) of:
• BL = 4 x Static Bollard Pull (BP) for vessels where BP <25 tonnes
• BL = (0.8 x BP) + (16 x the square root of the BP) for vessels where 25<BP<130
• BL = 2.2 x BP for vessels where BP >130 tonnes
(3) Shackles used in the tow line shall have a breaking load of circa 3 times the bollard pull, but in any event it will be greater than the tow wire breaking strength.
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(4) The tow line may incorporate a nylon spring (stretcher) made up with a hard eye thimble at each end. If used, its breaking load shall be circa 1.5 times the breaking strength of the tow wire.
The practice of using a nylon stretcher is not normally encouraged by BP unless specified in the tow procedures or sanctioned by the BP Marine Representative.

(5) On winches used for open sea towage, the holding power of the innermost layer of the wire rope shall not be less than 2.5 times the static bollard pull. In addition to the main holding system there shall be an emergency holding system which can give a holding power on the innermost layer of wire rope of at least 2 times the static bollard pull.

(6) The tow vessel shall be fitted with a towing pod, gob wires or enclosed towing pins to prevent the tow rope from riding up the vessel side and causing a capsizing moment (sometimes referred to as ‘girting’).
(7) All towing gear must be fully certificated and substantiated by documentation.
(8) Adequate protection against tow wire chafe must be provided. The chafing protection must not inhibit the tow vessel paying out or recovering wire during the course of the tow. Frequent movement of the tow wire often affords the greatest protection against chafe. Failure to provide adequate protection will result in BP refusing to accept a ‘back-charge’ billing for a replacement wire.
(9) The working deck should be visible from the manoeuvring and winch control positions. The use of CCTV is acceptable.
2.3 Documentation
The following (minimum) documentation shall be available for inspection:

• Vessel Registry Certificate
• Tonnage Certificate
• Load Line Certificate
• Class Certificate
Towed Cargo Barge Selection (Normally Unmanned)

The towed cargo barge will be selected, after undergoing a technical assessment which may include an inspection, to ensure it is fit for the purpose of the intended workscope. This technical inspection will normally be completed by the Warranty Surveyor and the BP Marine Representative. It will evaluate the suitability of the cargo barge with reference to the general requirements stipulated in Paragraphs 3.1 to 3.8.

3.1 General
The cargo barge shall have the physical capability to transport the cargo safely to its destination, eg dimensions, draft, deck loading, point loading, stability etc.

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3.2 Steelwork
All external and, where practicable, internal steelwork will be examined for damage and integrity. All defects shall be recorded to protect, where appropriate, BP from any subsequent damage claims submitted by the Owner. The deck supports and plating shall be suitable for attaching grillage fabrication when required.

3.3 Towing Arrangement
A suitable and fully certificated bridle system with safe working loads and breaking loads based on the bollard pull of the towing vessel shall be provided (refer to Appendix 4A). The bridle system shall be capable of being separated at the apex so that the unit can be towed by two vessels if required.

3.4 Tow Recovery
A suitable, and certificated recovery system will be fitted to the cargo barge.
This recovery system shall be capable of total recovery of the towing bridle to enable reconnection.

3.5 Emergency Towing Arrangement
A suitable and fully certificated arrangement will be fitted. The arrangement will be such that it can be deployed from the cargo barge and recovered by the towing vessel, without outside assistance (refer to Appendix 4B).

3.6 Anchoring Equipment
The cargo barge must be fitted with a suitable and fully certificated anchoring system for emergency use. The anchor mooring line shall be of sufficient length to secure the cargo barge and its cargo at all reasonable water depths, bearing in mind the planned route and final destination.

3.7 Mooring Equipment
There shall be sufficient mooring bitts to moor the barge securely alongside a quay or parent vessel. In general there shall be at least eight mooring bitts – three on either side and one forward and aft, on or near the centre line. Fairleads and Panama fittings shall be sited, where applicable, to avoid mooring line chafe and to allow the moorings to have raised leads to the parent vessel/quayside. Mooring lines shall be in good condition and of sufficient breaking load, length and number to provide a secure mooring system.

3.8 Ballast and Pump Room System
The ballast system shall be such that the loading or discharging of ballast can take place at any draft. All manholes/hatches shall be secure and watertight to ensure the integrity of the unit. The tank venting system shall be in good working order, and the means of preventing water ingress proved.

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Adequate quantities of clean fuel and cooling water, where appropriate, must be provided to ensure all the envisaged ballasting operations can take place without replenishment.

Ballast pump and pipeline arrangement plans shall be displayed in the pump-house/room.

3.9 Navigation Equipment
Navigation lights and shapes must be provided in accordance with the International Regulations for Preventing Collisions at Sea. Navigation lights shall be independently operated (eg from gas containers or from independent electric power sources). Spare a mantles/bulbs should be carried, and fuel and power sources should be adequate for the maximum anticipated duration of the voyage plus a reserve. A secondary duplicate system shall be available for use.

3.10 Safety Equipment
Fire extinguishers shall be fitted in the vicinity of any machinery/fuel that could provide a source of ignition. The extinguisher(s) will be of a suitable type for the fire likely to be encountered.

Lifebuoys shall be sited in strategic positions to provide added security during inspection periods on tow.

Lighting shall be provided in any enclosed space that is likely to be manned in an urgent or emergency situation.

Emergency shut-off valves for the fuel system shall be in working order.

An adequate engine start system shall be provided.

3.11 Cargo Barge Access
The cargo barge shall be capable of being boarded safely from either side. Care shall be taken to ensure that access is not impaired by the positioning of the cargo secured on deck.

The use of properly secured ‘pilot ladders’ will be considered in certain circumstances.

3.12 Documentation
The following (minimum) documentation shall be available for inspection:

- Vessel Registry Certificate
- Tonnage Certificate
- Load Line Certificate
- Class Certificate

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4 Towed Cargo Barge (Normally Unmanned)
Loadout and Departure Checks

The charterer shall be responsible for ensuring that the cargo barge, its cargo and the sea fastenings have classification where required, and Warranty Survey approval and Certification.

Before departure, the towing vessel and tow, and the towage and stowage arrangements shall be inspected by the Tow Master, the Warranty Surveyor and the BP Representative onsite who are all to agree that everything is satisfactory.

The watertight integrity of the tow shall be assured by an inspection of the closing arrangements for all hatches, valves, air pipes and any other openings through which water might enter the hull. The tow shall be at a suitable draft for the intended passage.

The securing arrangements for the cargo and stores carried on the tow shall be carefully examined to ensure that they are completed as per the approved ‘seafastening’ drawings and that they are adequate for the duration of the voyage. The fabrication, and placement of seafastenings will be undertaken by coded welders and, upon completion, all welds will be subject to Non-destructive Testing (NDT). The stowage of the deck cargo shall be so arranged as to provide the tow with adequate stability.

5 Towed Barge/Vessel (Permanently Manned)

Craft such as construction barges and mobile drilling units which require towage are supplied with their own individual operating procedures which specify weather limitations, optimum transit drafts, towing arrangements and minimum/maximum manning levels, etc. The instructions and guidelines contained within these procedures shall be complied with at all times.

6 Riding Crew (Temporary Manned Units)

Subject to the safety of the riding crews, which is of paramount importance, the safety of tows during sea passage is increased if a riding crew is carried. However, as barges, cargoes, seasonal weather and operating areas vary, each tow shall be considered individually, and the approval of all interested parties must be obtained prior to a riding

crew being appointed.

7 Passage Planning

The route to be followed by the tow shall be planned and will take into account such factors as the weather, tidal streams and ocean currents, the size, shape and weight of the tow and the navigational hazards to be avoided.

Whenever possible, lee shores and shoals shall be given at least 5 miles clearance.

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Where necessary, tow procedures shall be issued and they shall include, but not be limited to:

• Contingency plans for adverse weather ie plans for heaving-to, taking shelter, entering a port of refuge or anchorage and identifying emergency jacking locations, shall be made in advance of the voyage
• Contingency plans for the tow parting
• Details of cargo barge inspection routines, etc
Communications

HM Coastguard shall be informed in advance of the intended passage of a difficult tow. After sailing, the Coastguard or coast/radio station shall be kept informed of the movement, time of arrival at destination, and time tow secured at destination. Where tows, through breaking adrift or by some other cause, present a potential hazard to shipping or offshore structures, the accompanying towing vessel shall immediately take steps to broadcast an ‘Urgency Signal’.

Procedures for communication with offshore BP Marine Controllers are contained within Section 2.

Towage

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Appendix 4A

Typical Barge Towing Arrangement

PANAMA
FAIRLEAD
A-FRAME AND
SHEAVE
RECOVERY WIRE
BL 25 TONNES
STUD LINK CHAIN
BL = 3 X TUG BP
OPEN LINK EACH END
SHACKLES SWL = TUG BP
ROPE MESSENGER
50MM CIRC
LENGTH 90M APPROXIMATELY
DELTA PLATE
SWL = TUG BP
ALL EYES FITTED WITH THIMBLES
PENNANT WIRE BL = 0.9 X TOW
WIRE BL LENGTH 30 TO 45M
TUG NYLON SPRING
(IF USED)
BRIDLE LEG WIRE BL = 3 X TUG BP
SMIT TYPE
BRACKET
WINCH
ANGLE BETWEEN
BRIDLE LEG <60°
UKCSMAL001_007.ai

Typical Barge Towing Arrangement
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Appendix 4B

Emergency Barge Towing Arrangement

PANAMA
FAIRLEAD
EMERGENCY TOW PENNANT
BL = 3 X TUG BP
PENNANT BRACKETED
TO SIDE WITH SOFT
STEEL CLAMPS
PASSES OVER CHAIN
WINCH
POLYPROP LINE BL = 25T
LENGTH = LENGTH OF BARGE + 90M
BUOY
UKCSMAL001_008.ai

Emergency Barge Towing Arrangement
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Section 5

Vessels Alongside BP Installations

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Vessels Alongside BP Installations

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1 Application

This section contains instructions and guidelines relating to any vessel or barge which is moored alongside, or anchored close to, a BP production Installation.

2 General Operations

2.1 Risk Assessment/Hazard Analysis

Any vessel or barge requiring to enter the 500m zone around an offshore Installation shall complete a full risk assessment and hazard analysis on the workscope to ensure that all operations are conducted in a safe manner. Hazard analysis must include representative and management of the vessel, barge, Marine Logistics (Marlog) Department, Installation and must cover any specialised operations such as diving (refer to Section 2).

From the risk assessment, full operating procedures shall be developed to mitigate risks.

2.2 Project Bridging Document

A bridging document, which interfaces the Safety Management System (SMS) of BP and the vessel, shall be prepared for the duration of the project. Refer to Section 1 Paragraph 3.5.1 for the requirements of an interface document.

2.3 Combined Safety Case/Operations Manual

When it is planned for a mobile offshore Installation (barge, flotel, etc) to be adjacent to a production Installation, a Combined Safety Case is required to detail the interfaces between the Installations and to incorporate the bridging document. The Combined Safety Case must be submitted to the Health and Safety Executive for approval at least 6 weeks before operations are due to commence.

As part of the Combined Safety Case, a Combined Operations Manual is required to inform active personnel of the project, and to bridge the Safety Management Systems of

the barge and Installation. The objective of the Combined Operations Manual is to:

• Identify names, roles and responsibilities of key project personnel
• Identify channels of communication
• Detail the scope of work for the vessel
• Detail how the Installation and vessel emergency procedures are integrated
• Detail the Permit to Work Systems
• Identify and agree a Simultaneous Operations (SIMOPS) matrix. Also any restrictions to diving operations, supply vessel operations, crane operations, etc
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The contents of the Combined Operations Manual will be determined by the appropriate field group management and that document will take precedence over this.

For guidance it is envisaged that the Combined Operations Manual will address the following points:

2.3.1 Running Anchors
All anchor work will be conducted as per Section 3.

Prior to running anchors to set up alongside any production Installation, full discussion must be held with the production Offshore Installation Manager (OIM) about the pending work programme and his approval must be obtained prior to commencing the operation.

Any limitations or conditions the production OIM specifies must be adhered to.
Full liaison and communications must be maintained between the production Installation OIM and the BP Representative onboard the barge/vessel.

2.3.2 Production Installation Alarm Signals/Emergency
Should the production Installation alarm signals be heard whilst the barge/vessel is alongside, the BP Representative or Barge/Vessel OIM/Master must contact the production Installation and ascertain the seriousness of the incident and what action is required to be taken.

2.3.3 Barge/Vessel Alarm Signals/Emergency
In the event of an emergency on the barge/vessel, the production Installation OIM must be informed and advised of the course of action being taken.

2.3.4 Crane Operations
Co-ordination of Crane Operations

Permission must be sought by the production Installation or barge/vessel before the commencement of any crane operation which may affect the safety of the other unit.

2.3.5 Accident/Incident Reporting
All accidents/incidents must be reported to the production Installation OIM. A BP accident, incident, industrial illness report may have to be completed in addition to any vessel or barge report.

2.3.6 Access Bridge Operations (Accommodation Barge Only)
Semisubmersible Units

(1) The barge shall maintain records covering all aspects of the gangway operation, including the manufacturer's technical data. Routine planned maintenance shall be completed by a competent person and records retained for reference.
(2) The barge shall be positioned so that the access bridge is in an equilibrium (mid-stroke) position when landed on the fixed offshore Installation.
Vessels Alongside BP Installations

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(3) The bridge shall be fitted with visual and audible alarms which will be activated automatically. Typically these will be measured by horizontal stroke and angle to the vertical.
Note: The bridge will automatically lift when the telescopic motion exceeds the maximum or minimum allowable working stroke.

(4) The bridge alarm shall be audible and will be sounded at the access bridge, navigation bridge and control room positions. The operator shall demonstrate that the vertical angle limits are not exceeded.
(5) The alarm system shall be such that it may be acknowledged from the navigation bridge but only reset from the local access bridge position.
(6) Activation of the access bridge alarm shall be taken as 'Notice of bridge closure' as defined in the procedures detailed in Item 7.
(7) Access bridge procedures shall form part of the Combined Operations Manual and shall contain at least the following information:
• The authority and criteria for lifting the bridge
• The amount of warning given

• The method of rapid disconnection in the event of an emergency
(8) When a bridge is in position, only authorised personnel will transfer to or from the production Installation or barge. Procedures will be in accordance with the Combined Operations Manual.
Jack-up Units

(1) Access bridge procedures shall form part of the Combined Operations Manual.
(2) When the bridge is in position, only authorised personnel will transfer to or from the production Installation or barge.
2.3.7 Personnel Movements
The number of shiftwork personnel to be transported to the production Installation will be communicated by the BP Representative, or his designate, to the OIM in good time.

The number of shiftwork personnel to be transported to the vessel/barge will be communicated by the production Installation OIM, or his designate, to the BP Representative in good time.

At no time will additional personnel either on the production Installation or the vessel/barge exceed the capacity of the lifesaving equipment onboard either the production Installation or the vessel/barge.

Vessels Alongside BP Installations

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Mooring to Production Installations

3.1 General
There are no arrangements in place for the mooring of vessels alongside Installations.

For any mooring, a structural assessment will be required together with the calculation of the maximum environmental loading on the jacket. Specific procedures must be developed in conjunction with the Installation, and particular attention must be paid to ensure that their content assures the integrity of any subsea equipment.

Supply vessels are not allowed to moor at offshore Installations.

3.2 Anchor Deployment
Deployment of anchors shall be carried out as laid down in Section 2. Vessels will be provided with approved procedures, plans and field charts.

3.3 Planning
Forward planning shall involve:

• Risk assessment and hazard identification of the complete operation
• Identification of suitable anchor handling vessels
• Arranging all anchor handling equipment
• Survey equipment requirements
• Development of procedures, plans and field chart
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Application

1.1 General
This section contains instructions and guidelines for any vessel or barge operating on Dynamic Positioning (DP).

1.2 Authority and Responsibility
Nothing in this section shall supersede the spirit or letter of any legislation that covers the authority and responsibilities of individuals onboard DP vessels or representatives of Owners/Operators ashore.

Any vessel/barge contracted by or on behalf of BP for DP operations, shall comply with Section 1 Paragraphs 3 and 4.

Vessels owned, operated or chartered by, or on behalf of, BP, will comply with the latest revision of International Marine Contractors Association (IMCA) guidelines for the design and operation of DP vessels, and will be audited in line with the latest revision of United Kingdom Offshore Operators Association (UKOOA) guidelines for auditing vessels with DP systems. Where conflict exists between legislation and/or these guidelines, the more rigorous requirement will be used in order to safely and efficiently complete the workscope. Vessels operating on DP shall also comply with International Maritime Organisation guidelines published June 1996.

Note: Dynamic Positioning Vessel Operators Association (DPVOA) was superseded by IMCA during 1995. (However, some DPVOA documents are still valid.)

Irrespective of the sea area in which a DP vessel is working, it is a fundamental necessity for the Owner/Operator of the vessel to define the responsibilities and authority of the various key members of the crew.

1.3 DP Classification
International Maritime Organisation (IMO) have defined three equipment classes:

Equipment Class 1

Loss of position may occur in the event of a single fault.

Equipment Class 2

Loss of position should not occur from a single fault of an active component or system such as generators, thruster, switchboards, remote controlled valves etc, but may occur after failure of a static component such as cables, pipes, manual valves etc.

Equipment Class 3

Loss of position should not occur from any single failure including a completely burnt fire subdivision or flooded watertight compartment.

A single fault includes a single inadvertent act by any person onboard the DP vessel.

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Principles for All DP Vessels

2.1 Basic Philosophy
A fully operational DP system shall reliably keep a vessel/barge in position and working such that the maximum excursion from vessel motions and position control system accuracy shall be equal to, or less than, half the critical excursion for the work being carried out.

2.2 Safe Working Limits
Safe working limits shall be determined for each geographical location and type of task to be performed. These limits must consider every possible failure mode, and the likely time to restore the DP system and/or move clear of an area such that a safe situation exists. Particular attention should be paid to the following scenarios:

• Failure of any section of the power generation, distribution and control systems
• 'Blackout' situation and the vessel movement against time to restore power while operating within the 500m zone or development area.
• Time to recover any equipment or divers from the sea to a safe position
• Divers working within a jacket
• Water depth
Note: 'A Safe Situation' means where the work has or could immediately cease and there are no serious consequences.

‘Safe Working Limits’ are the environmental limits that would make a critical excursion from a single fault very unlikely either through adequate control and power remaining; environmental loads are small and the time to reach a safe position is short; existing circumstances and conditions position loss do not have any serious consequences.

2.3 Redundancy of Equipment
All DP vessels used to conduct ‘diving, drilling, flotel, pipelay operations’ must be Class 2 (refer to Paragraph 1.3).

Class 1 DP vessels requiring to operate within the 500m zone of Installations must have procedures which reflect the possible loss of equipment and position. They will be required to operate in a ‘blow-off sector’ and will not be allowed to approach closer than 100m to the Installation. (‘Blow-off sector’ means a position where if all power on the vessel is lost, then the vessel will drift clear of the Installation.)

Required levels of redundancy shall be addressed during pre-mobilisation hazard analysis and evidenced within project documentation.

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It is essential that all key DP personnel know the consequences to be expected from various failures as the levels of sophistication and redundancy of vessels vary considerably. To assist Operators with worst case failures for Class 2 and Class 3 equipment, the DP control system for vessels built after 1 July 1994 should be fitted with a consequence analysis function checking that, in terms of thruster and power, the vessel can maintain station following the worst case failure mode.

2.4 Failure Modes and Effects Analysis (FMEA)
Documentation on the reliability and availability of the DP system shall be available in the form of a FMEA. BP require FMEAs for Class 1, Class 2 and Class 3 DP vessels.
The FMEA should be updated after any major changes to plant or equipment, it should be a live document held onboard the vessel and the core crew should be familiar with its contents. The purpose of an FMEA is to give a description of the various failure modes of the equipment referred to its operational task:

• Functional breakdown of the DP system or subsystem into blocks with each block described
• Description of each physically and functionally independent item and the associated

failure mode
• Description of the effect of each failure mode on other items within the system, and on the DP system as a whole
• The FMEA should be used as a reference document by the crew to understand the consequences of any failure
(The reason BP require an FMEA for Class 1 vessels is to understand the number of single point failures, although most single point failures are permitted, and to give the crew the document for reference purposes.)

2.5 Capability Plots
The maximum continuous operational station-keeping capability for the DP system shall be calculated for the following cases:

• All thrusters operational with maximum effective thrust
• All thrusters, except the most effective thruster, operational with maximum effective thrust
• The maximum number of thrusters and/or power units remaining operational after the worst single failure
• The equivalent loading on all thrusters in the intact condition shall be calculated to correspond with the above bullet point
This information shall be presented in the form of a polar plot. For each condition, several current speeds shall be considered, eg 0, 1, 2, 3 knots, etc. Current to be coincident with wind and associated wave loads to be from a fully developed sea.

Plots should be provided in accordance with the IMCA standard contained in M140 Specification for DP Capability Plots.

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Note: For operations west of Shetland it is essential that plots are available for the high

currents experienced. Three to 4 knots and real time plots, using actual and

forecast conditions, should be considered.

This theoretical exercise is to provide plots which should be verified during the vessel’s operational life, in the form of ‘footprint’ plots which are to be retained onboard for reference.

2.6 Operations Manual
Every DP vessel/barge shall have an operations manual particular to its DP system and the operating practices of the Owners/Operators. It shall cover all the work for which the vessel is designed or likely to be used and shall include, but not be limited to, the following:

- Capability plots and verification footprints
- Working profiles and capabilities of equipment
- DP alerts and emergency responses
- Responsibilities and communications
- Manning
- Trials and checklist procedures
- Reporting and recording procedures
- DP footprints

2.7 Proving Trials
All new DP vessels/barges are required to undertake proving trials in addition to, and after, testing and commissioning trials. The DP system shall be proven in all normal modes of operation. When all normal modes are functioning correctly, failure modes shall be simulated and the results of such tests documented. Finally, performances shall be demonstrated in both the intact and various failed conditions.

Such proving trials shall be carried out (observed) and properly documented by a competent third party and the results made available. These DP proving trials shall be carried out annually by a competent independent third party and the documented results made available to BP.

2.8 Procedures and Documentation
All DP vessels/barges, including Class 1 DP vessels, shall have a comprehensive testing procedure which shall cover the following:

- Mobilisation checks for new charter
- Checklists for each new location
- Watchkeeping checklists

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Where the DP and engine control stations are located separately, then each shall require separate checklists.

The DP system shall be fully technically documented. In addition to the vendors' data, it is essential that there is an overall document which brings together the equipment, describes the interfaces between various components and identifies the actual make, model and any modifications made to the standard supply. Drawings shall identify all the main components, their location on the vessel and their cable and/or pipe routes.

Repairs, modifications and maintenance callout of Service Engineers shall be recorded, as shall intermittent faults and failures. A comprehensive picture of the DP reliability shall be continuously assessed and made available to BP.

2.9 Vessel – Safety Management, Audits and Assurance
2.9.1 Safety Management
Any DP vessel/barge contracted by, or on behalf of, BP shall have a structured and documented Safety Management System (SMS) enabling Company personnel to effectively implement the Company health, safety and environmental policies. Two of the key elements of success are the competence of personnel and the identification of risk (refer to Section 1).

2.9.2 Audits and Assurance
Vessel Safety Management Systems require inspections and audits, and any vessel chartered by, or on behalf of, BP shall be subject to inspection and audit (refer to Section 1). The first stage of this process is for the Operator of the vessel to supply BP with basic information on their SMS and the levels of inspection.

All DP vessels must be approved by BP Marine Logistics (Marlog) prior to commencing work at any BP worksite.

It is recommended that vessel Owners are members of the IMCA so that they can be kept advised of any industry standards and, in particular, the networking of DP incidents and statistics. The following documents are required for review of a DP vessel, the five bullet points in bold are always required:

• Copy of the latest valid independent DP FMEA
• Confirmation that no major changes to DP systems have been carried out since the FMEA, or if so, details
• Copy of the current valid independent DP annual trials
• Copy of the valid independent marine safety audit report. (Preferably IMCA/UKOOA or similar standard)
• Copy of the marine crew qualifications and experience (ie CV-type document, particularly with reference to experience on the proposed vessel)
• If possible a brief matrix of crew courses attended
• Record of any DP failures in the last 6 months and the actions to prevent

recurrence
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Depending on the amount of information available for review and the findings, a visit to the vessel may be necessary.

If a vessel visit is necessary, information will be gathered by:

• Review the minutes of safety meetings for any accidents and in particular any recurring actions that have not been addressed, assess the trends in accidents/incidents
• Brief and informal discussions with officers and crew to determine the level of safety culture
• Review the Permit to Work System, risk assessments and their control
• Review the effectiveness of the application of the Safety Management System
• Review the planned maintenance system in place, reasonably up to date and spot check being followed
• Review the Company's Marine and DP Operations Manual/Procedures

It is useful to know the type of workscope that the vessel is to be carrying out, particularly critical operations in order to decide if any limitations on the vessels use should be recommended. As the review progresses it may be necessary to request additional documents or information to clarify certain points.

After the above review process the Marine Logistics Department will advise concerned and the vessel operators whether the vessel is acceptable and if any restrictions on operations are to be imposed. This advice will be for the specific workscope.

2.10 Manning

When any vessel is operating on DP within the 500m safety zone of an Installation, there are to be two trained DP Operators on the bridge at all times. They will man the DP console alternately, being relieved at regular intervals.

On drilling or diving vessels, or on other vessels where there are extended periods on DP and the Master has other responsibilities, at least two people (in addition to the Master), capable of assuming the role of DP Operator, must be provided for each watch.

On any vessel, the DP Operators will, after a specific period of duty, have an equivalent period off-duty. No DP Operator will have a period of duty exceeding 12 hours.

When any vessel is operating within the 500m zone of any Installation, the vessel's engine room will be manned by a qualified person at all times.

Additionally, on diving support, drilling, accommodation and crane vessels, at least two competent and qualified Engineering Officers are to be on duty at all times.

There must be onboard one technician capable of minor fault-finding and maintenance of the DP system.

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2.11 Responsibilities and Accountabilities
The vessel's operations manual shall define as a minimum the responsibilities and accountabilities of the following personnel:

• Master/Offshore Installation Manager (OIM)
• Diving/Drilling/Project Superintendent/Supervisor
• Operations Superintendent (if carried)
• Chief Engineer
• DP Operators, Watchkeeping Engineers and DP Technicians

2.12 Position References
The number and types of position references required shall depend upon the nature of the work to be performed as well as the environment in which they are required to operate. Care is needed to determine whether redundancy is completely provided by duplication of similar sensors. Similar sensors must be stand-alone completely independent of each other.

For DP diving vessels, well stimulation vessels, construction vessels, flotels and vessels involved with the drilling or transfer of hydrocarbons, there must be a minimum of three independent reference systems of which two shall be of a different type. At least two independent sensors shall be deployed and online, with the third sensor online whenever possible or available for immediate selection.

For shallow water DP operations, reference is to be made to IMCA Document 12, DPVOA DP Position Loss Risks in Shallow Water and, where possible, at least one surface radio position system shall be used. Attention is drawn to the impact of maximum wave amplitude on vessel positioning in relatively shallow water depth

(pipelaying).

The overriding principle is that safe working limits are to be determined and agreed with BP, or the BP Representative. Safeguards against ‘all identifiable risk’ shall be included within the risk-specific procedures together with the type of position reference system. Hazard analysis shall include the following:

• Taut wires – failures shall not give a constant signal when the vessel is moving. Fouled wire, faulty sensors or inadequate weight should be addressed. Positions of subsea infrastructures that may be damaged or fouled by taut wire weights shall be considered
• The possibility of single-point failure onshore to DGPS positioning systems
• Acoustic – limits of performance, subsea obstructions shall be addressed. Sensors tethered to the vessel should be avoided where practicable. Deployment of more than one transducer does not make the system redundant if it is still subject to a common mode failure, eg one transducer, one transceiver, the thruster noise, thermal layering, etc
• Short-range radio signals – failures from loss of line-of-sight communication
• Pseudo signals
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2.13 DP Alert Levels
For all DP vessels/barges there are three DP alert levels:

• Green
Normal operational status (green light); adequate equipment is online to meet the required performance within the declared safe working limits.

• Yellow
Degraded DP operational status (yellow alert); in general it is the condition where one or more items of redundant DP equipment has failed, safe working limits are being exceeded or an excursion of heading or position is likely but the excursion will not be critical.

• Red
DP emergency status (red alert); is where there is loss of position, or position loss is inevitable.

For a vessel operating on task-specific procedures, the responses to the DP alert signals shall be documented. The following would be the minimum expected onboard drilling, diving or flotel units:

• Green – full DP diving, drilling or flotel operations can be undertaken
• Yellow – divers shall return to the bell immediately and obtain a seal; air divers shall return to the surface, and decision made by responsible parties whether or not to abandon the dive. Drilling activities suspended. Flotel gangway closed to personnel crossing
• Red – if not already done so the divers shall return to the bell and obtain a seal, and air divers return to the surface; the bell shall be recovered to the surface after due consideration of the hazards involved; the DP Operator shall use all means available to maintain position until the divers are sealed in the bell and the bell is clear of obstructions. Overside equipment to be released or recovered. Drilling equipment to be disconnected. Flotel gangway disconnected
The response to each status level will depend on the type of operation being carried out. However, the Vessel/Barge Master/officer in charge must move the vessel clear of the 500m zone should any equipment failure occur which results in operating on DP without 100% redundancy in the required systems as defined in the relevant paragraphs above. With any failure the DP operation must be suspended until the cause of the failure has been identified and the correct remedial action taken.

2.14 Weather Precautions
Due regard shall be paid to any indications of impending weather changes, in particular sudden wind shifts and/or gusting, to ensure that timely action is taken to reduce the possibility of loss of position. Prior to commencing operations every effort should be made to assess any known unusual currents that occur as a result of changing weather conditions.

• Obtaining regular and frequent weather forecasts for the area of operations, and use of facsimile facilities and charts
• Seeking information by radio from other units in the vicinity about prevailing weather conditions in their areas
• Use of experience to assess the prevailing conditions and likely trends
• The presentation of environmental information measured by the DP system and any trends in conditions which it can provide

• The use of onboard meteorological instruments

2.15 Operator Training

Key elements of safe and successful DP operations are trained and experienced staff including DP Operators, Engineers and Maintenance Technicians. The provision of external qualifications and evidence of competency does not guarantee that people are 'fit for purpose' and it is necessary that each vessel identifies training requirements for its crew. Owners are therefore directed to consult the following:

• IMO document – International Convention on Standards of Training, Certification and Watchkeeping of Seafarers 1995 (STCW)
• IMCA guidelines on M117 The Training and Experience of Key DP Personnel

Levels of training and experience shall be addressed during any pre-mobilisation/hazard/risk assessment for each workscope. In general, they shall follow the IMCA guidelines (refer to Section 1 Paragraph 3.5.4).

Refer to Section 1 Paragraph 4.5.6 for a definition of the role, responsibility and accountability of the BP Marine Representative.

The BP Marine Representative is responsible for ensuring that the scheduled DP trials and checklists are completed, and that the offshore Installation OIM is advised of vessel operational status prior to entry to the 500m zone. During operations, the BP Representative will ensure that the agreed procedures and safe working limits are observed.

Where there is a requirement to deviate from the agreed procedure due to operational necessity or plant failure, the BP Representative shall confer with the Master, OIM (if inside 500m zone or working under a platform permit) and other interested parties and agree to a revised procedure which is an alternate safe system of work. This revised procedure shall satisfactorily safeguard exposure to risk identified in the original procedure.

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2.16 DP Hazards

2.16.1 Operations Close to Obstructions

Particular care must be exercised when operating on DP in close proximity to fixed objects such as platforms, mooring buoys etc. The use of anchors and tugs shall always be avoided unless the DP system is particularly equipped and proven for operating with

anchor lines. These options are not preferred and shall only be approved after having been fully considered and all other possible alternatives rejected. It is not normally necessary or desirable to use backup moorings alongside a structure. The value of a visual reference from the DP control position to provide an early additional indication of vessel movement is substantial, and the DP vessel heading shall be selected to make this feasible whenever possible.

2.16.2 Close to Other Vessels

When operating on DP close to another vessel, which may or may not be on DP, a vessel is potentially subject to several forms of interference. These include thruster wash (which may affect both hulls and taut wires), acoustic and radio position reference signal interference and intermittent shelter from wind and sea. These factors shall be considered when planning such operations and due allowance made for them. This may take the form of assuming less accurate position-keeping than would normally be expected. Co-ordination and choice of position reference sensors and frequencies, and careful choice of the relative positions of the vessels, is essential. Comprehensive procedures shall be established and approved by the Marine Consultancy Branch prior to the commencement of the operation. Working close to vessels not on DP, eg cargo handling from supply vessels, shall be avoided especially if divers are deployed.

2.17 Cargo Operations

A vessel/barge operating on DP alongside an offshore Installation may conduct supply vessel loading/unloading operations provided:

• The wash from the supply vessel does not impinge on the station-keeping ability of the DP vessel/barge

Note: It can be shown that the wash has more effect on a monohull vessel than a semisubmersible vessel working at her operating draft.

• The DP Master, BP Marine Representative and, if diving operations are involved, the Diving Supervisor all agree to allow the cargo work to take place
• That if simultaneous containerised cargo/diving operations take place, there is a safe horizontal separation between the overside lift and the divers work area
• That if simultaneous tubular cargo/diving operations take place, then the distance from such operations to the diving activity shall be equal to or greater than the water depth

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2.18 Pre-setup

Prior to establishing position-keeping on DP at the worksite, the vessel will carry out a series of pre-setup checks to ensure that all power generation, distribution and control systems are fully operational.

These checks will be carried out by any vessel outwith the 500m safety zone of an Installation prior to commencing operations on DP within that zone.

In the case of any vessel which has been operating on DP immediately prior to entering the 500m safety zone, the completion of such a checklist will not be required prior to entering the zone.

Vessels entering the 500m zone must advise the Installation OIM of the operational status, confirm that they have completed the generic DP checklist for entering BP platform/controlled areas which have a 500m safety zone (refer to Appendix 6A) and receive permission to enter the zone.

2.19 Closest Approach

The closest approach to an offshore Installation shall not be less than 10m.

Where DP operations take place close to an offshore Installation and within a mooring spread, the DP vessel/barge shall have a minimum 180° safe sector for exit. In the case of a diving vessel if the bell is below the catenary then it shall not be closer than 50m to any mooring line, the safe sector shall be on recovery of the diving bell and the guide weight above the mooring catenary.

At all positions within that ‘safe exit sector’ the deepest part of the vessel/barge hull, or hull penetration where applicable, shall be at least 10m above the mooring catenary.

In all cases where close approach is required, scale plan and profile drawings shall be provided to ensure that:

• There are no surface obstructions such as offshore Installation platform extremities, lifeboats, gantry systems, etc. The lateral and roll movements of the vessel/barge shall always be taken into account
• There are no subsurface obstructions caused by the ‘batter’ of deep water jacket leg structures. Operators shall always be aware of the dangers associated with a taut wire position reference system should it become fouled and give corrupt information
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Diving Support Vessels

3.1 Design and Operation
All DP Diving Support Vessels (DSVs) shall, be minimum DP Class 2 or DP Class 3 and operating in that mode. In addition to the requirements outlined in Paragraphs 1 and 2, DSVs will also be:

• Designed and operated in accordance with relevant legislation and industry practices
• Free of any known failure mode which shall prevent the safe recovery of divers or cause a ‘red alert’
• The determination of safe working limits shall consider the time necessary for the divers to return to the bell and, bearing in mind that position loss is always possible, the likely speed of position loss and the increased position excursion after the worst known failure condition
Note: Safe working limits will vary depending on location and water depth; lower limits shall apply when divers are working inside a jacket than when they are working in open water.

It is recommended that vessel owners are members of the IMCA so that they can be kept advised of any industry standards and, in particular, the networking of DP incidents and statistics. Reference should be made to IMCA publication Guidelines for the Design and Operation of Dynamically Positioned Vessels, in particular Section 2.

3.2 Diving Hazards
For every vessel/barge and project there shall be a pre-mobilisation risk assessment/Hazard Identification (HAZID) study to identify and evaluate the risks which are not included in generic and task-specific procedures.

The maximum operating parameters, regardless of wind or sea direction, shall be established for each workscope.

When diving operations are to be undertaken in the vicinity of anchor mooring lines, the accuracy of their position and excursion is to be determined.

If it is necessary to dive within the catenary of a mooring system, the catenary and the touchdown points of the mooring lines are to be confirmed by the use of a Remotely Operated Vehicle (ROV).

All diving operations within a mooring pattern will be conducted under a Permit to Work System issued by the unit within whose mooring pattern the diving operations are to take place. The following requirements are to be confirmed before issue of the

work permit:

• Diagram
A diagram showing the aspect, length, catenary and touchdown points of all relevant legs of the mooring pattern is to be provided at the DP console for reference by the DP Operators.

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• Tension Variation
The Installation shall note the variations in tension in the mooring lines due to prevailing environmental forces and estimate the probable variation in catenaries in which the operations are to take place.

• Communications
Communication links are to be established and maintained between the DP vessel and the Installation. Each shall update the other at regular intervals as to the progress of their individual operations and any proposed actions which may impinge on the safe conduct of the other's operations, eg overside work, dumping of hazardous substances, etc.

• Emergency Response and Recovery Vessel
The Installation standby vessel is to be briefed as to the proposed diving operations.

• Tension Monitoring
Throughout the period that diving operations are being conducted within the mooring pattern of an Installation, the Installation will monitor the tensions of its mooring lines. Any change in the tensions beyond the prevailing variations is to be immediately transmitted to the diving vessel.

Whenever possible, radio or surface reference systems shall be employed.

The horizontal clearance between suspended mooring lines, the diving bell wire, diving bell and bell guide weight shall, be maximised and shall, whenever possible, be no less than 50m.

The above limitation need not apply when operating procedures ensure that the diving bell wire, diving bell, diving bell guide weight, and diver maintain a clearance of at

least 10m vertically above the mooring catenary.

If possible, the horizontal distance maybe maximised by slackening mooring line(s) to the seabed. In the event that this procedure is adopted, the catenary and touchdown points will be confirmed as previously stated.

In the event that it is necessary to reduce the horizontal clearance between the bell/bell wire and the mooring line catenary below 50m, the following shall be adhered to:

• The mooring line must be marked in such a way that its location, relevant to the diving bell wire, diving bell and bell guide weight, can be determined at any time. Methods of marking can include ROV, transponders
• Consideration must be given to the prevailing environmental forces. The prevailing environmental forces shall be such that in the event of total loss of power the vessel will drift clear of the mooring catenary. In any event, if the power output requirement to maintain station exceeds 40% on any one thruster, operations are to be suspended
• When twin bell systems are utilised, both bells must not be deployed simultaneously within the 50m envelope
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During the time that the bell and divers are deployed, the Installation will take no action that could cause the position, catenary or touchdown point of the Installation's mooring lines to alter, whether by tensioning the mooring lines, altering the position of the Installation, or adjusting the ballast of the Installation.

In the event that a unit reports an unexpected variation in tension of its mooring lines, diving operations will be suspended immediately. Diving operations will not recommence until such time that the reason for the change in tension has been determined and the catenary, etc of the mooring line confirmed.

The Installation from which the mooring lines are deployed shall be monitored at all times by the DP vessel. The position shall be monitored by visual, radar, or other electronic means.

In the event that the Installation requires to make an adjustment to her mooring pattern, whether in tension on the mooring lines, position or aspect of the mooring lines, diving operations will be suspended. The adjustment to the mooring pattern/lines will not commence until the diving vessel has confirmed that diving operations have ceased and

the bell has been recovered. The position, catenary and touchdown point(s) are to be confirmed before recommencing diving operations.

Work in the vicinity of an anchor touchdown point shall be avoided because movement here is inevitable. Such work can cause poor seabed visibility and trap a diver and/or his umbilical.

4 Drilling and Well Intervention MODU/Vessels

4.1 Selection, Chartering and Audit
Reference should be made to the Subsea Emergency Response Guidelines – the Red Book (UKCS-EM-007).

5 Accommodation Vessels

5.1 Design Philosophy
All DP accommodation vessels shall be a minimum of DP Class 2 or DP Class 3 and operating in that mode. In addition to the information given in Paragraphs 1 and 2, an accommodation vessel shall meet the following criteria:

• No known failure mode shall risk position loss such that the gangway connecting the DP vessel to the structure will be damaged, or shall move in such a way as to injure personnel using the gangway. Personnel have to be given sufficient warning to safely clear the gangway
• The determination of safe working limits shall consider the speed with which position could be lost relative to the time required for personnel warning, clearing of the gangway and lifting and swinging clear. Also, the distance from the nearest point of contact, and the speed at which this distance can be covered relative to position recovery, shall be considered
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In addition, there shall be an independent joystick facility for manoeuvring.

Reference should be made to IMCA publication Guidelines for the Design and Operation of Dynamically Positioned Vessels, in particular Section 5.

6 Semisubmersible Crane Vessels (SSCVs)

6.1 Design Philosophy
All DP SSCV shall be a minimum of DP Class 2 or DP Class 3 and operating in that mode. In addition to the information given in Paragraphs 1 and 2, a SSCV shall meet the following criteria:

• No known failure shall cause an excursion or loss of position such that contact with a nearby structure is possible, whether such nearby structure is fixed or floating, moored or using DP
• The determination of safe working limits shall consider the clearance necessary in normal operating condition so that the failure case above is met with a margin of 10m
Note: The use, for assistance, of passive, pre-laid anchors or external power, eg tugs, may be considered but response times shall be taken into account and their failure modes must be considered.

In addition, there shall be an independent joystick facility for manoeuvring.

Reference should be made to IMCA publication Guidelines for the Design and Operation of Dynamically Positioned Vessels, in particular Section 6.

7 Pipelay Vessels

All DP pipelay vessels shall be a minimum of DP Class 2 or DP Class 3 and operating in that mode.

In addition to the information given in Paragraphs 1 and 2 a vessel maintaining position while providing a steady tension on a pipeline or umbilical shall meet the following criteria:

• No known failure shall result in the sudden total loss of tension
• The determination of safe working limits shall consider the consequences of a sudden failure of the tension load from mechanical failure so that such a failure does not risk:
- Injury to personnel working on or near the line
- The vessel coming into contact with any nearby structure or vessel
- Lifting injury during crane operation from attendant vessel
- The effect of maximum wave amplitude in shallow waters
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The safe working limits shall additionally be determined by the limits of heading

capability from failure of thrusters furthest from the tensioned equipment in beam environmental conditions.

Reference should be made to IMCA publication Guidelines for the Design and Operation of Dynamically Positioned Vessels, in particular Section 8.

Survey and ROV, Trenching Support Vessels

8.1 Design Philosophy
All DP survey, ROV or trenching vessels shall be a minimum of DP Class 1. If DP Class 1 then the vessel will have to operate inside the 500m zone in a vector drift off situation and no closer than 100m to the platform. In addition to the information given in Paragraph 1 and 2, a survey and/or ROV support vessel shall meet the following criteria:

• No known failure shall cause a position loss which could result in contact with another vessel, mooring line or offshore structure, or cause the trencher/plough to be dragged off location
• The determination of safe working limits shall reflect the location in which the work is being carried out, the time to recover to a safe situation, and the relative size of the vessel and any nearby structure
Reference should be made to IMCA publication Guidelines for the Design and Operation of Dynamically Positioned Vessels, in particular Section 9.

8.2 Redundancy
Redundant thrust units are not required for ROV and survey work where loss of position does not risk personnel or offshore structures.

If the vessel does not have redundancy, both in terms of motive power and control systems, then the vessel will not operate within the 500m safety zone of any Installation where, in the event of the loss of either motive power or control, the prevailing environmental forces would set the vessel down on the Installation.

Where the vessel does not possess redundancy as prescribed in the previous paragraph, the vessel will not operate on DP closer than 100m from the Installation. Within 100m the vessel will be manoeuvred manually.

Note: Dispensation from this limitation maybe obtained from Marine Consultancy Branch, Dyce depending upon the technical inspection of the vessel, but in no case will the vessel be allowed to operate on DP less than 50m from the Installation.

The minimum position control requirement is a single automatic control system with a joystick. If the survey work requires close passing of a structure on automatic control

then the system shall not be capable of suddenly, without alarm, changing track such as to risk collision. Also, the thrusters shall be capable of being stopped and/or reversed to prevent collision if the DP system fails.

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8.3 ROV Launch, Operation and Recovery
The contractor's procedures for the launch, recovery and operation of the ROV shall be strictly adhered to.

If the vessel/barge is required to provide a lee for the launch or recovery of the ROV, it shall be carried out at least 200m away from the Installation.

Every effort shall be made to ensure that the ROV umbilical does not become entangled with a propeller, thruster unit or taut wire position reference system.

8.4 Position References
A vessel may operate within the 500m safety zone of an Installation, up to a distance from the Installation of 200m, if it has a second reference system tested and available for immediate operation.

Well Stimulation Vessels

9.1 Design Philosophy
All DP well stimulation vessels shall be a minimum of DP Class 2 or DP Class 3 and operating in that mode. It is recognised that at present there are not many DP Class 2 well stimulation vessels but some are being converted so proposed vessels will be assessed by Marlog on a case-by-case basis.

In addition to the information given in Paragraphs 1 and 2, a well stimulation vessel shall meet the following criteria:

• No known failure shall cause a position loss which could result in contact with another vessel, mooring line or offshore structure, or cause tension to be applied to the process umbilical, or cause the uncontrolled release of chemicals
• The determination of safe working limits shall consider the consequences of a sudden mechanical failure so that such a failure does not risk:
Injury

to personnel working on or near the process umbilical

The
vessel coming into contact with any nearby structure or vessel

The safe working limits shall additionally be determined by the limits of heading capability from failure of thrusters furthest from the process umbilical in beam environmental conditions.

Reference should be made to IMCA publication Guidelines for the Design and Operation of Dynamically Positioned Vessels.

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9.2 Redundancy
The required levels of redundancy for thrusters, power generation and power management will be addressed at the design stage and will be evidenced in the vessels FMEA and capability plots. They will be in line with the requirements detailed in Paragraph 9.1. For general guidance the following shall be considered:

• Thrust units shall be independent such that there are no common failure modes except for one at the highest level, eg drive motor power. The safe working limits shall include the failure of at least the most useful thruster
• The sudden unexpected failure of one diesel engine must always be considered, as must a sudden demand for power from the process equipment, if not separately powered. Provided that another engine can be brought online before position excursion has exceeded the predetermined limits then power redundancy does not have to be on line
• The power distribution arrangement shall be set up so that no switchboard fault can cause a failure of such proportions that there is inadequate power to keep position until the umbilical is safe
There shall be at least one backup method of controlling the vessel’s thrusters to retain position in the event of failure of the online control system. A second automatic control is preferred, but an independent joystick would be acceptable provided that:

• It controls surge, sway and yaw, with automatic control of yaw an option
• The control system and its power supply are independent of the failed automatic control unit

• Two gyro compasses are available to the control system
• A simple display of vessel position is provided independent of the failed unit
• It is only used to maintain position to achieve a safe situation

9.3 Communications

Direct communications shall be immediately available between all responsible parties including:

• DP control
• Process control
• Engine control room
• Umbilical winch control

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9.4 Personnel Responsibilities

The vessel operations manual shall define, as a minimum, the responsibilities of the following personnel:

• Master/OIM
• Process Supervisor
• Umbilical Controller
• Chief Engineer
• DP Operators including DP Control Operators, Watchkeeping Engineers and DP Technicians

10 DP Platform Supply Vessel (PSV) Operations

BP does not presently permit platform supply vessels to operate alongside their assets in DP mode, this applies to all classes of DP vessels.

This is presently under review by the Marine Logistics Department which is working with IMCA and the Nautical Institute to an agreed set of industry standards for PSV operations.

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Appendix 6A
Generic DP Checklist for Vessel
Entry into Platform 500m Zones

MASTER TO CONFIRM TO PLATFORM YES/NO COMMENTS
New client DP acceptance trials carried out and
accepted
Date: Time:
Field arrival DP trial carried out and accepted
Date: Time:
Have there been any DP incidents in the last 3 months Brief details:
If DP incident above, has this been closed out and root
cause identified
Brief details:
Are sufficient thrusters, generators and DP systems
on line and operational?
List:
State vessel DP Class. Confirm the class in which the
vessel is actually operating
State number and type of DP references available and
which are to be used
List:
Two qualified DP Operators to be on bridge at all
times
List names for watches:
0000 to 0600
0600 to 1200
1200 to 1800
1800 to 2400
What is the closest that the vessel will be to the Platform,
and what type of operations (diving, ROV etc)
State:
State which Platform faces the vessel will be working on State:
Has the vessel received a permit from the Platform to
enter the 500m zone?
Are there BP representatives on the vessel, if so, state
names and disciplines
State:
Have weather limitations been agreed between the
Platform and vessel?
Have SIMOPS been discussed between the Platform
and the vessel?

If the vessel has any problems with the DP system or position keeping, this is to be reported immediately to the Platform
Confirm:

UKCSMAL001_012.ai

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Section 7

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Section 7

Supply Vessel Operations (cont’d)

Appendix 7A Bulk Hose Guidelines
Appendix 7B Carriage of Oily Slops (MGN 283)

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1 Application

This section contains instructions and guidelines which shall relate to all vessels that supply and backload deck and/or bulk cargo to and from an offshore site.

2 Guidelines for the Safe Management
and Operation of Offshore Support Vessels

The United Kingdom Offshore Operators Association (UKOOA) and the Chamber of Shipping (CoS) have jointly published a marine operations manual for offshore support vessels entitled Guidelines for the Safe Management and Operation of Offshore Support Vessels. The entire contents of the document have been adopted by BP for their offshore support vessel operations. Additional requirements are contained in Paragraphs 4 to 7.

A copy of the UKOOA/CoS Guidelines for the Safe Management and Operation of Offshore Support Vessels shall be carried on all supply vessels.

Additionally, a copy of the UKOOA Guidelines for the Safe Packing and Handling of Cargo to and from Offshore Locations shall be adopted by BP as best industry practice, and a copy shall be carried onboard all supply vessels.

3 Guidelines for Bulk Loading Hose Supply and Use

BP bulk hose guidelines form Appendix 7A, all relevant platform and vessel personnel should be familiar with the requirements for compliance with the contents of the guidelines. These are also included in the UKOOA/CoS Guidelines for Safe management and Operation of Offshore Support Vesels.

4 Emergency Procedures

In the event of a platform general alarm sounding, the following actions shall be followed:

(1) Vessel to stop bulk transfer operations.
(2) Drain line back to supply vessel.
(3) Where possible, platform to shut manifold valve.
(4) Vessel to disconnect hose and proceed to a safe area and standby.
5 Loading Operations

5.1 Oil Pollution
For all routine hydrocarbon loadings, tanks shall be filled to a maximum of 90% capacity.

Masters and officers are to be familiar with the location of all tank gauge sensors so that a sounding correction can be made for the list or trim of the vessel during the final

stages of loading.

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5.2 Drilling Fluids
The Vessel Master shall:

(1) Ascertain from the Shipping Supervisor the quantity, nature and any specific requirements or hazards associated with the handling and carriage of the product.
(2) Ensure that a safe system of work is complied with by crew and third-party personnel.
(3) Nominate a responsible person to be available for liaison in the provision of vessel services for loading operations.
(4) Endorse a statement on quantities loaded in conjunction with the marine surveyor and the supplier's representative.
5.3 Dry Bulk
The Vessel Master shall:

(1) At the time of presenting the vessel ready to receive cargo, ensure that empty silos are clean and dry with all fittings and screens intact.
(2) Ensure that all loading and discharge lines on the vessel are clean and dry of all residues from previous cargoes.
(3) Nominate the silos to be utilised for the operation, and arrange for these silos to be opened to inspect for 'fitness for purpose'.
(4) Obtain from the Shipping Supervisor a statement on specification and quantity of cargo to be loaded, with particular emphasis on any hazardous or toxic properties.
(5) Nominate a competent crew member to be responsible for the loading operation.
(6) Endorse the quantity loaded statement, subject to his agreement, in conjunction with the bulk chemical supply company representative, and the Shipping Supervisor.
Offshore Bulk Cargo Operations –
Hydrocarbon Transfers to/from Drilling Units

The following requirements are in addition to the recommendations detailed in the UKOOA/CoS manual:

(1) Each Mobile Offshore Drilling Unit (MODU) is required to use a rig-specific

checklist. The checklist shall be laminated and condensed to a single page. As an 'aide-mémoire' for line setting, the reverse side of the checklist shall contain a diagram of the line, valve and pumping systems.
(2) Preference shall be given to hydrocarbon transfers taking place during daylight hours.
(3) No transfers shall take place in marginal conditions.
(4) Rig hoses shall be fitted with high visibility flotation collars.
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(5) All leak-sensitive valves to be identified, locked and labelled. Leak-sensitive valves shall include vessel side master bunkering valves as well as internal crossovers. Movement of the above valves shall be conditional on the operator being authorised and in possession of the hydrocarbon transfer checklist.
(6) A rig Watchkeeper shall be deployed with appropriate communications, to be on continuous duty to monitor hoses and report all overside activity.
(7) A vessel crew man shall be deployed with appropriate communications, to be on continuous duty to monitor and report all overside activity.
(8) Not more than one hydrocarbon product shall be transferred simultaneously.
(9) Products other than hydrocarbon products may be discharged simultaneously subject to the person monitoring the operation not being distracted from their responsibilities.
Offshore Bulk Cargo Operations – Dry Chemicals

7.1 Application
The following requirements are in addition to the recommendations detailed in the UKOOA/CoS manual.

7.1.1 Use of Purge Air
The Vessel Master shall always use purge air prior to starting a transfer to ensure that the lines are clear and have been correctly set.

On completion of a transfer operation the lines shall always be blown clear of powder.

OIMs shall be aware that some older vessels are fitted with a 40psi bulk system.
If circumstance dictates that the offshore Installation is required to blow back air to the vessel, then extreme care shall be taken not to overpressure the vessel's system.

7.1.2 Cargo Compatibility

Vessel Masters are advised that some dry chemicals of the same classification are not compatible.

Cements of the same classification shall always be segregated if they have been supplied from different manufacturers. Failure to comply with this Instruction could lead to extremely expensive consequences.

Generally, barytes and bentonite chemicals from different suppliers shall always be compatible for mixture. However, in situations where the vessel is requested to back load these chemicals and the intention is to 'load on top', Masters are required to seek assurance from the offshore Installation that the cargo is within specification.

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7.2 Vessel Tank/Silo Inspection
When time and operations permit, all empty silos shall be inspected before arrival at a supply base. Such an inspection shall include visually checking that the silo is clean and dry and that all fittings and screens are intact.

Bulk Cargo Operations – Carriage of Brine

8.1 Legislation
In April 1987, The Merchant Shipping (Dangerous or Noxious Liquid Substances in Bulk) Regulations 1996, SI 1996/No 3010 came into force giving effect to Annex II to the International Convention for Prevention of Pollution from Ships 1973, as amended, and requiring the adoption of Standards for the Procedures and Arrangements for the Discharge of Noxious Liquid Substances.

8.2 Application
The above regulation applies to vessels involved in the loading, carriage and discharge of zinc bromide brines and other weighted brines which are classified as pollution category 'A' substances.

8.3 Compliance
All vessels involved in the carriage of the foregoing cargo in bulk are required to hold a valid Bulk Chemical Handling (BCH) Code Ship Construction Certificate and an International Pollution Prevention Certificate for the Carriage of Noxious Liquid Substances in Bulk (International Noxious Liquid Substances (INLS) Code Certificate)

covering the substances in question. The issue of a certificate denotes that the vessel has been surveyed to comply with, amongst other things, the tank and pumping system design, to minimise residues remaining onboard.

Procedures in force within the logistics contractor ensure that only vessels with appropriate certification load the above substances. However, Vessel Masters and Offshore Installation Managers (OIMs) must be aware of the above regulation in order to prevent backloading an unsuitable vessel.

8.4 Handling
Handling precautions detailed in the hazard datasheet which accompanies the cargo manifest shall always be observed.

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8.5 Backloading
Brines used in workover operations can become contaminated with reservoir fluids and gases.

Before backloading a brine used in workover operations, the OIM shall ensure that where contamination has taken place the flashpoint of the brine is measured.
The flashpoint value shall be made known to the BP the Drilling Representative who shall contact the Drilling Superintendent so that a satisfactory technical resolution of the problem may be obtained.

Reefer Container Operating Procedures

The following paragraphs give the procedure for handling refrigerated containers onboard BP vessels.

9.1 Purpose
The purpose of this procedure is to provide guidance to Masters and crew of offshore support vessels, as well as OIMs and logistics and catering companies, on loading, connection, disconnection and discharging of Refrigerated Cargo Carrying Units (RCCUs) from Offshore Support Vessels (OSVs).

Prior to loading RCCUs onto OSVs fitted with reefer power connections, the following points should be taken into account:

• Confirm that the RCCU is compatible with the ship's reefer power supply
• A cargo planning discussion should be held prior to loading between the ship's loading officer and the shore base responsible person, and should consider the following:
- Positioning of the RCCUs to allow easy access to the ship's power sockets
- Positioning the power cables so that they will not be damaged by other cargo
- Positioning the power cables so that they will not present a trip hazard
-The integrity of the stow. As far as is possible and practicable, all RCCUs should be loaded in one block
- Route that the vessel is likely to take and the likely order of discharge
-RCCUs are to be classed as priority lifts and must be recorded on the vessel deck plan as such
-Weather forecast to be encountered en route and consequently the most advantageous stow to provide protection to the RCCUs
- Orientation of the RCCU to provide best weather protection
- Access to RCCUs for the offshore locations to be visited
-The order of loading to ensure that the above points can be met. The RCCUs should be loaded either first or last
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Connection and disconnection of the RCCU power supply will be carried out by the ship's crew.

RCCUs are not normally connected to the power supply for the return journey.

9.2 Procedure for Connection and Disconnection of
Power to Refrigeration Cargo Carrying Units
9.2.1 In Port
Connection:

• Visually check power cables, local isolators and sockets for signs of external damage
• Connect the power cable to the RCCU by following the illustrated procedure below. First ensure that the power to the particular socket to be used is turned off. The power cable must be plugged into the RCCU first. This must be the first connection
• When all RCCUs have been connected, switch on the power
• Check cable runs to remove or minimise any trip hazards associated with the cables
• Any faults must be reported to ASCO base immediately (01224 288852)

Procedure for Connecting Power

Note: Connection sequence must be strictly observed. Never make the connection at the container with power on the cable.

(1) Lift the rubber flap.
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(2) Remove the protection cap by unscrewing the locking ring.
(3) Identify the container socket end of the power cable.
(4) Mate the socket to the appliance inlet. After insertion, rotate the locking ring on the appliance inlet to secure the connection.
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(5) Unscrew the protection cap on the deck socket and insert the plug rotating the locking ring on the plug to secure connection. Switch the socket ON.
(6) Check that the red pilot light is illuminated.
(7) Check that the amber beacon is flashing.
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9.2.2 At Oil Rig/Oil Drilling Platform
Note: All RCCUs are considered priority lifts.

• Before entering the 500m zone, the power to all RCCUs must be switched off
• After departing the 500m zone, switch the remaining RCCUs back on
• All RCCUs that require discharging at location must then be disconnected
Note: It may be necessary to disconnect other RCCUs to avoid connection/cable

damage.
Disconnection:

• Disconnect the power supply to the RCCU by following the illustrated procedure below. The cable must be disconnected from the ships's deck socket first
• Coil cable and stow in a safe, dry place
• Inform the bridge when this operation is completed
• The Vessel Master must have a discussion with the Installation to ensure that RCCUs are discharged as priority lifts
• Once the location's RCCUs are discharged, the remaining location's RCCUs are to be switched back on
Note: Caution must be taken when backloading in the vicinity of the RCCU. This may only take place after a risk assessment has been conducted by all impacted with the change.

Procedure for Disconnecting Power

Note: Connection sequence must be strictly observed. Never break the connection at the container with power on the cable.

(1) Turn the socket switch OFF.
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(2) Remove the plug and replace the protection cap.
(3) Confirm the red pilot light is off.
(4) Remove the cable socket.
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(5) Replace the protection cap.
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Appendix 7A

Bulk Hose Guidelines

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2 Guidelines 1
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3.1 Introduction 6

3.2 Requirement 6

4 Additional Backup and Expertise 7

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1 Introduction

This set of notes is intended to provide a quick reference guide to the supply, storage and use of bulk loading hoses. It reflects the latest equipment specifications and scope of supply, together with ‘best practice’ input from the Business Units (BUs), drilling operators, BP Logistics and Promarine Ltd on the storage and use of the hoses.

2 Guidelines

(1) Agreement Details
Bulk loading hoses and ancillary equipment are supplied through a BP Master Agreement (MA) (No: 102632) by Phoenix Beattie Ltd. The contact is Mel Shepherd on 01224 853810, email mells@phoenixbeattie.co.uk, and mobile 07734556751. The BP Technical Custodian for the MA is David Watson on 01224 832775, email watsondj@bp.com.

(2) Ordering
The complete scope of supply is on the BP Vocab system and is ordered through the Maximo maintenance management system. Delivery by Phoenix Beattie is

guaranteed at Aberdeen, Peterhead, Immingham or Great Yarmouth supply bases within 5 days from receipt of order.

Note: For rigs etc, which cannot order as above, it is strongly recommended to order type-approved bulk loading hoses to UKOOA colour coding.
This will assure use of a quality product to the recognised standard and colour coding. It is a contractual requirement for all rigs to fit new, type-approved hose strings at the commencement of a contract with BP.

(3) Hose Uses
Hoses are supplied for the bulk transfer of the following fluids:
• Potable water • Cement
• Oil-based mud • Barytes
• Scale inhibitor/surfactant • Brine
• Glycol • Drill water
• Diesel • Specialist chemicals
• Base oil
Note: The potable water hoses are lined with synthetic rubber and have British Water Research Council approval.

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(4) Hose Sizes
The majority of hoses are supplied in 4in diameter, with the exception of the scale inhibitor/surfactant hose which is supplied in 3in diameter, and the cement and barytes hoses which are supplied in 5in diameter.

(5) Hose Construction and Length
The Standard hoses are of softwall construction, but hardwall and heavy duty hardwall hoses are also available for a number of fluids. They are supplied in a standard section length of 15.2m and also as a ‘tail’ length of 6.0m. The actual make-up of each ‘platform-to-boat hose’ will consist of the most appropriate combination of section lengths, which is covered in Item 15 of this guideline.

(6) Colour Coding
The colour coding of the hoses is in line with the UKOOA/CoS recommendations regarding hose colour, hose stripe details and end sleeve banding.

(7) Hose Quality and Identification

All BP hose assemblies are supplied ‘type approved’ by Det Norske Veritas (DNV). This again is in line with the UKOOA/CoS recommendations. Each individual hose assembly has a unique identifier number stamped on the end connection, giving the following information: manufacturer’s logo, hose type, month and year of assembly, working pressure in barg and unique serial number.

Users should be aware that third-party supplied equipment/systems may not be ‘type approved’ and will be more susceptible to failure.

(8) Hose Lifters
All hose lifters are supplied as items of certified lifting equipment. They are either of Phoenix Beattie’s design and only have a single eye to reduce weight or Hookey hooks, which can also be supplied within the agreement but are heavier and may cause handling difficulties.

(9) Unions
A large range of Anson hammer lug unions in both carbon steel and stainless steel form part of the scope of the MA. There are also a number of ‘flange-to-union’ adapters. Both can be found on Vocab.

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(10) Flotation
The flotation collars are of the ‘lace-on-jacket’ type and are a highly visible colour. The recommended number of floats per 15.2m hose section is given below:

Hose Service Hose Size Floats per Hose Section
Diesel 3in 4
4in 4
Potable/drill water 3in 4
4in 4
Oil-based mud 3in 10
4in 9
Dry cement 4in 7
5in 8
Dry barytes 4in 10
5in 13

The collars should be secured using manila rope rather than man-made fibre to

avoid slippage. The rope should be secured to the hose, threaded through the eyelets on the jacket and finally tied off on the hose at the other end.
Other flotation systems are available but must be evaluated for each operation.

(11) Self-sealing
Quick-release self-sealing breakaway couplings are available. They are of TODO manufacture in aluminium and viton, complete with a dust cap. Phoenix Beattie provides a refurbishment service for the TODO couplings to avoid costly replacement. The use of these couplings on hydrocarbon and brine hoses is mandatory.

(12) Weak Link
Weak link self-sealing couplings are also available. The function of these items is to avoid overtensioning or even breaking the hose and therefore having to scrap the complete length of hose. All spills from this type of incident are therefore avoided. Spares kits are also available so that these items can be rebuilt on the platform. Use of these is optional.

(13) Hose Testing and Dispatch
All hose sections are hydrotested by Phoenix Beattie to at least 1.5 times the working pressure on assembly. Due to the 5-day delivery, minimal stocks of hose sections are required on platforms. It is suggested that spares should be restricted to one section of each type of hose.

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(14) Offshore New/Unused Hose Storage
For delivery, hoses are rolled up tightly with one end connection in the middle, then shrink-wrapped, laid flat and a label attached warning the recipient to unwrap immediately and store flat. Wherever possible, hoses should be stored flat, out of direct sunlight and any contact with water should be minimised.

Note: If it is not possible to store the hose flat due to lack of space – as a minimum – the centre coupling should be freed from the roll and the kink in the hose removed, thereby avoiding delamination of the hose and premature failure in service. There is no definitive answer to the question of hose shelf-life but anything over 3 years old should not be put into service and should be scrapped instead.

(15) Hose String Assembly
New hose assemblies should be made up on deck rather than when hanging from a crane. When a section of hose is to be replaced, it should be inserted and couplings secured whilst free from tension. After couplings are fully tightened, the assembly should be leak tested. If satisfactory, the couplings should then be marked with a paint line to indicate any subsequent movement during a visual inspection.

(16) Bulk Operations
Any bulk transfer operations should only take place after all personnel involved are clear on their roles and responsibilities, especially those persons monitoring tank levels and setting lines. Where hydrocarbons and brines are being transferred, consideration should be given to the use of a formal check to ensure lines are confirmed as correctly set.

(17) In-service Inspection/Changeout
During operations, inspection of hoses is primarily by ‘close visual inspection’ of the entire hose length, paying particular attention to the end terminations (ship and Platform ends). Hose sections are relatively inexpensive (ranging from £300 to £700 per 15.2m section) and users are encouraged to replace all hose sections which are suspect. Platforms may wish to consider a proactive replacement policy in addition to the visual inspection. As a guide, we would recommend a maximum in-service life of 2 years. This may be modified by each Asset through risk assessment.

Close visual inspection means a visual check of the entire external area of the flexible hose assembly, paying particular attention for blisters, deep lacerations or abrasions exposing inner core/fabric, unravelling of the outer cover, surface cracking and misalignment of coupling paint marks. Flotation collars should be secure and in the correct position (refer to the table in Item 10).

Personnel carrying out this task should be deemed to be competent to identify the above defects. Records of visual inspections should be made appropriate to the system used by the BU.

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(18) In-service Leak Testing
Leak testing should be carried out whenever a component of the assembly is

changed to confirm the integrity of the connections. Potable (fresh) water should be used to carry out leak tests, wherever possible.

Leak testing should be carried out as follows:

(a) Wherever possible, leak test the complete hose assembly.
(b) Hang off or lay hose assembly on deck.
(c) Fit blank end cap at one end.
(d) Fill hose with water.
(e) Pressurise to circa 5bar sufficient to indicate a leak.
(f) Hold for 5 minutes and visually inspect complete length.
(g) If all is satisfactory, drain the assembly to the oily drains system.
(h) Repair/replace as needed, retest and return to service.
Exceptions to this are only where the presence of water would cause severe operational difficulties for the product carried through the hose. They should be the subject of a risk assessment which should include environmental as well as safety considerations.

The use of compressed gas such as air or nitrogen should be avoided for any form of leak or pressure test because:

• Large volumes of pressurised gases are dangerous
• Hoses are not designed for pressurised gas
• Leaks in hydrocarbon hoses can produce a flammable mist
• Pinhole leaks are not always detected
(19) In-service Hose Hanging Arrangements and Deployment
Hoses should be suspended in arrangements which avoid all sharp bends and protrusions, wherever possible. Slings used for hanging off bulk hoses should be connected to hard couplings, thus avoiding cutting into the body of the hose. Hose lifters are available for fitting at hose connection points. Hoses should be left hanging clear of the sea to avoid undue movement in stormy/poor weather conditions and immersion in seawater which degrades the hose fabric. Potable water and dry bulk hoses must, as a minimum, have an end cap fitted to prevent salt water contamination of the hose when stowed.

Before deploying hoses, the end caps should be removed to prevent ingress of water. When passing the hose to the vessel, the hose should generally be slung from the end coupling thus ensuring that the hose is kept under control at all times and there is no free end to strike personnel on the PSV.

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Bulk Hose Handling – Sling Requirement

3.1 Introduction

With the introduction of the Golden Rules of Safety, the methods of securing bulk hoses to vessels have been reviewed. A team from vessels and offshore looked at several options including saddles and automatic devices as well as simpler methods, all with the objective of removing crew from under the suspended hose string. As a result of this, a method has been devised which results in minimal modification to the ships and minimal physical handling of the hose.

3.2 Requirement

3.2.1 Vessel

The vessel requires three pins welded to the upper rail or taff rail in the safe haven, near the bulk hose manifolds on each side and stern. These pins are for hooking on the eye of a sling (3T SWL and approximately 2 to 3 metres long) when the hose is being lowered to the ship.

3.2.2 Installation

The sling (hang-off sling) should be attached to the bulk hose about 6 to 8 metres from the hose end and have two turns around the hose, ‘choked’ on the eye. The sling should then be prevented from slipping on the hose by use of tie-wraps or light lashings to prevent slackening and subsequent slippage. The Installation/rig lifts the hose by a stop fitted to the end connection of the hose string so that there is no free end hanging which can strike crew of the vessel. Should any other method of slinging be used, the vessel is to stop the job until such time as the lifting arrangement is risk assessed. Marine Logistics should be made aware of the deviation via DCR Dyce.

3.2.3 Method

The vessel will advise the Installation of the optimum position of the sling on each hose prior to coming alongside. This may vary, according to the distance from the hang-off position of the required product manifold on the ship. The crane driver will then pick the hose up and pass it down to the vessel in the normal fashion. This should ensure that the hose is not suspended over the vessel until the securing sling has been attached to the vessel and the hose is lowered into the operating space onboard. As the hang-off sling nears the vessel’s side rail whilst the hose is being lowered, the crew will catch the eye of the sling, if reasonably practicable, by boat hook or by hand, and fit the eye over one of the pins. (The crewman’s hand should be close to the hose for only a few seconds during such a manoeuvre.) The crane driver will continue to lower until the sling takes the weight and he will then lower the hose end into the safe haven, where the ship’s crew will unhook the hose end. This leaves the crew free to manoeuvre the hose

end onto the manifold, whilst the hose is securely hung off at the ship's side.

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Passing the hose back to the Installation is the reverse procedure. The hose end is attached to the crane hook via the lifting sling and, if possible, the ship's crew lift the hose over the side between crane hook and hang-off sling. The crane driver is then given the signal to lift and the hose can be lifted clear of the ship with no-one in attendance at the safe haven.

Vessel crews should be reminded that hose couplings should, whenever possible, avoid contact with the ship's structure and that the integrity of the couplings must be by visual inspection of the painted line on the couplings.

Note: In marginal weather, greater care than normal is needed by the vessel to avoid overrunning the hose, especially if deck cargo is also being worked.
Consideration should be given to only working bulk at this time.

Supplier Quality

Phoenix Beattie operates a Quality Management System which complies with BS EN ISO 9001. They have been audited on several occasions in the recent past with no significant findings.

Additional Backup and Expertise

For any information/advice on bulk hose handling procedures and operation of supply vessels, contact should be made in the first instance with the Promarine Technical Department, Tel: 01224 211176, Fax: 01224 592545. Alternatively, contact BP Logistics, Tel: 01224 832265, Fax: 01224 832128.

Phoenix Beattie has a number of technical experts who are prepared to visit platforms and rigs to resolve any problem areas relating to bulk loading hoses and hanging arrangements. (Refer to contact in Paragraph 2 Item 1.)

The following provides examples of the types of hoses that are in common use in bulk loading operations. Please note that it is the colour on the coupling which identifies the product.

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HOSE COLOURED
APPLICATION BAND
DRY CEMENT YELLOW
DRY BARYTES ORANGE
POTABLE WATER BLUE
DIESEL OIL/FUEL BROWN
BASE OIL WHITE
DRILL WATER GREEN
OIL BASED MUD BLACK
BRINE RED
GLYCOL PURPLE
SCALE INHIBITOR NO COLOUR

CONNECTION

5in HAMMER LUG UNION

5in HAMMER LUG UNION

4in HAMMER LUG OR QUICK
RELEASE SELF-SEALING COUPLING

4in QUICK RELEASE
SELF-SEALING COUPLING

4in QUICK RELEASE
SELF-SEALING COUPLING

4in HAMMER LUG OR QUICK
RELEASE SELF-SEALING COUPLING

4in QUICK RELEASE
SELF-SEALING COUPLING

4in QUICK RELEASE
SELF-SEALING COUPLING

4in HAMMER LUG WITH
BALL VALVE OR AIR BLOW

4in QUICK RELEASE
SELF-SEALING COUPLING

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Appendix 7B

Carriage of Oily Slops (MGN 283)

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1 Objective

To provide specific advice for the safe transportation, offshore handling, tank cleaning, onshore handling and onshore disposal or treatment of wet bulk backloads contaminated during drilling and other operations. This guidance is aimed at offshore Installations, offshore supply vessels and appropriate onshore staff (eg surveyors, tank cleaners, base operators and waste processors). In particular, analytical tests should be carried out and made available to the ship's Master prior to backloading, confirming that flashpoint exceeds 60°C and that there is no trace of hydrogen sulphide in the product mass.

2 Background

Industry, in conjunction with the Chamber of Shipping and the Marine Safety Forum, has produced these guidelines to assist operators in better describing the wet bulk backload cargoes they wish to transfer to shore for processing, using the bulk mud tanks on Offshore Supply Vessels (OSVs).

In the course of well operations, water-based fluids such as seawater, brine or water-based mud may become contaminated, commonly with oil-based mud or base oil from oil-based mud, (herein after called wet bulk waste) which cannot be legally discharged to the marine environment. These contaminated fluids are returned to shore for treatment or disposal.

Operations giving rise to such fluids include:

• Wellbore cleanup operations where oil-based mud is displaced from the wellbore to seawater or completion brine
• Operations where water-based mud becomes contaminated with oil-based mud during displacements
• Cementing operations with associated spacers
• Pit cleaning operations
• Drilling operations where wellbore fluids are contaminated with oil-based mud, crude oil or condensate
• Other tank cleaning operations where fluid chemical components cannot be discharged because of the offshore chemical regulations
• Rig floor drains where the fluid is oil contaminated
• Any of the above fluids may also be contaminated with hydrogen sulphide (H2S), typically from Sulphate Reducing Bacteria (SRB) activity
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When fluids are severely contaminated and of small volume, then general industry practice is to transport to shore in tote tanks or similar type carrying units. For fluids that are ‘lightly’ contaminated, general industry practice has been to back load to the mud tanks on the OSVs. It is this latter practice in particular that has raised grave concerns for the following reasons:

• It is difficult to accurately describe the chemical make-up of the fluid and hence provide a Material Safety Datasheet (MSDS) that adequately describes the material
• Gas testing on OSVs returning to shore with this cargo has found high levels of H2S in the atmosphere above the cargo on a significant number of occasions. Lower Explosive Limit (LEL) tests also revealed an explosive atmosphere in excess of that which the OSV has the capability to safely transport
• The mud tanks on the OSVs are not designed or classified to contain and transport wet bulk cargo with a flashpoint of less than 60°C. The pump rooms and pumping systems for the discharge of the product tanks are not intrinsically safe. This classification is only found onboard specialist type OSVs
The reason for the very high LEL% values that have been recorded is contamination with crude oil and condensate. The bulk mud tanks on OSVs are not designed for this purpose and under no circumstances should fluids contaminated with the mentioned products be back loaded to an OSV’s mud tanks.

Recognising the relatively complex nature of the cargo, these guidelines address the issue by recognising that a series of tests should be undertaken on the material intended for back load to provide an indicative view of the constituent make-up and reactive qualities of the material. It must be recognised that because of the segregation issues described in Paragraph 3 below, these tests can only be indicative.

The tests can be performed either on the rig or onshore. The rate at which these fluids are generated during certain operations on the rig may preclude sending samples to shore for testing necessitating rig-based testing. In either case, the results of the tests must be made available to the Master of the OSV prior to the backloading hose connection taking place. Once tests have been carried out no more fluid should be added to the intended cargo on the offshore Installation. If any further additions are made a further test will be required.

The results of these tests will allow the Master, through confirmation with reference to Paragraph 5 Key Test Results Ranked, to establish if the backload is acceptable for carriage onboard the OSV. Acceptance is based on the reported analytical information and the measured physical properties, the known nature of the chemical make-up and the previous cargo carried in the OSV’s tanks. A generic risk assessment will be available onboard the OSV and updated when new or improved/different information and circumstances become apparent. Offshore Installation staff should be aware that in

certain circumstances, the Master of the OSV may require advice from the OSV's onshore technical advisers and that a response from onshore may take time to progress. If there is any doubt regarding results, repeat the tests and review.

The backload hose should not be sent to the OSV and connected up unless there is agreement between the OSV Master and the Installation OIM that the backload is acceptable for transportation.

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Composition of the Wet Bulk Waste

The final wet bulk waste may contain components and formulated mixtures including:

- Water (both seawater and potable water)
- Oil-based mud
- Base oil
- Water-based mud
- Wellbore cleanup detergents
- Completion brine (including corrosion inhibitors, biocide etc)
- Cement spacers
- Rig wash
- Brines containing various salts

The major component is normally seawater. The proportions of the other constituents are variable. The wet bulk waste is likely to be heterogeneous in that oil-based mud will separate to the bottom, base oil to the top, with seawater in between. OSV motion will not normally be sufficient to mix and stabilise the cargo to a homogeneous form.

The components and formulated mixtures may arise from different wellbore operations. The volumes of each component are normally known, although the degree of volumetric accuracy is variable depending on how and where this material is stored on the rig prior to back loading to the OSV.

During discharge to onshore storage tanks and road tankers, the make-up of the initial discharge may be different in composition to that discharged later due to separation of components during transportation. This may result in higher concentrations of an individual component being transported in road tankers.

Example

Oil-based mud/contaminated wet bulk waste containing:

• Seawater 75% (volumes)
• Mineral oil-based mud 10%
• Cement spacer with surfactants 10%
• Base oil 5%
The above mixture will separate, leaving the base oil on the surface, the seawater below this and the mineral oil-based mud on the bottom. The cement spacer will mix with the seawater although the surfactants will also mix with base oil and oil-based mud.

During transfer operations from the OSV to road tankers, the initial fluid comprises the heavy oil-based mud, followed by the lighter seawater and finally the base oil. In the event of a hose rupture or spillage, all component fluids should be treated as oil contaminated and should be contained, preventing discharge to the sea.

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Testing Prior to Backload

A wet bulk waste may contain a significant number of chemicals for which Material Safety Datasheets (MSDS) are available offshore. It is not practicable however to develop a description of the wet bulk waste from such an array of documents. Although MSDSs will be available for formulated mixtures, there may still be uncertainty in describing the properties of the wet bulk waste. As a precaution, the following tests should be carried out prior to back loading in order to assist confirmation of the potential hazards:

• pH Numerical range 0 to 14
• Chlorides mg/l
• Retort Oil content volume %
Water content volume %
Solids content volume %
• Flashpoint (closed cup) °C
• Noxious gases LEL explosive gases
H2S
Oxygen
• Bulk density Specific gravity
As described in Paragraph 2, tests may be carried out offshore on the Installation by

trained personnel or samples sent onshore for analysis by the waste processor or other competent laboratory.

The analysis should be carried out in a timely fashion on representative samples of each wet bulk waste intended for backloading to an OSV. If backloading is delayed for any reason, such as bad weather, it should be noted on the Appendix II analysis form (shown in Figure 1). If there is any doubt regarding results, repeat the tests and review.

Results of the tests should be entered on the Appendix II analysis form and attached to the appropriate Waste Consignment Note, eg SEPA C note.

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Key Test Results Ranked

Test Indicator Range of Results Interpretation
Flashpoint Potential for explosion >60°C Should be >60°C to back load. If the flashpoint is low (<70°C) then an explanation should be provided
LEL Potential for explosion Ideally zero. Meter alarm typically set to 10 to 20% LEL Consistent with flashpoint above – for transport only. If measurable LEL, repeat test and review explanation
H2S Poisonous gas Ideally zero Indication of bacterial activity
pH Measure of acidity or alkalinity 4 to 11 COSHH personal protective equipment and personnel exposure
Oil %

volume
The major
component
requiring backload
Agrees with
components in
Appendix II
analysis form
Confirm retort agrees with
Appendix II analysis form
and waste consignment
note
Solids %
content
Potential need for
tank cleaning
Agrees with
components in
Appendix II
analysis form
Confirm retort agrees with
Appendix II analysis form
components and waste
consignment note. Tank
residue could form a source
of SRB and H2S over time

More detailed procedures are provided in the Notes section at the end of this appendix. Test results should be consistent with the information on the Appendix II analysis form.

Further Testing on the Offshore OSV

There is no onus on the OSV to carry out further tests. Tank hatches cannot be removed offshore because of safety.

Tests onboard the OSV at the time of backloading are only possible if sampling ports are available. Consideration should be given to installing suitable sampling ports onboard OSVs to allow the use of the LEL/H2S meter. (Usually this can be dropped from the vent system using the extended sniffer hose.) If testing has not been carried out, the waste processor handling the backload in harbour should be advised and the material condition should be deemed fit for transportation onshore prior to that occurring.

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Where the backload is to a dirty tank (containing material from a previous oil-contaminated backload for example), the previous documentation should be reviewed. The potential for biological activity resulting in H2S in the dead volume and sludge must be determined. Should the overall pH be reduced through mixing of the fluids, H2S breakout could occur.

Backloads should be discharged from the OSV as soon as possible. The need to clean the tanks should be reviewed on each trip to minimise the risk of biological activity and H2S buildup from any solid residue.

7 Testing in the Harbour Prior to Offload

A gas test for LEL and H2S must always be performed on the OSV tanks containing the backloaded material prior to offloading in port as a matter of standard procedure.

Waste processors should also check the Appendix II analysis form parameters onshore. Prior to discharge, the ullage air space in the tank will be sampled by the waste processor, preferably in conjunction with the surveyor, for LEL and H2S to confirm that no change of condition has occurred. Undertaking these tests will confirm that the properties of the wet bulk waste are properly described in shipping documentation. In the event that there is a significant divergence between offshore analysis and onshore analysis, the waste processor should raise a non-conformance. If there is any doubt regarding results, repeat the tests and review. The offshore operator, the offshore location, the ship’s Master, base operator, surveyor and tank cleaners should be advised accordingly.

Note: If the wet bulk waste is back loaded into tanks already containing oil-based mud residues, as can be the case, then the onshore test results will be different to those measured on the rig.

Test results should also be provided to tank cleaning companies in the event tank cleaning is required.

8 Documentation and Reporting Requirements

MSDS documentation of the components and mixtures must be made available to the OSV Master. IMDG manuals are carried on the OSV for all types of chemical materials shipped.

A waste consignment note (EA or SEPA C) is normally generated to accompany the wet bulk waste being back loaded. This should reference the Appendix II analysis form in Figure 1.

The completed Appendix II analysis form is reviewed by the Installation OIM to confirm the backload is safe to transfer.

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The Waste Consignment Note and Appendix II analysis form (Figure 1) are to be made available to the ship's Master prior to backload operations for review and comment.

Once it is agreed to back load, a copy is forwarded to the waste processor onshore by the offshore Installation.

A dangerous goods certificate must be provided by the offshore Installation based on the requirements of the individual component MSDS.

The waste processor checks the samples drawn onshore, comparing the analytical results to those obtained from the backload offshore samples. In the event of a discrepancy, the waste processor advises the operator, offshore location and OSV Master.

Test results should also be provided to tank cleaning companies in the event that tank cleaning is required.

Whilst every effort has been made to ensure the accuracy of the information contained in this appendix and associated Notes, neither UKOOA, the Chamber of Shipping nor the Marine Safety Forum, nor any of their member companies, will assume liability for any use made thereof.

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Good Practice - Oil Contaminated Cargoes for Transportation by OSV

TO BE COMPLETED AND PROVIDED TO OSV MASTER PRIOR TO BACK LOADING.
APPENDIX II ANALYSIS FORM
Sample Description
Sample Reference
Vessel Date
Offshore Asset Producer
Total Number of Barrels Waste Note
Component Name Value Units Method MSDS Available
% volume N/A
% volume N/A
% volume N/A
% volume N/A
% volume N/A
% volume N/A
% volume N/A
% volume N/A
pH pH Meter
Salinity (Chloride) (mg/l) mg/l Titration
Flashpoint (Oil Fraction)
Closed Cup
Flashpoint
Base Oil Flashpoint
Closed Cup
Flashpoint
From MSDS
Other Low Flashpoint Chemical
Closed Cup
Flashpoint
From MSDS
Gas Test (H2S) Mg/l
Gas Meter
Zero mg/l
Gas Test (LEL) % <25%
Gas Test (Oxygen) %
Water % volume Retort
Oil Content % volume Retort
Solids % volume Retort
Bulk Specific Gravity SG <2.5
Appearance
Odour
Conclusions
Analyst (print name) Issue 2
May 19 2004

Analyst signature
Date

UKCSMAL001_027.pdf
Figure 1 Appendix II Analysis Form
Bulk Hose Guidelines
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Notes I

Flashpoint

The minimum acceptable flashpoint (Pensky Martin Closed Cup or equivalent) of 60°C is applicable to wet bulk wastes and will determine whether the material is safe for transportation via the OSV's tanks. SOLAS regulations determine that materials with a flashpoint below 60°C cannot be back loaded to an OSV's mud tanks unless the OSV is certified for carriage where additional systems of inerting the environment onboard the OSV will be in place. Generally, OSVs do not have the intrinsically safe systems required for the carriage of produced/unrefined hydrocarbons.

Sampling should be set up to detect the worst case situation, particularly where there is potential for crude oil or condensate contamination where the oil will rise to the surface of the tank. Drilling rigs will normally have robust ventilation in the area used to store oil-contaminated fluids and this may mask the condition experienced onboard an OSV when carrying hydrocarbon-contaminated product. OSV storage tanks are not normally vented. Air sampling from above the drilling rig mudpits may understate explosive gases.

Sampling should reflect the conditions in the OSV tanks, ie no agitation. Base oils typically have flashpoints in the range 70 to 100°C. If the only oil component in a bulk waste is base oil then the flashpoint cannot be lower than that of the base oil itself. If the flashpoint is relatively low (60 to 70°C), an explanation must be provided on the Appendix II analysis form before the form is presented to the OSV Master. Prior to sampling, the Installation pit should be left without agitation for at least 30 minutes and then surface sampled. If there is any doubt regarding results, repeat the tests and review.

This sample can then be split and one part used for flashpoint testing and the other for noxious gases. Flashpoint is tested as per closed cup flashpoint equipment manufacturer's instructions.

Lower Explosive Limit (LEL)

The LEL gas detector will confirm potential flashpoint problems. Note that the LEL meter (which also serves as an H2S meter) is used in harbour to check vapour condition in the ullage air space above the tank prior to discharge. The test carried out prior to backloading should reflect the conditions in the ship's tanks, ie there will be no agitation and no forced ventilation unless it is specifically required/requested (unlike rig mudpits).

The noxious gas test is modified to simulate the unvented ship's tanks. The sample is placed in a closed container with a sampling port on top and left to equilibrate for 30 minutes. A tube is then connected from the port to the gas analyser and the sample analysed. This method simulates the unvented ship's tank. The above procedure has been agreed with gas analyser manufacturers and service companies carrying out the test offshore. So far this adaptation has been available through BW Technologies – Gas Alert Max equipment. Other manufacturers are able to offer alternatives.

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The flashpoint and LEL results should be consistent with each other. LEL gas meters are normally set so that the alarm goes off in the range of 10 to 20% LEL methane equivalent. Any number above 25% would be considered high. Other gases potentially present can have a different LEL range than methane. If there is any doubt regarding results, repeat the tests and review.

Hydrogen Sulphide (H2S)

Hydrogen sulphide may be detected. H2S can occur in wellbore fluids but this source would normally be identified by rig equipment and appropriate measures taken to neutralise and remove the H2S.

In surface tanks and facilities H2S most commonly arises from the activity of Sulphate Reducing Bacteria (SRB). SRB will become active provided there is a 'food' source and low oxygen conditions. This would be typical of stagnant oil-contaminated fluid stored for a long time (several weeks). This environment can arise on both Installations and OSVs in tanks and manifolds. Disturbing stagnant fluids or mixing low pH fluid into a high pH fluid containing H2S could cause the release of H2S into the void space above the tank.

Hydrogen sulphide is a heavier-than-air and an extremely poisonous gas. Maximum exposure limit is 10ppm over an 8-hour period. The LEL gas meters currently being used also test for the presence of H2S. H2S is a known danger during drilling operations. Offshore sensors and routine offshore analysis methods will detect if H2S is a potential problem in bulk waste backloads.

In the event of a positive test, another sample should be collected to confirm the result. If this second result is positive, further work may be required to determine the source of the H2S. A test using a Garrett gas train will determine the levels of H2S dissolved in the liquid. As a precaution, treatment of the material may be required.

The SRB organisms thrive in a pH range of 5.5 to 8.0. The lower the pH, the greater the breakout of H2S. The backload can be treated on the Installation to prevent breakout of H2S in the OSV tanks. Biocides kill the bacteria but do not remove dissolved H2S. H2S scavengers will remove dissolved H2S but do not stop biological activity. Caustic soda will raise the pH and prevent H2S gas breakout.

In the event that H2S is detected, tests should be carried out offshore to determine the best treatment prior to backloading. After treatment, a final H2S test should be carried out to confirm zero H2S and noted on the Appendix II analysis form before the hose is connected to the OSV for backload.

Example Procedure for LEL% and H2S Meter Only

• Collection of Sample
The sample should be taken from below the surface of the unagitated tank to simulate the unagitated OSV tank. Most oil will be in the top layer and will give a worst case oil content.

(1) Leave tank or pit unagitated for 30 minutes before taking a 2.5 litre sample.
(2) Fill the sample into the container provided up to the marked line and replace screw cap lid.
(3) If a magnetic stirrer is available, mix for 1 hour before proceeding to gas detection. Two large magnetic fleas are included in the kit.

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• Gas Detection (% LEL Value, Combustible Gases)
(1) Ensure batteries have been fully charged. If not, place in charger and allow charging for 12 hours.
(2) Switch instrument on in a clean air environment.
(3) The detector will beep and run a set of self-checks. Once these are complete, the screen will display three levels on the screen:
• H2S: 000ppm
• O2: 20.9%
• LEL: 000%

(4) The pump automatically starts and continues to run until the unit is switched off.
(5) Remove the plugs in the sample container lid and place the sampling hose into the head space.
(6) Any combustible gas will be registered on the LEL monitor.
(7) After 5 minutes, remove the hose and switch detector off by holding down the on/off button for 5 seconds (the unit will beep four times before switching off).
(8) Any gases detected should be reported on the Appendix II analysis form.
• Calibration
(1) O2 sensor is automatically calibrated each time the unit is switched on.
(2) LEL sensor is factory calibrated to methane and can be calibrated using a calibration gas supplied by BW Technologies.
(3) H2S sensor is factory calibrated but subsequent calibrations can be done using a calibration gas supplied by BW Technologies.
It is recommended that the LEL and H2S sensors be calibrated every 3 months or when the unit is onshore using the appropriate mixed calibration gas from BW Technologies.

• pH
Seawater pH is typically 8.3. Oil-based mud is alkaline and could raise the pH slightly. Cement contaminant is highly alkaline. In general, alkaline pH (above 7) protects from corrosion. Highly alkaline materials can be caustic and require care in handling. Cement and sodium silicate can lead to high pH. Low pH (less than 4) is highly acidic and an explanation should be provided on the Appendix II analysis form. Acids such as citric acid or acidising chemicals such as hydrochloric acid can lead to low pH.

Note: Low pH means any H2S will already have broken out as a gas.

• Salinity – Chlorides
Seawater is typically 20,500mg/l chlorides. Oil-based mud contains some calcium chloride increasing this level slightly. Sodium chloride brine can contain up to 189,000mg/l. Results should agree with the composition.

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• Retort Analysis (Solids, Water, Oil Volume %)
This should match the estimated composition (volume %) on the Appendix II analysis form.

Note: It may be difficult to get representative samples if the liquid tends to separate.

Some divergence is expected, eg if oil is noted as 5%, the range could be 3 to 10%.

If separation is likely, a range is preferred eg 5 to 10%. The solids component can form a residue in the OSV tank and a potential location for SRB activity and H2S.

• Specific Gravity – SG
Common water-based fluids cover the range 1.03 (seawater), sodium chloride (1.2) and calcium chloride (1.33). Rarely used brines such as caesium formate can reach 2.2. Oil-based mud is typically 1.1 to 1.5 but can exceed 2.0. Mixtures will have intermediate values, most tending to 1.03 as seawater is the major component. Note that if mixtures separate, the top half can be a different density than the bottom half.

• Appearance
General description confirming if cloudy/clear and colour. It should be consistent with Waste Consignment Note description.

• Odour
Slight versus strong odour, consistent with description.

• Conclusions
This should demonstrate that the various parameters measured are in agreement with one another.

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Notes II

Checklist Review of Wet Bulk Backloads

Operation Offshore
Installation
Offshore
Supply
Vessel
Waste
Processor
Tank
Cleaner
1 Ensure MSDS of components and formulated
mixtures are available
X X X X

2 If test to dispatch period is greater than 48 hours, explanation is on Appendix II analysis form
X X
3 Check if Dangerous Goods Note is required X X
4 No backloading without completed Appendix II analysis form
X X
5 Data provided in all boxes (no boxes marked N/A) X X X X
6 No additions to the backload cargo after the analysis is carried out
X
7 No crude oil contamination in backload X
8 Flashpoint significantly higher than 60°C X X X X
9 Base oil flashpoint noted X X X X
10 Flashpoint of any other low flash chemical entered on Appendix II analysis form
X
11 Lower explosive limits consistent with flashpoint X X X X
12 Hydrogen sulphide (H2S) concentration zero X X X X
13 pH within range 4 to 11; if outwith, explanation provided on Appendix II analysis form
X X X X
14 Salinity mg/l chlorides – consistent with description X X X X
15 Retort oil/water/solids % volume – consistent with Waste Consignment Note description % or bbl of components
X X X X
16 Specific gravity – in expected range of description X X X X
17 Note if any heterogeneity and separation is expected X X X X
18 Waste Consignment Note and Appendix II analysis form consistent
X X X X
19 Appendix II analysis form signed X X X X
20 Information reviewed on Installation and results within limits for OSV transportation
X

Carriage of Oily Slops (MGN 283)
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Operation Offshore
Installation
Offshore
Supply
Vessel
Waste
Processor
Tank
Cleaner
21 Waste Consignment Note and Appendix II analysis form to ship’s Master before backloading, confirming that the material is safe for carriage onboard the OSV
X X
22 Master to check dirty tank’s previous backload information prior to loading
X
23 Master to confirm to Installation that cargo can be back loaded before operation commences
X
24 Onshore test before discharge or tank entry with Waste Consignment Note and Appendix II analysis form checked
X X X
25 Waste processor onshore tests and, where a significant difference in result is obtained, a non-conformance is raised
X X
26 Non-conformance to the operator, offshore Installation, ship’s Master, base operator surveyor and tank cleaner
X X X X

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Section 8

Seismic and Survey Vessel Operations

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1 Application

This section contains instructions and guidelines which relate to seismic and hydrographic survey vessels that are on charter to, or on behalf of, BP. It also relates to any seismic/survey vessel that requires to operate within a BP offshore Installation safety zone.

Where the vessels are also equipped with Dynamic Positioning (DP) capability, Section 6 must also be addressed. Vessels contracted by, or on behalf of, BP shall comply with Section 1 Paragraph 4.

2 Seismic Vessels – General Description

2.1 General

A description of some pertinent aspects of seismic acquisition is given here in order to familiarise readers with the method, and to emphasise some of the pertinent issues with respect to interface with other operations.

2.2 Technique

Seismic vessels will generally tow a number of streamers (1 to 10) at depths which could range from 5 to 15m (Figure 8.1 shows a generic schematic of the towing arrangements which might be encountered). The length of each seismic streamer may vary between a few hundred metres up to several kilometres with a small tail buoy connected at the far end. The streamer drifts with surface sea-currents and such drift is often monitored by cable compasses, tail-end navigation in the form of Relative Global Positioning System (RGPS) on the tail-buoys, and in-sea acoustics. Where multiple streamers are utilised they will be typically 50 to 150m apart yielding a total cable tow width of several hundreds of metres at the front end. The maximum front end width of towed equipment is, in fact, some 20 to 50m wider than the width defined by the streamers due to the large diverter doors.

As a result of the aforementioned streamer drift (or ‘feathering’), the tail-ends of the streamers can be laterally displaced several hundreds of metres more, yielding a possible overall track of the streamers on any one seismic line of up to 1km wide (current dependent).

The vessel will acquire data by sailing down pre-plotted sail lines (usually parallel) at about 5 knots. Once committed to the acquisition of a seismic line, the seismic vessel becomes severely hampered in manoeuvrability without the loss of a considerable amount of time and major expense. A turning area of up 10km may be required at each end of the seismic lines.

The seismic energy source most commonly consists of one or two large air gun arrays which are towed about 200m behind the vessel but well within the width as defined by the outer seismic streamers (for multi-streamer work). There are various alternative forms of energy source which may be encountered and these could include marine vibrators.

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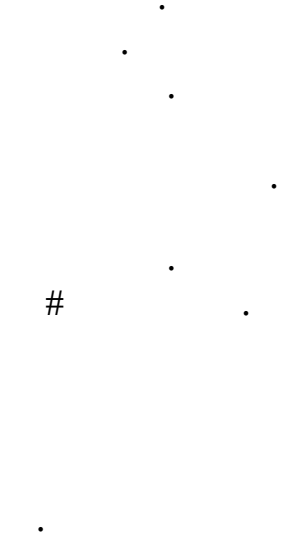
Figure 8.1 Typical Seismic Acquisition Setup



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The seismic streamers are very easily damaged by physical contact and, therefore, the areas to be surveyed must be clear of physical obstructions of any kind including, but not limited to, other vessels, surface or near-surface mooring buoys, wave rider buoys, etc.

The foregoing acquisition method will leave a hole in data coverage under the physical location of any platforms, rigs or other physical obstacles. When this happens, the ‘holes’ may need to be filled by some platform ‘undershoot’ technique which could envisage the use of two vessels straddling the obstacle, or the laying of ocean-bottom seismic cables.

Apart from sensitivity to physical impact, seismic streamers are also sensitive to all forms of acoustic ‘noise’. Sustaining such noises can be severely detrimental to the quality of the final seismic product. Due to swell noise, seismic vessels often have to

stand by for considerable periods of time, and can be caused to shutdown for swells of only 1.5 to 2m. Accordingly, predicting the exact duration of a survey is as reliable as the prediction of weather.

Other forms of acoustic noise which can be detrimental to seismic acquisition are propeller noise and thruster noise from other vessels. This noise can often by picked up several kilometres away by the seismic vessel. Accordingly, and other than for the obvious safety reasons, the co-ordination of other vessel activities (and timely information on plans for such) with the seismic activities is required in order to maximise the quality of the seismic product. Standby and supply vessels should also be requested to liaise with the seismic vessel in order to minimise, wherever possible within the constraints of their own workscopes, detrimental effects upon the seismic activities.

There are other, not so common, variations on the above theme such as the laying of seismic cables on the seabed (ocean bottom cable), dragging a cable along the seabed, vertical receiver arrays in the water column or single recording units being dropped or planted on the seabed. In all these various methods, multiple vessels are usually employed. Because of the variability of these techniques, it is beyond the scope of this document to describe them all in detail, but each one brings its own particular set of hazards.

2.3 Hazard Assessment
Prior to the conduct of a seismic survey, a hazard assessment shall be conducted, and the necessary controls to mitigate or remove the identified hazards shall be put in place.

2.4 Close Approach Procedures
Where the seismic operations require approaches to within 500m of fixed Installations, a set of survey-specific ‘Close Approach Procedures’ shall be put in place. Considerations for the development of these procedures are included in Paragraph 8.

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Site and Pipeline Survey Vessels –
General Description

The following describes typical survey vessel operations likely to be encountered, with emphasis on operating parameters.

3.1 Site Surveys

These are undertaken in order to investigate a future drilling rig or platform site, and the operations are usually of more limited extent than the seismic surveys described in Paragraph 2.

Site survey vessels usually tow near-surface streamers and, in addition, near-seabed towfish.

3.1.1 Streamers

Site survey vessels will generally tow a number of streamers (1 to 4) at depths which could range from 1 to 5m. Each seismic streamer is usually a few hundred metres (up to 2km) long with a small tail-buoy connected at the far end. The streamer drifts with surface sea-currents and such drift is often monitored by cable compasses, tail-end navigation in the form of RGPS on the tail-buoys, and in-sea acoustics.

As a result of the streamer drift (or ‘feathering’), the tail-ends of the streamers can be laterally displaced.

The vessel will acquire data by sailing down pre-plotted sail lines (usually parallel) at about 5 knots. A turning area of up to 5km may be required at each end of the seismic lines.

The seismic energy source most commonly consists of one or two airgun arrays which are towed about 20m behind the vessel but well within the width as defined by the outer seismic streamers (for multi-streamer work). There are various alternative forms of energy source that may be encountered and these could include deployed electrical sparkers or ‘boomers’.

3.1.2 Towed Fish

In addition to the streamers towed near the surface, a survey vessel may be towing a submerged towfish at other depths in the water column. Towed from a winch, via a cable that carries power to (and data from) the instruments, a typical towfish is a torpedo shaped container 1 to 4m in length. The distance that it is towed behind the vessel varies with different equipment, but is usually around 2 to 3 times the water depth.

Towfish cannot be steered and are deflected by the current. The position and depth of the fish are tracked by the vessel and are generally known to within 15m. A change in the forward speed of the towing vessel causes the towfish to sink. So rapid and unplanned changes in the vessel course or speed can cause the towfish to crash into the seabed and sustain damage or become detached from the cable.

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Survey work using towfish-mounted equipment is generally less susceptible to bad weather than is survey work using streamers, but it is unusual to be able to continue in wind conditions over Force 5.

3.2 Pipeline Surveys
Survey vessels are often engaged to inspect existing seabed pipelines, or to investigate potential future pipeline routes.

Investigation of new routes is carried out using similar equipment and methods to that used in the site survey work described in Paragraph 3.1.

Inspection of existing pipelines is carried out with a range of instruments placed near or on the pipeline. The survey is carried out at speeds of 1 to 5 knots and may be conducted from a towed fish, or a Remotely Operated Vehicle (ROV) connected by umbilical to the survey vessel. Rapid and unplanned changes in vessel course are highly likely to damage the towed body.

3.3 Hazard Assessment
Prior to the conduct of a site survey, a hazard assessment shall be conducted and the necessary controls to mitigate or remove the identified hazards shall be put in place.

3.4 Close Approach Procedures
Where the survey operations require close approaches to within 500m of fixed Installations, a set of survey-specific close approach procedures shall be put in place. Considerations for the development of these procedures are included in Paragraph 8.

Coring Vessels

There are various types of vessel used for coring operations at offshore sites.
They range from a dedicated vessel equipped with a drilling derrick and dynamic positioning, to a vibrocore handled from the crane onboard a supply or standby vessel.

Dynamically positioned vessels are to comply with Section 6.

There are various safety hazards associated with the equipment used during coring operations and, in particular, the methods used to deploy and recover equipment. Hazard assessments to identify all known hazards shall be completed with procedures

developed to mitigate any identified risk.

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Two of these risks onboard supply vessels are:

• The deployment and recovery lifting system shall be designed to minimise the number of crew required to work within the area. No crew member shall be required to work within a wire ‘bight’ and the area shall be clear of all non-essential personnel and equipment. The lifting equipment shall have a Safe Working Load (SWL) which exceeds the weight of the core equipment plus a safety margin to allow for the additional tension created by:
- Core withdrawal
- The vessel movement ‘hoist factor’
• Vibrocorers, vibro-impact corers, etc can be cumbersome equipment to manhandle. Physical dimensions can be as much as 8m in height, 6m wide at the base and a weight of over 3.0 tonnes. If it is planned to use this type of equipment it is essential that the vessel has suitable cranage for lifting the equipment clear of the bulwark for initial deployment and final recovery. The use of ‘jury-rigged’ lifting gear is to be discouraged for such routine work
5 Communications

The Vessel Master is responsible for ensuring that a general call is made on Channel 16 VHF to inform other marine traffic within the area. These general calls shall be made at regular intervals, and the information relayed on a separate working channel. Seismic and survey vessels engaged in specific workscopes outwith areas of marine traffic need not comply with the above requirement providing a continuous radar watch is maintained.

The Vessel Master shall pay particular attention to advising and liaising with diving and fishing vessels within the area.

The responsible postholder within BP Survey and Seismic Branch, Aberdeen shall ensure that the BP field group and Marine Consultancy Branch, as appropriate, are advised of the impending activity in good time.

A responsible postholder within the above Survey and Seismic Branch shall ensure that the offshore BP Representative has been advised of all the known offshore locations

which may be affected by their respective operations.

The BP Representative shall ensure that the Vessel Master and the contractor's party chief are advised of all the known offshore Installations, Diving Support Vessels (DSVs) etc within the survey area.

6 Safety Management – Bridging Document

For all survey and seismic operations, the Business Unit Leader (BUL) or his nominated deputy shall arrange for the development of an interface document to bridge the Safety Management Systems (SMSs) of the vessel, BP and any Installation (refer to Section 1 Paragraph 3).

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7 Offshore Installation Safety Zones

Where permission from the Operator has been granted, the Vessel Master is still required to request clearance from the Offshore Installation Manager (OIM)/Marine Controller before entering the controlled area.

The Vessel Master shall ensure that the OIM/Marine Controller is fully and accurately briefed with respect to the proposed activity. The OIM/Marine Controller can then make an accurate assessment of the risk to the offshore Installation or any other marine activity taking place within the controlled area.

The Vessel Master shall ensure that the field standby vessel has been fully and accurately briefed in respect of the proposed activities.

Upon entering the 500m zone, the Vessel Master shall ensure that proper safety measures are taken and that special consideration is given to effects of sea, wind and current.

Manoeuvring close to an offshore Installation for the purpose of transferring cargo or personnel is not normally permitted unless authorisation has been granted by BP Marine Department and the Operator.

8 Operations Within the 500m Zone of Installations

Close approach procedures shall be developed for all survey and seismic vessels requiring to enter the 500m of Installations.

Survey and seismic vessels shall not be permitted to operate within the 500m safety zone unless permission has been granted by the Operator. Permission will only be granted following full hazard analysis and risk assessment prior to undertaking the survey. Where the vessel does not have adequate redundancy of power generation, distribution and control systems such that a single mode failure shall endanger the Installation, safe operating parameters shall be established.

Prior to entry to the 500m zone, the vessel shall confirm, by functional checks, the satisfactory operation of all communication, propulsion, manoeuvring and control systems. Any defects noted after this initial report must be immediately reported to the Installation OIM and the vessel manoeuvred clear of the 500m zone. Continued operations will be subject to a risk assessment between the OIM and the Vessel Master/BP Representative.

The checklist governing entry into the 500m zone is contained within the relevant site-specific marine operations documents listed in Addendum 1.

While operating within the 500m zone, the vessel bridge shall be manned by at least two experienced, qualified and competent officers, one of whom must be the Master. Additionally, the engine room must be manned by an experienced, qualified and competent engineer.

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Prior to the vessel approaching the Installation, the Master must be aware of all other marine operations taking place; this includes diving activities and other subsea operations. He must also be aware of the location of buoys or other obstructions, or any platform operations, that could present a hazard to the vessel during close approach.

During close approach, the separation of the vessel and towed sensors must be identified and agreed within the vessel's 'Close Approach Procedures'. In any event, it is recommended that the vessel or equipment should not come closer than 50m to the platform.

Limitations for all operations must be identified and included within the close approach procedures. Operations ‘upwind’ or during a ‘blow-on’ situation to an Installation must address the redundancy of equipment and, where there is only limited redundancy, close approach to the Installation shall only be made when current and wind conditions are such that, in the event that it lost power, the vessel would not drift onto the Installation.

9 Navigation

Responsibility for the safe navigation of the vessel rests with the Master.

Where the ‘con’ and/or navigation of a vessel is undertaken from a position other than the navigation bridge, the following safeguards shall be met:

• The Watchkeeper on the navigating bridge must be able to take instantaneous control of the vessel by the use of an override or some other similar facility
• Before any alteration of course or speed is made from a remote position, the Watchkeeper on the navigating bridge shall have to be informed and permission granted
• The navigation bridge shall have direct communication with each remote ‘con’ position

10 Planning

Daily meetings shall be held to plan the forthcoming activities. These meetings shall be attended by a senior member of staff from each discipline onboard. Items for the meeting agenda shall include, where appropriate, safety matters and defects which could affect the safe and efficient operation of the unit.

11 Lifting Equipment

All lifting and suspension equipment shall have valid certification. These certificates shall be kept onboard and filed for easy reference.

All lifting and suspension equipment shall be subject to an effective planned maintenance and inspection routine.

All lifting machinery and suspension beams shall be purpose designed and certificated, and marked with the SWL.

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12 Man Overboard

It is recommended that a ‘man overboard’ alarm is fitted at a convenient location on the aft deck. It is further recommended that activation of this alarm shuts down all towed electrical and high pressure air energy sources.

A Man Overboard Boat (MOB) shall be carried by each seismic/survey vessel. Launching and operation of the MOB is to be under the direct control of the Master. A safe means of launching and recovering the boat is to be provided, and the boat must be ready for immediate launching.

Man overboard procedures, which shall be included in the vessel’s safety manual, must identify designated postholders to crew the MOB. Each designated postholder must be trained for small boat operations and may be required to demonstrate the ability to operate the MOB at the vessel technical inspection.

A quantity of essential mechanical spares for the boat shall be maintained onboard. A list of such spare gear shall be kept onboard for information purposes.

MOB crew shall be supplied with immersion suits and inflatable lifejackets.

The MOB shall be supplied with VHF communication (this may be a portable hand-carried set).

Subject to favourable weather conditions, man overboard drills shall be carried out at regular intervals, not exceeding 14 days. Records of such drills shall be maintained onboard.

If the MOB is to be used as a workboat on deployed gear, a second boat shall be available and made ready for launching.

13 General Aft Deck Requirements

Machinery which may be operated from a remote position shall be clearly marked to warn personnel. All practical steps shall be taken to ensure that the area is safe to innocent bystanders and is visible from the control position. Where direct visibilityis not possible, the area shall be covered by a TV type camera/monitor. Alternatively, written procedures shall ensure that a responsible person is directed to the deck to confirm that the area is clear prior to commencement of operations and sufficient and suitable warnings and barriers posted.

Where the construction of the vessel is such that the aft deck activity cannot be viewed directly from the navigating bridge, a TV type camera/monitor system shall be installed to cover the blind spot area.

The instrument control room shall be installed with a TV type camera/monitor to provide a clear view of the aft deck activities.

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14 Personal Protective Equipment

All personnel shall be provided with safety hats, worksuits and safety boots.
The aforementioned equipment shall be worn at all times when working outside the accommodation.

Suitable protective gloves shall be made available to personnel working with wires, streamer operations, cable oil, or high voltage electrical equipment.

Approved, automatically inflating lifejackets and/or buoyancy aids shall be stored at a convenient location near the aft deck. The deck crew shall be instructed to wear a lifejacket or buoyancy aid at all times when a risk of falling overside exists, particularly whilst working at or near the stern of the vessel. These lifejackets/buoyancy aids shall be inspected and certificated in accordance with the manufacturer’s instructions.

Approved safety harnesses shall be stored at a convenient location near the aft deck.
The deck crew shall be instructed to wear a harness, when a risk of falling from a height or overside exists. Suitably sited and certificated harness attachment point shall be provided at or near the stern of the vessel.

Essential personnel working in the vicinity of high pressure equipment shall be instructed to wear approved ear and eye protection.

Personnel designated as crew for the MOB shall be supplied with immersion suits.
They shall be worn during all MOB activities including drills.

Vessels engaged in seismic/survey work in the higher latitudes of the northern North Sea (eg above 62° north), where the sea temperature is recognised as remaining cold throughout the year, shall additionally keep a supply of immersion suits for the use of

deck crew working at or near the stern of the vessel.

Adequate safety notices or pictograms shall be displayed to highlight special hazards or emergency instructions associated with the area. Safety or operating notices with written instructions shall be posted in English and, if appropriate, the language of the marine and seismic/survey crews.

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1 Application

This section contains instructions and guidelines which shall relate to all Emergency Response and Rescue Vessel (ERRV) operations in UK waters.

When operating in a field development area the roles of the Offshore Installation

Manager (OIM) and ERRV with regard to acting as On-scene Co-ordinator are defined within the relevant site-specific marine operations documents listed in Addendum 1.

When operating with a Mobile Offshore Drilling Unit (MODU), where no field-specific instructions are issued, the roles of the OIM and ERRV are defined in Paragraph 5.

2 ERRV Code

All ERRVs on charter to, or on behalf of, BP shall comply with the latest revision of the following guidelines:

• Emergency Response and Rescue Vessel Survey Guidelines a joint industry guide, published by the United Kingdom Offshore Operators Association (UKOOA)
• The Emergency Response and Rescue Management Guidelines for Offshore Installations, a joint industry guide published by UKOOA
• Where appropriate, Guidelines for the Safe Management and Operation of Offshore Support Vessels, a joint industry guide published by UKOOA and the Chamber of Shipping (CoS)
Copies of the above documents shall be carried onboard.

All ERRV crew members will attend such courses as are detailed in the above guidelines.

3 Main Functions

The fundamental requirements of ERRVs are to:

• Rescue people from the water and provide them with medical aid
• Recover and provide aid to people
• Act as a ‘place of safety’ in accordance with the Offshore Installations (Prevention of Fire and Explosion, and Emergency Response) Regulations 1995, SI 1995/No 743 (PFEER)
• Provide on-scene command as required in accordance with the relevant Installation’s Emergency Response Plan (ERP)
• Monitor safety zones to warn off shipping which presents a risk to Installations (or associated structures or vessels)
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Regulation 17 in SI 1995/No 743 The Offshore Regulations (Prevention of Fire and Explosion, and Emergency Response) Regulations 1995 covers arrangements of recovery and rescue. Further information on this issue is contained in the Approved Code of Practice for the regulations. The Dutyholder shall ensure that effective arrangements are made to secure a good prospect of those persons being recovered, rescued, and taken to a place of safety.

In normal circumstances, and weather permitting, the ERRV will remain outside the 500m zone and in the best possible position to provide a speedy response to any incident onboard the Installation or attending vessels.

When required for close standby, the ERRV shall complete a pre-entry to the 500m Zone Checklist prior to being granted permission to enter the 500m zone (refer to Paragraph 10).

Whilst manoeuvring on location, the ERRV shall steer an offset course which avoids sailing directly at the Installation and prevents unauthorised entry in the safety zone.

Preparation of Contingency Plans

Each ERRV should be provided with the relevant sections of the Safety Case that may affect its operation, and the ERP by the Dutyholder of the Installation it covers.
The Owner and the Master of the vessel should prepare written directions covering the response of the ERRV in the event of an incident.

Such plans should reflect the Installation ERP and must be agreed by the Dutyholder of the Installation.

The plans must include:

(1) The responsibility of the Master of the ERRVs for the organisation and control of the search for and rescue of survivors in the sea or adrift in boats or rafts, particularly with other vessels converging on the area to provide assistance.
(2) Clear guidelines as to the responsibility of the Master of the ERRVs and the OIM, the transfer of responsibility from the OIM and the circumstances in which the Master shall adopt the role of On-scene Co-ordinator (OSC).
(3) An agreed procedure for the transfer of responsibility for the control of the search and rescue to the relevant Search and Rescue (SAR) organisation. The names of such organisations should be written into the contingency plans.
(4) Any guardship roles for an ERRV.
There are four main events where persons may have to be rescued or recovered from the sea:

• Persons falling overboard from the Installation during overside work
• Helicopter ditching near to the Installation
• Escape from the Installation in the event of a major accident
• Recovery of persons following evacuation by Totally Enclosed Motor Propelled Survival Craft (TEMPSC)

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The role of On-scene Co-ordinator and handover procedures from the OIM to the ERRV Master should be clearly established and understood. The ERRV contractor, will be responsible for defining the roles of ship's staff in this event. Copies of muster stations will be posted onboard the vessel. The ERRV Master will ensure that both he and his crew are fully familiar with the Merchant Ship Search and Rescue Manual (MERSAR) and Annex A of the Department of Energy's Offshore Emergency Handbook, both of which are required to be carried onboard.

Role of On-scene Co-ordinator

5.1 General

The role of the OSC is fully described in each site-specific marine operations document listed in Addendum 1 (MODUs are described in Paragraph 5.2) but the following general guidelines apply:

• OSC authority, and handover procedures are to be clearly established and understood
• The Master should be capable of performing the role of OSC
• The Master should be capable of implementing the Coastguard SAR Plan
• The Master should be capable of modifying the Coastguard SAR Plan as required to reflect local demands
• The Master and officers should be capable of monitoring and reporting weather conditions to the Coastguard
• The Master and officers should be capable of making clear Situation Reports (SITREPs) to the Coastguard and BP
• The Master and officers should be capable of advising the Coastguard on the release of SAR units
• Proper records must be kept

5.2 MODU Outwith Field Development Control

In any emergency incident occurring on a MODU, which poses serious threat to the asset and/or personnel onboard, and which would result in the Dyce Emergency Response Centre (ERC) being mobilised, the OIM, or his deputy, shall ensure that the

following are carried out:

(1) Cover all contacts as per MODU emergency procedures.
(2) Update the ERRV as often as practicable.
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5.2.1 Installation Abandonment
If the situation reaches a stage where the OIM has no other recourse but to abandon the Installation, then he, or his deputy, shall carry out the following:

(1) Inform the Master of the ERRV of the abandonment decision and request that he now takes over as OSC. If possible, indicate the method of evacuation and whether or not he is going to be contactable once he has left.
(2) Make all contacts as per MODU emergency procedures for abandonment.
(3) Cover all actions required for rig abandonment.

5.2.2 Role of ERRV
On receipt of contact (refer to Paragraph 5.2 Item 1):

(1) Close up to the Installation, muster all crew as required, ensure that all vital equipment is made ready as per Paragraph 6.
(2) Monitor the situation, providing assistance when requested.
On receipt of decision to abandon (refer to Paragraph 5.2.1 Item 1):
(1) Take over as On-scene Co-ordinator and inform the Coastguard immediately.
(2) Monitor the situation, provide assistance where possible and attempt to contact rig OIM if applicable. Implement Coastguard SAR plan.
(3) Relay, if necessary, any distress messages direct to a coastal radio station or Coastguard Maritime Rescue Co-ordination Centre (MRCC).
(4) Keep the MRCC fully updated through clear situation reports.
(5) If available, apply Fi-Fi cooling to the Installation, where required.
(6) Maintain proper records.
(7) Carry out all other On-scene Co-ordinator functions as necessary, giving priority to the saving of life, until relieved.
5.2.3 Catastrophic Incident
In the event of a catastrophic incident, when MODU OIM is out of contact, the ERRV Master will immediately assume the role of On-scene Co-ordinator, relaying the distress message and establishing a link with the Coastguard.

Coastguard will alert BP Dyce ERC.

5.2.4 Dyce ERC – Actions
On receipt of either emergency incident report (refer to Paragraph 5.2), or decision to abandon (refer to Paragraph 5.2.1 Item 1):

(1) Establish link with rig Owners.
(2) Liaise with the Coastguard as to the possible delegation of a better placed resource (Naval/Fishery Protection Vessel, RAF Nimrod) to take over as OSC from ERRV Master.
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6 Offshore Installation Abandonment ERRV Procedures

In an abandonment situation, the OIM will request the ERRV to take up position, to support abandonment of the Installation. This position may be down weather of the Installation but not directly so, having due regard to the possibility of escaping flammable gas or oil, and the possibility of a major explosion.

The order to abandon the offshore Installation will be given verbally by the OIM.

The actions of the ERRV will be to:

(1) Come to close standby and be prepared to provide support to personnel embarked in TEMPSC.
(2) Prepare to launch rescue craft as required.
(3) Prepare rescue equipment, including mechanical recovery systems.
(4) Be prepared to act as a reserve radio station.
(5) Be prepared to act as Co-ordinator Surface Search (CSS) and/or OSC should the emergency situation require it.
Note: Refer to the site-specific marine operations documents in Addendum 1 for local CSS and OSC arrangements.

(6) Prepare to embark survivors.
(7) Maintain sharp lookout for survivors in the water.
(8) Maintain an accurate ‘tally’ of embarked survivors.
(9) Provide first-aid and hypothermia treatment to survivors.
(10) Be prepared to embark survivors from lifeboats/liferafts.

(11) Be prepared to disembark survivors by helicopter.
(12) Be prepared to make for the nearest safe port with survivors.
Note: In an emergency abandonment, ERRV Masters shall be alert to the possibility of flammable gases or oil being on or near the sea surface and of the possibility of a major explosion occurring on the offshore Installation. In such cases it may be prudent to position the vessel a safe distance upwind or upweather of the Installation.

7 Collision Risk Monitoring

7.1 General
The ERRV may be responsible for monitoring all passing traffic and for ensuring that the risk of ship/Installation collision is minimised at all times. Alternatively, a radar early warning system may be used to alert both the ERRV and the Installation.

Clear instructions on the monitoring of safety zones, and actions required of the ERRV, are contained within the ERP of the Installation (refer to the relevant site-specific marine operations documents listed in Addendum 1).

The ERRV shall maintain an effective radar and visual watch at all times. It is recommended that surveillance is carried out with one radar set on the 24-mile range and one radar set on the 12-mile range.

Where a vessel is identified as passing within 2 miles of the Installation, it shall be tracked and its progress monitored until such time as it has passed the nearest approach to the Installation.

If the target vessel’s course is such that it would impinge on the Installation’s 500m zone, the OIM must be informed. Immediate action must be taken to contact the vessel and divert it clear from the 500m zone of the Installation.

In the event that the target vessel does not respond to attempts to communicate by conventional means, the ERRV shall alert the Installation OIM. The ERRV will continue to update the OIM as the distance between the vessel and the Installation decreases.
The ERRV’s reporting procedures will be in line with the Installation’s own procedures.

All other means to attract the vessel's attention shall be used. These include searchlights, whistle, foghorn etc. The 500m zone is to be protected by all possible means without compromising the vessel's safety, and its prime role and function as outlined in Paragraph 3.

If weather conditions are suitable and depending upon the anticipated size of the target vessel, the ERRV may use its FRC and or its Daughter Craft (DC).

7.2 Drifting Vessels
When the ERRV detects a vessel which is drifting due to mechanical breakdown, it shall plot the direction and rate of drift of the vessel.

In plotting the rate and direction of drift, the ERRV shall assess the danger presented by the drifting vessel both to the Installation for which the ERRV is responsible and for other Installations which may be in the vicinity.

In the event that the drifting vessel presents a danger to the ERRV's Installation, the ERRV shall inform the OIM and establish communications with the drifting vessel.

If the circumstances so dictate, the drifting vessel shall be requested to arrest its drift by anchoring. Such a request shall only be made with the consent of the Installation's OIM. The ERRV should also consider any additional support which it may be able to provide in order to slow or arrest the drift and prevent collision with the Installation, eg passing of a tow line to another vessel. Any action must not compromise the prime safety role of the ERRV.

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In the event that the drifting vessel, while passing clear of the Installation(s) for which the ERRV provides safety cover, is drifting towards other Installations, the ERV shall inform the OIM of the Installation for which the vessel provides safety cover. The ERRV's Master shall also contact the ERRV's for the Installations at risk, informing them of the drifting vessel. The OIM of the Installation shall contact the other Installations at risk, informing them of the danger.

Whether a drifting vessel presents a danger or not, the ERRV shall in every case broadcast a PAN message, giving all known details of the drifting vessel.
Such information shall also be passed directly to HM Coastguard.

7.3 Collision Monitoring Whilst on Close Standby
When on close standby, the platform structure may create a shadow zone in the ERRV's radar coverage. In such circumstances, the ERRV shall, at regular intervals, while still maintaining safety cover, manoeuvre itself from out of the shadow of the Installation to observe the vessel movements in the shadow sector.

7.4 Traffic Monitoring
ERRVs on duty at BP Installations are required on request to compile details of traffic movements in and around their Installations. Specific instructions along with appropriate logsheets are placed on ERRVs as required.

Additional Functions

8.1 General
Some ERRVs are capable of carrying out multipurpose roles such as supply, firefighting, towing, Remotely Operated Vehicle (ROV) and oil clearance. In such cases, it must be emphasised that the main role of the ERRV takes precedence over any other function, and the OIM shall ensure that these functions do not interfere with, or detract in any way from, the capability of the vessel to respond to an emergency. The ERRV role must never be compromised and, when on standby duty, personnel must be fully vigilant at all times.

8.2 Cargo Operations
Prior to any cargo operation alongside an Installation, the vessel will complete the pre-entry to the 500m zone checklist for that particular Installation.

An ERRV shall never approach an offshore Installation to work cargo unless the vessel can meet the requirements of the BP guidelines for ERRV cargo transportation and/or transfer (below).

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Design
Particulars/Features
Minimum Requirements Remarks
Visibility • Full, unobstructed and direct
view of working deck area

from control station
• Full, unobstructed and direct view of stern from control station
Reliance on third-party communications and/or television systems as prime means of monitoring activities not generally acceptable
Powering At least equivalent to supply vessel of equivalent displacement
• Minimum of 3000 shaft horsepower
• Additional power may be required if extensive additions to superstructure
Propulsion and Manoeuvring Arrangements
• Two variable pitch propellers
• Two rudders
• One forward tunnel/azimuth thruster
• Other arrangements may be considered, but must be at least equivalent to those shown
• Thruster not less than 500 horsepower
Control Arrangements • Combinators for main propulsion
• Tiller steering
• Direct control for thruster
• To be grouped ergonomically at control stations
• POSCON preferred
Communications – Internal
Two to deck crew • Must include Public Address (PA) or similar
• May include portable VHF handsets

Communications –
External
Three VHFs in wheelhouse • To include fixed set at forward
and aft control stations
• Balance can include handsets
Illumination – Deck At least equivalent to supply
vessel of similar size
• Illumination to be sited/shaded
to reduce dazzle risk to ship
handlers
• Illumination to be sited/shaded
to reduce dazzle risk to aircraft
personnel during winching
operations, etc

Table 9.1 BP Guidelines for ERRV Cargo Transportation and/or Transfer – Vessels

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Experience/Qualifications Minimum Requirements Remarks
Experience – Masters and
Shiphandling Mates
• To have good general,
recent, experience of
Platform Support Vessel
(PSV) operations
• To have particular
experience of handling
own vessel in close
proximity situations at
offshore locations
• ‘Recent’ to be within the
last 12 months
• Verification shall
be required
• Actual training only under
direct supervision may be
permitted

Experience – Deck Personnel • To have good general, recent experience of supply vessel type operations
• To be fully familiar with hazards associated with such operations
Toolbox talks required before commencement of each operation
Familiarity with Terminology Sound understanding of terms likely to be used by Installation in relation to supply vessel operations
Qualifications Appropriate qualifications for operations proposed
Minimum as defined by MSA

Table 9.2 BP Guidelines for ERRV Cargo Transportation and/or Transfer – Crew Competency

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Procedures etc Minimum Requirements Remarks
Manning – Bridge As for other supply vessels, as defined in this document
Two men on bridge whilst alongside Installation
Manning – Deck At least three crew members to be immediately available on working deck during cargo operations
• Two with experience as above
• One trainee (subject to risk assessment)
Bulk Transfers As for all other vessels,

as defined in this document
Commodity management programmes to be agreed and established before bulk transfers considered
• Commodity management to include assessment of source, length of time on vessel, etc
• Operations to be restricted to hours of daylight except where specific risk assessment has been completed
• Risk assessment to include issues associated with both vessel and personnel
Platform Approach As for all other vessels, as defined in this document
• Positive confirmation that all principal systems are operational
• Communications check, etc

Table 9.3 BP Guidelines for ERRV Transportation and/or Transfer – Procedures and Restrictions

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Where the ERRV is not suitable for close approach to an offshore Installation, the FRC may be used for transferring small packages of freight etc.

Careful consideration shall be given to the carriage of dangerous goods on ERRVs.

• Interfield Transfer by ERRV
Cargo shall not be loaded until it is confirmed that the receiving Installation can accept

the shipment.

• Port Loading by ERRV
Prior to loading dangerous goods, the shore base shall confirm with the Installation that it is able to offload the vessel on its arrival in the field. If this is not possible, the Installation is then required to refer to the International Maritime Dangerous Goods (IMDG) Code in order to establish the properties of the proposed cargo and whether the safety of the ERRV is liable to be jeopardised in an emergency situation on the Installation, eg fire. A decision shall then be made whether or not to load the cargo on the vessel. Forthcoming weather shall also be taken into consideration when making this decision. It is not expected that at ay time an ERRV would place itself or its crew at jeapardy in an emergency.

To achieve the above requirements, ERRVs engaged in cargo operations, either acting as floating storage or conducting inter-platform transfers, will observe the following:

• Deck area in the way of the rescue zones to be kept clear at all times across the width of the ship
• Helicopter winching area to be kept clear at all times
• Master and crew to be fully fit and competent to carry out the requirements of the standby role at all times, with particular consideration being given to the problems of fatigue
• Close standby duties will not be performed whilst hose operations take place
Additionally, the following guidelines will be observed during cargo operations:
• Master and deck crew will have suitable experience in supply vessel operations in the North Sea
• The Master will always have the final say as to when supply operations commence and are suspended
• Hours of working in the supply mode will be limited to:
- Hours of daylight for routine requirements
-No more than 12 hours in any 24-hour period, with 6 hours rest to be made available and taken at the Master’s discretion after 6 hours engaged in loading or discharging operations
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-There may be occasions when the platform may require the field vessel to work in excess of the normal 6-hour period when it first returns to location from port. Under such circumstances, the relieved ERRV may be held on location until the

Master and crew of the field vessel have undertaken a suitable rest period following completion of cargo operations. This decision will be discussed between the OIM and the Vessel Master, the final decision being the responsibility of the OIM

When the vessel is being used for the purposes of floating storage, the Master has the responsibility for ensuring that the cargo is stowed correctly, adequately sea-fastened at all times and in such a manner to prevent movement on the vessel's deck.

The Installation will provide the Master with adequate information on weather forecasts and early warning of any inclement weather that may be expected over the forecast period.

Prior to lifting any containers, the Master has the responsibility for ensuring that the crew are satisfied with the condition of the lifting arrangements.

The crew will wear the appropriate protective safety equipment at all times during these operations. A crew member, experienced in cargo handling operations, will be nominated and will ensure that an effective communication system exists between the vessel, crane driver and Banksman.

It must be borne in mind that the unexpected can always happen, and crews shall be fully vigilant and ready to perform their primary function of safety support at all times and during all phases of cargo operations.

Platform staff must be made aware of the limitation of ERRVs involved in cargo operations. They may not be as sophisticated as traditional supply vessels and may therefore have a limited station-keeping ability and suffer greater weather downtime. Every effort shall be made by the platform to pre-plan as far as practicable, and to carry out transfer operations during suitable weather windows.

Helicopter Ditching

Upon arrival at a location, the ERRV Master shall be given the helicopter radio frequency used by the offshore Installation, and shall ensure that the radio set is working for two-way communication.

The ERRV Master shall be given advance warning about all helicopter flights.
The helicopter frequency shall be monitored for at least the last 15 minutes of the inbound flight until such time as the helicopter has been clear of the offshore Installation for 15 minutes. The ERRV shall not communicate on the helicopter frequency unless specifically requested to do so, or an emergency situation occurs.

When advised of an impending flight, the ERRV shall monitor the aviation radio

frequency and the flight path to the offshore Installation(s).

The Master shall position the vessel so that it is best able to effect a rescue, but must not place the vessel in the flight path or at a position where an overshoot may occur.

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Note: Where an ERRV is assigned to stand by more than one Installation, the Master shall position the vessel so that it is in the best position to effect a rescue at either Installation. The appropriate field information in the relevant site-specific marine operations documents, as listed in Addendum 1, may explain the role more clearly in such circumstances. Additionally, the ERRV and the Installation will have Health and Safety Executive approved operating procedures for ERRV sharing.

10 Close Standby and Close Approach

10.1 Cover
No overside activities shall take place unless there is a vessel on close standby, or alternative arrangements are in place.

To provide close standby cover, the ERRV may be required to enter the 500m safety zone of the Installation. Prior to being granted permission to enter the 500m zone, the Master of the ERRV will be required to complete a ‘Pre-entry Checklist’ to confirm that all power generation, distribution and control system onboard the vessel are online and fully operational. The checklist will also advise the ERRV of any particular marine hazards, restricted zones and operational requirements at the location (refer to the relevant site-specific marine operations documents, as listed in Addendum 1 for checklists). Any defects occurring after the initial report must be immediately reported to the Installation, and continued operation will be subject to a risk assessment performed by the Installation OIM and the ERRV Master.

Prior to any person working overside, communications shall be established between the vessel and the person with responsibility for those engaged in the overside work.

The Installation OIM shall ensure that the ERRV is stood down from close standby duties as soon as the operation requiring close standby is completed or the operation suspended as appropriate.

Extreme caution must be exercised when on close standby. Vessel Masters shall give themselves plenty of sea room when manoeuvring close to the Installation and shall make themselves aware of tides and weather which may set them towards the Installation. They shall be familiar with the position of any exposed oil/gas risers. As a general guideline, ERRVs on close standby duty shall not approach an offshore Installation closer than 50m. ERRVs' Masters shall, whenever practicable, station their vessel down-weather of the Installation.

The ERRV Master and the OIM/Marine Controller shall make a deliberate assessment of the prevailing weather conditions before commencing routine overside work that may require a rescue service.

When on close standby, the ERRV shall be in a position where it may best observe the overside activities, while paying due attention to the prevailing environmental forces to avoid being taken onto the Installation's structure.

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The ERRV Master shall be responsible for keeping the offshore Installation informed about deteriorating weather conditions. In particular advising the Installation when weather conditions are nearing the limitations of the rescue facility, so that the overside work in-hand may be safely concluded.

10.2 Withdrawal of Cover
When, for whatever reason, an ERRV has to withdraw close cover, it will immediately inform the person responsible for the personnel engaged in overside work and the Installation's control room/OIM as appropriate, and the reason for withdrawal.

Except where the ERRV has suffered a total loss of motive power or has an onboard emergency, it will maintain close cover until such times as the Installation informs that the personnel have been withdrawn or alternative arrangements are in place.

When clear of the Installation, the ERRV Master must report the vessel's position to the Installation.

The ERRV and the Installation will record in their logs all communications made regarding close cover.

An ERRV on close standby duties must remain dedicated to that activity and shall not be requested to conduct another routine multi-role activity such as cargo operations.

Note: OIMs and ERRV Masters shall appreciate that the weather limitations referred to above also include poor visibility which may preclude a safe or satisfactory search/rescue operation taking place.

11 Routine Vessel Duties

11.1 Radio Watch
The ERRV shall maintain an efficient 24-hour radio listening watch for marine and aviation ‘traffic’ addressed to the vessel or offshore Installation.

The ERRV shall make radio contact with the offshore Installation at least twice a day. At such times, the offshore Installations shall ensure that the vessel is fully operational and has no defects or personnel incapacity.

11.2 Visual Watch
The ERRV shall maintain an efficient visual watch for any unusual occurrences such as emergency flares, oil slicks, etc and report any sightings to the OIM/Marine Controller.

During the hours of darkness the ERRV shall check the operation of the offshore Installation navigation lights and advise the offshore Installation of any defects.

During periods of restricted visibility the ERRV shall advise the Installation to activate foghorns, and keep the Installation advised on the visibility. Each ERRV shall complete the Installation Navigation Aids Monthly Checklist to ensure compliance with the Department of Transport requirements. Completed checklists are to be forwarded to the Installation OIM.

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11.3 Moored Buoys
The ERRV shall visually check, twice a day, the position of: mooring, weather or location buoys within the proximity of the offshore Installation and confirm the position and condition of each buoy to the OIM/Marine Controller. The OIM shall record such checks in the official logbook.

12 Training/Exercise Drills

The ERRV Master will exercise the crew in man overboard drills. The first drill shall take place as soon as is practicable after the vessel arriving on location, and at regular intervals thereafter.

All drills shall be conducted in weather conditions that will not endanger the safety of the FRC crew. The OIM/Marine Controller shall try to ensure that there is a sense of realism in such training exercises, eg realistic scenarios and the involvement of other Installation staff where appropriate.

Safety helmets shall be worn whenever the crew are required to work or remain on station within 500m of the offshore Installation.

Onboard specialist training of ERRV crews is to be completed by the Master to the standards prepared by the Offshore Petroleum Industry Training Organisation (OPITO).

All drills shall be recorded by the ERRV in the format provided by the UKOOA Guidelines.

The OIM/Marine Controller shall ensure that the ERRV is actively involved with all offshore Installation emergency and abandonment drills.

Specialist ERRVs which are fitted with firefighting monitors shall be requested to demonstrate the operation of such equipment, in conjunction with offshore Installation drills only where the need for the fire monitors has been confirmed in the charter party and Installation emergency plans.

ERRV Masters shall exercise their crews in search and rescue techniques.

Validation Exercise – Annual

Each ERRV is required to carry out annual trials to confirm that they can meet the BP rescue and recovery standards. Such trials will be recorded in the UKOOA format and extrapolated using an independent consultant as provided by the BP Marine Consultancy branch. Promarine will act to arrange such validation trials for Installations using the scenarios from each Installation’s emergency plans. Validation trial reports will be issued to each Installation.

All offshore staff have access to, and are required to wear, Personal Locator Beacons (PLBs) when travelling by helicopter and working over side. Should personnel have to abandon the Installation and take to the sea, they should be wearing PLBs as well as the immersion suits and lifejackets.

ERRV staff should practise the use of the direction finders at least once per year, per crew (twice per year).The manufacturer will provide two PLBs set to the exercise frequency of 121.65kHz and confirm that the exercise is covered by their licence.

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It is preferred that the PLB is strapped to a mannequin and placed in the sea so that the watch is immersed for at least 3 seconds to arm and activate the alarm, and to prevent unnecesary violence to the PLB should it be thrown into the sea from the deck of the rig or Installation. The PLB is Ex rated and, as such, can withstand considerable energy should it be required.

The FRC or DC should then move off from the location before commencing the exercise. The FRC/DC direction finder should be set to Channel FR-11.

Establish that PLB tones are heard from the DF speaker, and that a bearing indication is given. The bearing indication should be correct for the PLB location. (The antenna has the forward dipole marked with an arrow.) Turn the FRC/DC around whilst maintaining position to confirm that the DF shows the bearing moving as the vessel changes heading. The craft should now proceed away from the PLB until the tones are no longer heard. The craft should now be turned short about to re-establish the tones. Determine if any of the rescue craft equipment is interfering with the DF system, using the Squelch control to find the noise floor, the number of LEDs which are showing to just eliminate the noise on the seaker should be noted. Once the maximum range/minimum noise has been estanblished, continue away from the PLB until no detection of sound or LED. Move back towards the PLB and determine the range at which:

- First DF bearing is found
- First tones are heard
- First green LED is lit

Establish if the craft speed or engine rpm has any effect on bearing or accuracy.

Having checked the detection ranges etc the craft should move away from the PLB and use the DF to guide the craft to the ‘survivor’. This should be repeated several times to provide the crew with experience of the units.

Note: Whilst the PLB batteries are suitable for a minimum of 3 hours transmission,

each watch should be used for one exercise session. The activation of the watch in distress mode means that as soon as turned off, the low battery alarm will sound. This is a safety function to ensure that the batteries are checked following any period of activation that may have had an effect on battery life.

The PLBs are designed for optimum performance on the emergency frequency of 121.5kHz and to be assisted by transmission of the signal through the body of the wearer, hence the detection range of the PLB will be less that that where the PLB is fitted to a human.

13 Pollution Control Equipment

Pollution control dispersant spraying equipment is only carried on vessels where there is a requirement under the relevant Oil Spill Contingency Plan.

Pollution spray equipment is to be tested with water only as soon as practicable following the vessel's arrival on location and prior to any advised well tests or hydrocarbon transfers to tankers.

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ERRV Masters shall never use oil dispersant for exercise or anti-pollution purposes unless expressly instructed to do so by the OIM.

Should oil dispersant be used for whatever reason, the amount used and the total remaining onboard shall be reported to the offshore Installation.

14 Equipment Defects/Personnel Injuries and Sickness

The Vessel Master shall report all personnel injuries, sickness and equipment defects to the OIM/Marine Controller immediately. The OIM/Marine Controller shall report all defects that may affect vessel performance to the logistics contractor.

Should the Master fail to report the above details, BP may instigate a formal investigation.

Serious personnel injuries shall be reported via the normal BP Medevac/Medrescue Procedures.

15 ERRV Changeouts

ERRV Masters shall keep the offshore Installation advised of an impending changeout. ERRV Owners/Operators shall keep the logistics provider and the Installation OIM advised of any impending relief schedules, timings etc.

The ERRV Master shall not hand over to the relief vessel until:

(1) The relief vessel is on location, able to take over standby duties and the Master has confirmed to the OIM/Marine Controller that all equipment is operational and crew are medically fit. Relief vessels to complete Entry into the 500m Zone Checklist.
(2) The relief vessel has been advised of all marine information appropriate to the offshore Installation, eg marine and aviation radio frequencies, position of mooring buoys, local marine and aviation traffic in or near the area.
(3) The relief vessel is to have a copy of the following documents:
• BP Marine Operations Manual (UKCS-MAL-001)
• Platform Emergency Response Plan
• Installation Navigation Aids Monthly Checklist
• Logistics provider reporting forms and documentation. In the event that the relief vessel does not have a copy, the relieved vessel will hand over their copy. When, due to weather or operating conditions this is not possible, the Installation will ensure that the relief vessel receives copies at the earliest opportunity
(4) The OIM/Marine Controller is satisfied with the relief vessel details and has given his permission.
As soon as the relief vessel has arrived on location, the offshore Installation shall require the ERRV to provide the information required in the ERRV Changeout form sent to BP and the logistics provider.

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16 ERRV – Personnel Recovery Equipment

Facilities and procedures for the safe operation of fast rescue craft, mechanical recovery equipment, rescue baskets, etc shall be available onboard and fully understood.

Suitable protective clothing and equipment shall be supplied to ERRV crews as required by ERRV Operational Guidelines issued through UKOOA.

Fast rescue craft main hoist wires shall be regularly inspected, and changed at least annually.

17 Offshore Installation Operations

The OIM shall ensure that the ERRV is kept informed about any operation which may affect its role.

Such operations may include:

- Flaring of gas or oil including cold flaring and gas venting
- Activation of overboard discharges or vents
- Planned movement of marine or helicopter traffic
- Planned diving or ROV operations

18 Anchoring

No vessels shall not anchor unless there is a vessel emergency.

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Appendix 9A

Response and Rescue
(Management of Shared Services)

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1 Introduction

The sharing of rescue, recovery and associated services between two or more offshore locations can result in several benefits for the Installations involved. These include:

• Cost-effective utilisation of resources
• Access to enhanced/additional support facilities

In implementing such shared services, however, consideration must be given to a number of factors, including:

• Legislative requirements for Dutyholders to ensure provision of good prospect of recovery
• Commitments made in the relevant Safety Case(s)

• Operational requirements existing at the location(s) involved
• Management procedures necessary to ensure compliance with all requirements

2 Purpose

The purpose of this (document/appendix) is to describe the various procedures which should be adopted to ensure that all matters associated with the introduction and implementation of shared rescue, recovery and associated services are adequately addressed.

Topics addressed include:

• Supporting documentation
• Change management
• Implementation of shared service
• Maintenance of shared service

Each topic is considered in greater detail below.

3 Supporting Documentation

3.1 Feasibility Study

Proposals for the sharing of rescue, recovery and associated services between two or more offshore Installations must be supported by a feasibility study demonstrating that after implementation legislative requirements and commitments made in the relevant Safety Case(s) continue to be complied with.

Such studies, which may be undertaken by a contractor working on behalf of the Company shall consider such factors as:

• Relative locations of the Installation(s) involved
• Typical and maximum complements of the Installation(s) involved
• Safety/survival equipment provided on or at the Installation(s) involved
• Operating conditions identified in the relevant Safety Case(s)

As discussed above the study shall take into account all appropriate operating conditions on the Installation(s) involved which have been identified in the relevant Safety Cases. In this context, this will include those conditions where the availability of rescue, recovery and associated services is considered to be a major factor.

Typically, three such conditions are normally identified, as follows:

• General operations, conducted wholly within the permanent structure of the Installation(s)
• Aircraft movements in support of activities on the Installation(s), conducted within the relevant safety zone(s)
• Particular operations, conducted outwith the permanent structure of the Installation(s)
The study shall consider the potential emergencies identified in the Safety Case(s) associated with each relevant operating condition.

Environmental factors have a major impact on the availability of rescue, recovery and associated services. Such factors are therefore closely linked to the various operating conditions described above, and are considered in parallel with them in the adverse weather policies developed for the Installation(s) involved. In assessing the feasibility of the proposed sharing of services, the study shall take any restrictions identified in such policies into account.

Where services are provided by standby vessels one of the principal factors to be considered is significant seastate. Whilst, to a degree, vessel design and experience of the crew should be taken into account in determining the impact on service availability, the following are generally being adopted as industry norms, and are included in many adverse weather policy statements:

• Low Seastate (HSig 0 to 3m)
- Service availability not affected by seastate
-Deployment of fast rescue craft, or similar, possible in all circumstances and will provide principal means of recovery
• Moderate Seastate (HSig 3 to 5m)
- Service availability degraded
-Deployment of fast rescue craft, or similar, only to be considered for circumstances involving genuine emergencies, but will continue to provide principal means of recovery
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• High Seastate (HSig 5 to 7.5m)
- Service availability significantly degraded
- Deployment of fast rescue craft or similar not possible without risk to crew
- Principal means of recovery will be mechanical arrangements
• Severe Seastate (HSig >7.5m)
- Normal service unavailable

- Vessels may be required to take actions to ensure own safety

Restricted visibility, for whatever reasons, will also have an adverse impact on service availability and will also be referred to in the adverse weather policies.

As noted above, the study shall take into account the safety and survival equipment (including relevant vessels) on or at the Installation(s) involved. Its scope should include a requirement to identify any additional arrangements which must be put in place to ensure that the relevant legislation and Safety Case commitments can be complied with. Examples of such arrangements may include:

• Requirements relating to design, manning and outfitting of the ERRV(s) supporting the shared service
• Requirements relating to the position of the vessel(s) during the operational conditions referred to above, and how this might be verified
• Requirements relating to any specialised and/or enhanced equipment which should be provided

3.2 Procedures for Managing Shared Service

In addition to the feasibility study referred to above, procedures describing how the shared service is to be managed must also be prepared.

Having regard to the advantages offered by sharing rescue, recovery and associated services a standard set of procedures must be prepared. These procedures are a supplementary part of this manual (UKCS-MAL-001) (available from Marine Logistics, Dyce), but are written in such a manner that they are self-sufficient, containing all relevant information and capable of being issued independently if appropriate.

A copy of the Shared Manegement Procedure should be placed on the Safety Management System.

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For clarity, and to minimise the work associated with introducing new sharing opportunities or amending those already in place, the procedures consist of three principal parts, as follows:

3.2.1 General Information and Procedures

This part describes the general procedures to be adopted in all circumstances where rescue, recovery and associated services are shared between two or more Installations.

1. Introduction
2. Purpose
2.1 Effective Utilisation of Services
2.2 Communications and Co-ordintion
3. Document Structure
3.1 General Information and Procedures
3.2 Appendices
4. Document Management
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5. Management
6. Normal Operations
6.1 Position of ERRV
6.2 Co-ordination of Activities
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6.4 On-scene Co-ordinator
7. Drills and Exercises
7.1 Requirements
8. References
9. Abbreviations and Definitions
9.1 Abbreviations
9.2 Definitions
3.2.2 Appendix A
This part contains general information relating to the performance of typical equipment likely to be employed in supporting the shared service.

Such information includes:

• Speed and time required to transit 1 mile for typical ERRV in a variety of seastates and relative directions
• Speed and time required to transit 1 mile for typical fast rescue craft in a variety of seastates and relative directions
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3.2.3 Appendices B1 to BX
A separate appendix is prepared containing the remaining specific information relating to each sharing scenario.

Thus, when a new scenario is introduced or existing arrangements require amendment,

only one appendix is involved.

The contents of each appendix are as follows:

1. Description of Locations Involved
1.1 Location A
1.2 Location B
2. Sharing Proposals
2.1 Feasibility
2.2 Principal Considerations
3. Definitions and Abbreviations
3.1 Abbreviations
3.2 Definitions
4. References
Sub-appendices contain such particulars as:

• Equipment (including vessels) employed to support services at the locations involved
• Location chart
• Matrices showing permitted and prohibited operations
• Contact details
In contrast to the control sheet for the main body of the document which is signed off by the custodians, each Appendix B will have its own control sheet, to be signed off by the personnel involved. Typically, this will include:

• The OIM(s) of the Installation(s) involved
• A representative of the Owners/managers of vessels involved
An example of a complete document, including a typical appendix is included in Reference (A). This should be referred to for full details.

These procedures shall form the basis of the change assessment described below, and shall normally be prepared before initiating this process. However, it must be recognised that as a result of this assessment further changes to the procedures may be necessary. These amendments, which will normally only involve the relevant appendix, must be incorporated before the final issue for use.

3.3 Workforce Briefing Pack
It is likely that the change management process described below will identify requirements relating to the briefing of personnel assigned to the offshore Installation(s) involved.

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In support of such briefings, arrangements should be made to prepare a pack containing the principal particulars of the proposed arrangements. Information required will include:

• Particulars of the location(s) involved in the sharing arrangements
• Relative positions of the Installation(s) involved
• Details of equipment (including vessels) employed to support the shared service
This should include particulars of any additional and/or special equipment mobilised to facilitate service sharing

• Details of the organisation managing the shared service
• Details of how the operational conditions identified in the Safety Case(s) will be supported by the shared service in various weather conditions
• Details of how conflicts in requirements for the service at the Installation(s) involved will be resolved
• Details of any consultation process, including arrangements for addressing any concerns raised by the workforce(s) involved
The pack(s) should be limited to about six to seven sheets, with proposals described in general details only. The briefing itself must include an invitation to discuss any aspect of the proposals in greater detail with the presenter.

Change Management

4.1 Initial Implementation
Proposals to introduce shared rescue, recovery and associated services shall be managed in a similar manner to other changes in operating procedures.

Processes for managing change are described in Reference (A) and shall be observed where appropriate.

The change assessment reviews must involve personnel actually assigned to the Installation(s) involved, since they will have the best understanding of operational details likely to be affected by the proposed changes.

Indeed, it is recommended that the reviews should be conducted onboard the actual Installation(s) involved since this will ensure participation by appropriate personnel. Onshore assistance to facilitate such offshore reviews can be provided if required.

The review(s) shall consider any changes likely to result from the implementation of the shared service. These may include such aspects as:

• Location of equipment, including any vessel(s) involved
• Planning of activities involving all the Installations supported by the shared service – this may include the re-scheduling of regular flights to some or all of the Installations involved
• Planning of activities involving only individual Installation(s)
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• Communications arrangements required to ensure that all parties are aware of each others' requirements
• Communications arrangements required to ensure that all parties are kept advised of any problems and/or conflicts in providing the level of support required
• Processes to be followed in resolving conflicts in the provision of support
• Requirements for briefings for personnel likely to be affected by the implementation of the shared service. This is likely to be principally the complements of the Installation(s) involved but the review should consider others who may also be affected
• Consultation processes to be observed. This shall include the means whereby comments received from personnel affected are recorded and addressed
• Additional verification trials required
• Requirements for additional temporary support, if any, during implementation of shared service
• Potential operations at any of the Installations involved in the shared service which may require mobilisation of additional temporary support
The change assessment review(s) shall be recorded in a formal manner.
All recommendations and/or requirements shall be clearly identified in this record.
As described above, the procedures for managing the shared service must be amended as necessary to incorporate relevant recommendations and/or requirements prior to final issue for use.

4.2 Amendments
This description above relates to the process to be adopted when planning for the initial introduction of shared services. However, it should be noted that where amendments to existing arrangements are being considered a similar process is likely to be involved.

Should this identify any changes which should be incorporated into the management procedures these must also be amended.

Implementation of Shared Service

5.1 Verification Trials
It is likely that the change assessment process described above will identify a requirement to conduct some additional verification trials.

In certain circumstances it may be necessary to conduct a full set of equipment trials but it is suggested that such requirements should be carefully reviewed.

Where adequate, recent information exists relating to the performance of existing equipment (including vessels), trials involving these aspects need not be repeated. In these circumstances the trials may be limited only to any additional activities the equipment is required to support.

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As an example, where standby vessels are the principal means of supporting the shared service and where:

• Adequate, verifiable information regarding the performance of the vessel(s) is available
• The relevant trials were conducted in the preceding 12 months in conditions similar to that likely to be experienced at the location(s) involved in the proposals
• There have been no significant changes in the personnel serving on the vessel(s)
It is likely that further trials involving these aspects will not be required. However, it is likely that trials will be required involving the following aspects of the support:

• Vessel transit times between the various locations supported, the trials being conducted in a variety of seastates
• Time required to locate potential survivors and commence recovery after arriving from another site at some distance from the location of the supposed incident
It may be necessary to conduct a series of trials, which will involve all personnel likely to be involved, before support provided by the shared service can be considered to have been satisfactorily verified. Where vessels are involved, this would normally involve both crews, in a variety of weather conditions.

It will, therefore, be appreciated that these trials may extend over a considerable period, and that interim arrangements may be necessary until the verification process has been completed.

5.2 Temporary Support Arrangements
In certain circumstances it may be necessary to mobilise additional temporary support arrangements in the early phases of the shared service.

Such arrangements may, for example, be necessary until any additional verification trials have been completed.

It is suggested that, where this is deemed necessary, the temporary nature of these arrangements should be emphasised. To promote confidence in the proposed shared service every effort should be made to utilise the eventual permanent arrangements, thus confirming the feasibility of the proposals. Such a policy will also help to resolve any problems which may arise in the communications between the various parties involved.

Maintenance of Service

6.1 Changes in Circumstances
In the event of significant changes occurring at any of the sites supported after the shared service has been fully implemented, a further change assessment shall be undertaken, as described in Reference (B).

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This may use as a starting point the original report, but all conclusions and/or recommendations therein must be carefully reviewed.

Dependent on the outcome of the assessment, a further feasibility study may be required and it is likely that amendments to the management procedures will be required.

6.2 Temporary Support Arrangements
The change assessment process described above may identify certain circumstances under which it will be necessary to mobilise additional temporary support arrangements.

Such circumstances may include extended periods of overside work or other projects requiring unusually high levels of support at any of the sites involved. Operations involving an unusually high number of aircraft movements over an extended period would also be included in this category.

Where such additional support is deemed necessary, its temporary nature must be

emphasised, and the equipment de-mobilised as soon as possible after the particular operations giving rise to this requirement have been completed.

Summary

Where circumstances permit the introduction of shared rescue, recovery and associated support represents a more effective use of resources whilst at the same time complying with legislative requirements and commitments made in the relevant Safety Case(s).

This appendix has summarised the procedure which should be adopted in introducing and maintaining such a service.

Experience has shown that in this, as in many other complex operations, good communications between the parties involved is vital, and that early efforts to promote this will pay dividends throughout the lifetime of the project.

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Appendix 9B

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1 Introduction

Current legislation requires dutyholders to establish rescue and recovery Performance Standards, thus demonstrating that personnel employed on an offshore Installation have a ‘good prospect of recovery’ to a place of safety in the event of an incident.

Where circumstances permit, Installations situated in the same general area will often share rescue and recovery facilities to make the best use of available equipment. Sharing may take place across activities on behalf of one Operator, or may be extended to include one or more third parties.

The legislation referred to above relates to all offshore Installations but, since it is not of a prescriptive nature, differences in interpretation by different dutyholders have emerged, with the result that what is considered to be a good prospect of recovery may differ from case to case. As a result, Performance Standards may also differ between Installations, including those in close proximity to each other. This possibility must be considered when sharing of rescue and recovery services are under consideration.

2 Purpose

This appendix has been prepared to provide guidance for the management of shared rescue, recovery and associated services throughout BP’s operations in the UKCS area. Management of such services involving one or more third parties is also considered.

In all cases where sharing of rescue, recovery and associated services is being

considered, a formal assessment of the practicality of complying with the relevant Performance Standards must be undertaken before the shared service is implemented.

Procedures describing how the shared services will be managed to ensure that all relevant Performance Standards will be complied with must also be prepared; that is the function of this appendix.

This appendix is therefore intended to serve the purposes described below.

2.1 Effective Utilisation of Services
Procedures are described which ensure that all parties involved in sharing rescue and recovery services are familiar with the procedures in place to ensure effective utilisation of the vessel(s) involved, without compromising the ability to comply with the relevant Performance Standard(s).

2.2 Communications and Co-ordination
Communications and contacts involved in the co-ordination of the shared rescue and recovery support service are described.

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3 Scope

This document describes the management of rescue, recovery and associated services shared between several offshore Installations operated by or on behalf of the Company. Where relevant, services involving third parties are included.

4 Document Structure

To facilitate ease of use and future revisions, the appendix is structured as follows:

4.1 General Information and Procedures
This first part contains general information relevant to all sharing scenarios.

4.2 Appendices
The appendices contain specific information relating to performance of equipment and the various sharing scenarios considered.

For ease of reference, the appendices describing the various scenarios have a common

structure and include:

(1) Approval/control record for that appendix.
(2) General information relating to location(s) involved.
(3) Particulars of equipment (including vessel(s)) to be employed in supporting operations.
(4) Particulars of third-party involvement.
(5) Particulars of any other special support required at the location(s) supported.
(6) Summary matrices of permitted/prohibited operations in various conditions.
(7) Contact information for location(s) involved.
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5 Document Management

5.1 Control
This document has been prepared by BP and is issued and controlled in accordance with the Company's document control procedures.

5.2 Custodian
Whilst prepared for independent use, this appendix is included as a supplement to the Marine Operations Manual (UKCS-MAL-001) Section 9. As such, it is therefore included in BP's upstream Safety Management System.

BP's Logistics Group is the Technical Authority for documents relating to marine matters included in this system and will, if appropriate, nominate a custodian.

6 Support Roles of Emergency Response and Rescue Vessels

6.1 Principal Role
The primary function of the vessel is to facilitate the recovery and continued wellbeing of personnel who may have to escape to the sea from the Installation(s) for which support is being provided.

6.2 Supplementary Roles
6.2.1 Traffic Monitoring and Collision Risk Management
A secondary role to the ERRV is to monitor the movements of marine traffic in the vicinity of the Installation(s) supported.

Where approaching traffic is likely to pass within close proximity of any supported Installation, timely initial warning of this fact must be given to the Installation. Thereafter, the Installation must be kept frequently appraised of the situation as it develops, until such times as the vessel involved has cleared the vicinity.

The vessel should also take whatever measures as may be safe and appropriate to draw the attention of the approaching traffic to the potential threat to the Installation(s).

General instructions relating to detection and notification of perceived threat to the Installation(s) supported are included in Paragraph 11 References 1 and 2. Further details of particular requirements which may exist at certain sites are referred to in the relevant appendix.

Subject to obtaining approval from the relevant OIMs and when safe to do so,

assistance may be offered to other vessels, which through being disabled or for any other reason may pose a threat to the Installation(s) supported.

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7 Service Management Principles

Where more than one Installation is involved, the roles referred to above must not be compromised for any of the sites supported.

It is therefore essential that the vessel can always be relocated in sufficient time to attend an incident at any one of the supported locations, responding in compliance with the Performance Standards relating to the operations in progress at the time.

Effective communications between the ERRV and the respective Installation’s OIMs (or deputies) are essential to ensure that the vessel is not required to carry out any activity that would result in response capabilities being compromised.

It is therefore essential that all operations are carefully planned, with adequate discussions between the various parties involved.

8 Operational Planning

8.1 Medium-term Planning

Twice per week, at intervals of 3 or 4 days, all Installations supported by the shared service shall prepare a schedule of anticipated activities for the next 7 days.

These schedules shall be exchanged between the Installations involved and the information relayed to the vessel by the most appropriate means.

The Worksite Co-ordinators on each Installation will review these schedules to identify any proposed combinations of activities for which support could not be provided.

Where such conflicts are identified, the Worksite Co-ordinators shall make every effort to resolve the matter by rescheduling activities on one or more of the Installations supported. If necessary, the respective OIMs will be asked to assist. Commercial aspects of each Installation's operations and overall field activities shall be taken into account when considering this matter.

Where operational clashes remain, it may be necessary to mobilise additional resources. Any such potential requirements should be notified to the relevant Onshore Logistics Team(s) at the earliest opportunity, to ensure that the necessary resources can be mobilised in a timely manner.

Responsibility for the mobilisation of additional resources shall be agreed between the various parties whose operations are supported by the shared service, but is not considered further in this document.

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8.2 Daily Co-ordination of Activities
The ERRV Master shall discuss anticipated activities and/or requirements for the following day with the relevant OIMs (or their nominated deputies) before 2000hrs the previous evening.

Particular emphasis shall be given to activities at any site requiring 'close support', since this may restrict the level of support which can be provided at other sites sharing the service.

Anticipated aircraft movements on the following day shall also be a specific topic for discussion.

Operational support requirements and any other relevant factors, including predicted

weather conditions, shall be assessed to decide where the vessel can best be located to support anticipated operations.

In particular, the Master shall seek to identify any potential conflicts in operational support requirements due to particular combinations of activities planned on the Installation(s) attended.

Every effort shall be made by the parties involved to resolve such conflicts in the field. The principal OIM shall act as arbitrator in circumstances where simultaneous service requirements cannot be resolved by the sites involved.

Upon a satisfactory work programme being agreed for all sites, the Master shall advise the relevant Installations of the vessel's intended location(s) for the next day.

The anticipated locations(s) of the ERRV shall be confirmed early in the morning of the following day.

Operation of Shared Service

9.1 Position of the ERRV
In all circumstances and at all times, the Master shall ensure that the vessel is located such that effective cover is provided for all supported Installations, having regard to the operations in progress at the time.

At all times, including those periods when the vessel is in the 'normal patrol zone', the factors to be taken into account shall include:

(1) Prevailing and forecast weather conditions.
(2) Transit speed of ERRV and auxiliary craft in present and forecast conditions.
(3) Anticipated operations/activities.
(4) Previous experience, particularly that drawn from earlier exercises and training.
As described above, at the start of each day the ERRV shall advise all Installations supported of her intended location(s) for that day. Any subsequent, significant changes in this programme required in the course of operations shall be promulgated to the sites supported as quickly as practicable.

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Any changes in operations/schedules on the Installation(s) supported shall be advised to

the ERRV Master as soon as possible in order that the vessel's position may be reassessed.

9.2 Overside Work Support

Where the vessel is required to provide 'close support' for operations involving an increased risk of personnel entering the sea, it is essential that activities are planned such that:

(1) They are performed in a safe and controlled manner.
(2) Predicted weather conditions throughout the anticipated duration of the operations are suitable.
(3) The ability of the ERRV to respond to an incident or provide adequate traffic surveillance at any other Installation(s) supported is not compromised.
(4) Response requirements for all supported sites can be complied with at all times.

Operations requiring this support shall not begin until the vessel is in the appropriate position, with FRC at immediate readiness.

9.3 Simultaneous Operations

In the event that support for specific operations occurring simultaneously, or nearly so, at several sites is required, the vessel shall be located in such positions that Watchkeepers have a clear and unobstructed view of the relevant worksites and/or helideck(s). Such operations are likely to include:

(1) Overside work support at more than one site.
(2) Aircraft movements occurring whilst overside work is supported.
(3) Simultaneous aircraft movements at two or more supported Installations.

When providing such support, the ERRV Master shall assess whether additional personnel should be appointed to monitor operations. This requirement shall also be taken into account when assessing whether all Installations can continue to be supported in the prevailing and/or forecast environmental conditions.

This requirement shall also be considered when planning operations on the various sites supported.

9.4 Adverse Weather

Timely notification of the likelihood that support services will not be available or may be withdrawn is essential.

In such circumstances, the procedures described below shall therefore be adopted.

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9.4.1 Emergency Response and Rescue Vessel
At the commencement of each day (approximately 0630hrs), the Master of the ERRV shall review anticipated operations as advised the previous day, the latest weather forecast and any other relevant factors.

The Master shall decide whether the necessary services can be provided at all supported sites in the course of the day. He shall advise the relevant Installation(s) of the outcome of this review at the earliest opportunity.

Furthermore, if in the course of the day circumstances should change such that the possibility exists that operations cannot be supported, the relevant Installation(s) should be contacted without delay and advised accordingly.

9.4.2 Supported Installation(s)
When forecast and/or actual conditions give rise to concern, the Master of the ERRV shall be contacted prior to the commitment to commence a particular operation which may require special support, to confirm whether the necessary facilities are likely to be available.

As an example, in such conditions it would be prudent to contact the ERRV prior to the departure of a helicopter from shore to verify that the facilities necessary to support aircraft operations are likely to be available upon arrival of the aircraft in the field.

9.5 On-scene Co-ordinator
In the event of an incident, the ERRV Master may be required to act as On-scene Co-ordinator as described in Paragraph 11 Reference 3.

10 Drills and Exercises

10.1 Requirements
Requirements for exercises are described in Paragraph 11 Reference 4.

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11 References

Reference may be made in this document to other relevant sources of information, including:

(1) Emergency Response and Rescue Vessel Management Guidelines for Offshore Installations, UKOOA.
(2) Marine Operations Manual (UKCS-MAL-001).
(3) Installation Data Cards, Installation Owner(s).
(4) Approved Emergency Response Standards for Standby Vessel Crews, OPITO/Cogent.
The above documents may refer in turn to other sources that should be consulted as necessary.

12 Definitions

Certain terminology may be used in this document. These are defined below.

Term	Definition
Close Support	Rescue and recovery support that requires the vessel to remain in close proximity to the relevant Installation, with personnel and/or equipment on standby in a state of immediate readiness.
Dutyholder	Fixed Installations – Operator. Mobile Installations – Owner.
Good Prospect of Recovery	Arrangements intended to give a good probability – in all but the most severe storm conditions and seastates – of rescuing, recovering and taking to a ‘place of safety’ persons having to evacuate or escape from an Installation, who fall overboard or are involved in a helicopter ditching. Refer to Paragraph 11 Reference 1.
Master	As defined in Section 1 of this document.

Term	Definition
Normal Patrol Zone	Area in which a vessel providing rescue, recovery and associated

support for two or more offshore Installations may be located when not engaged in ‘close support’ at any site.
For each sharing scenario, the relevant ‘normal patrol zone’ will be defined therein.
OIM As defined in Section 1 of this document.
Place of Safety An onshore or offshore safe location/vessel where medical treatment and other facilities for the care of survivors is available.
Principal OIM The OIM appointed to the principal BP Installation involved in any ERRV sharing scenario.
(Analogous to the ‘Multi-installation OIM’ described in Section 1 of this document.
For each sharing scenario described in the appendices to this document the Principal OIM will be nominated therein.
RESCo The functional position having responsibility on behalf of their respective OIMs for co-ordination of rescue, recovery and associated support for all offshore Installations located within a defined area.
Persons having this functional responsibility may be located remotely from the Installation(s) involved, and may have other duties not relevant to operations described in this document.
Third Party Any commercial entity, including Operators of other offshore Installations and/or the owners or managers of MODUs, whose actions may affect the safety of our personnel.
Worksite
Co-ordinator
The functional position having responsibility for co-ordinating activities that may require particular rescue, recovery and associated support facilities at each offshore site.
The WSCo function may be performed by personnel having other duties not relevant to operations described in this appendix.
(As examples, on fixed Installations this function may be undertaken by the OOE. On MODUs, the Company Representative or OWE may fulfil this role.)

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Section 10

Semisubmersible Drilling,

Accommodation and Production Units

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1 Application

This section contains guidelines which shall be followed by drilling/accommodation units on charter to, or on behalf of, BP.

2 Anchoring Procedures

Refer to Section 3.

3 Access Bridge Operations (Accommodation Units Only)

Refer to Section 5.

4 Move to Stand-off Position

Refer to Section 5.

5 Stability

all semisubmersible

All stability calculations must be completed by a competent and responsible person.

Stability calculations that establish the deck loading, vertical centre of gravity and the metacentric height shall be completed every 24 hours. Records of such calculations shall be signed by the responsible person and retained onboard, in chronological order, for a period of at least 3 months.

Manual stability calculations shall be completed on a regular basis. The manual calculation shall be compared to the daily report to check the accuracy of electronic calculations. The manual calculation shall include the manual dipping of all ballast, consumable fuel and drilling fluid tanks and all void spaces. Where practical the column drafts shall also be read manually to confirm the instrument readings on a daily basis and after any significant change in ballast or loading condition.

Whenever there is a scale difference between the calculated and draught displacement, a manual stability calculation shall be completed. As a temporary solution:

• Where the calculated displacement exceeds the draught displacement, the difference shall be subtracted from the calculations at the ’ballast’ Vertical Centre of Gravity (VCG)
• Where the calculated displacement is less than the draft displacement, the difference shall be added to the calculations at the ‘deck level’ VCG
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All stability calculations shall plan for the worst possible case and the ability of the unit to reach survival draught in 3 hours.

Changes to the lightship displacement (weight additions, subtractions or movements) shall be fully recorded. Such records shall be retained onboard.

6 Ballast Control

All ballasting or de-ballasting operations shall be carried out by a responsible, competent and fully trained operator.

All ballast operators shall have successfully completed an approved and recognised Ballast Simulator Course.

The ballast control room shall be permanently manned by a ballast operator. When moored alongside an offshore Installation, the Offshore Installation Manager (OIM) or senior marine responsible person shall be readily available when required.

Requirements for bridge manning when manoeuvring alongside an offshore Installation are detailed in Section 2.

7 Ballast Systems

The ballasting/de-ballasting sequence shall be followed as per the barge Operations Manual/barge Marine Operations Manual. Ballast control procedures shall ensure that the ballast system is operated in such a manner that a control function failure of the valves or pumps cannot result in the unit becoming unstable. They shall be clearly written, in the common language used onboard and in English, and understood by all ballast operators.

8 Emergency Ballast Drills

Emergency ballast drills shall be held once a month. These drills shall ensure that all key peronnel are familiar with, and exercised on, the proper function of the controls and equipment operated from the emergency ballast control position. In addition, the exercise shall ensure that all the control (local and remote) and pumping systems are function-tested and fully operational.

9 Mooring Tensions

The mooring tension gauges shall have remote readouts in the ballast control room, or any other control room that is a manned and functioning information and control area.

Mooring tensions shall be recorded every 2 hours, more frequently in storms/high seas.

During major ballast changes, and in adverse weather conditions, the mooring tensions shall be continuously monitored and recorded at the winch cabs, or automatically recorded at the control room.

The aforementioned mooring tension records shall be maintained for a period of at least 3 months.

10 Emergency Response and Rescue Vessels

Attendant Emergency Response and Rescue Vessels (ERRVs) shall be, weather permitting, exercised in man overboard drill at least once per week.

Attendant ERRVs shall be instructed to check the location of any mooring buoys at dawn and dusk. A record of this check shall be made in the Installation official logbook.

Refer to Section 9 for further information.

11 Terms of Reference – BP Marine Representative

11.1 Drilling Units

The marine procedures for the workscope and the terms of reference for the BP Marine Representative shall be discussed and agreed with the Business Unit (BU) and rig Owners/Operators during pre-rig move meetings.

The Marine Department shall fully brief the BP Marine Representative about the workscope and his responsibilities.

11.2 Accommodation and Construction Units

11.2.1 BP Marine Representative

The BP Marine Representative has a particular responsibility to safeguard the commercial interests of BP. In addition, the Marine Representative must safeguard the integrity of the unit, wherever that integrity may impinge upon the commercial interests of BP.

The word ‘responsibility’ when referring to the BP Marine Representative shall only relate to the giving of advice or by exercising his right to veto the commencement of an operation. It shall not normally be construed to mean that the Marine Representative has any direct control of the unit or its personnel, unless the specific activity has procedures which have been formally agreed by BP and the unit Owner.

The BP Marine Representative is responsible for ensuring that the agreed mooring, unmooring and towing procedures are complied with.

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Where there is a requirement to deviate from an agreed procedure due to operational necessity or plant failure, a management of change/risk assessment/hazard analysis shall be completed during which the BP Marine Representative shall confer with the Barge Master and all interested parties and agree to a revised procedure that is an alternate safe system of work. This revised procedure shall satisfactorily safeguard the exposure to risk identified in the original procedure and, in addition, shall be closely managed.

Whilst the unit is located within a controlled area, or is in the vicinity of a BP pipeline, the BP Marine Representative shall have the authority to veto:

• The movement of the unit and the anchor handling vessels
• The placement of anchors

Prior to the commencement of an operation, the BP Marine Representative shall communicate with the contracted forecasting centre to obtain an information update. If the operation is particularly weather sensitive, or the weather condition is marginal or liable to change, the BP Marine Representative shall advise the weather centre of:

(1) The type of operation (including contingency plans).
(2) The unacceptable weather parameters.
(3) The timeframe required for the operation.

The forecaster shall be instructed to contact the unit whenever adverse weather conditions are likely to be experienced at the location, or when a change in the forecast is likely to affect the operation.

The BP Marine Representative shall continue to liaise with the forecasting centre until the safe completion of the operation.

The BP Marine Representative shall ensure that all the weather forecast information is fully discussed with the Barge Master.

11.2.2 Barge Master/Senior Marine Person

The Barge Master is directly responsible for the marine aspects of the safety of that unit and the personnel and, where applicable, is responsible to the OIM. The Barge Master

shall have the right to veto any advice, recommendation or instruction, as appropriate, given by the BP Marine Representative that the Barge Master considers might endanger the safety of the unit or the safety of the personnel onboard.

During all anchor handling and towing operations, the Barge Master shall be responsible for ensuring that the mooring, unmooring and towing operation is carried out in accordance with the agreed procedures and in a safe and expeditious manner.

In compliance with the above the Barge Master shall ensure that:

• The prevailing and forecasted weather conditions are suitable for the commencement of the operation
• There are sufficient competent personnel to undertake the planned operations, such as winch operation, in a safe manner
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• A ‘passage plan’ has been established for the proposed sea passage. Such a plan shall take into account the forecasted weather conditions, any limitation or constraint such as draught, surface or subsurface obstructions and contingency plans such as the requirement to increase draught or seek shelter whilst on passage
• A continuous navigation watch is maintained, and that the unit is navigated in a safe and proficient manner
• The unit is fitted with operational navigation equipment appropriate to its certificate of class. Furthermore, the Barge Master shall also ensure that the equipment is of a type that is capable of ascertaining an accurate position throughout the passage
• The unit is supplied with suitable and up-to-date navigation charts
• The unit has sufficient stability at all stages of the operation, bearing in mind the requirement to ballast/deballast at criteria established in the unit’s operations manual
• The unit is towed at a safe speed and that the integrity of the tow line(s) is not put at unnecessary risk
12 Tow Vessel Master

Where more than one vessel is used in a towing operation, the BP Marine Representative and Barge Master shall agree to appoint a lead tow vessel.

In addition to its normal marine duties, the lead tow vessel may be responsible for:

• Co-ordinating alteration of course movements

• Maintaining a regular and accurate position of the tow
• Promulgating on VHF, the tow position and other pertinent information
• Liaising with the BP Marine Representative or Barge Master on weather conditions to ensure that the proposed route is still viable for the period of the weather forecast
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Section 11

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1 Application

This section contains guidelines which shall relate to all vessels and barges engaged in laying, trenching or recovering subsea pipelines, flowlines or umbilicals.

2 Legislation

Vessels engaged in connected activities or pipeline works are required to comply with The Health and Safety at Work etc Act 1974. SI 1995/No 263 Health and Safety at Work Act 1974 (Application outside Great Britain) Order 1995 extended the 1974 Act to offshore (refer to Section 1 Paragraph 3).

3 Anchor Mooring Operations

3.1 General

The placement and recovery of anchors shall be carried out in compliance with Section 3.

Because pipelaying and trenching activity is a weather sensitive operation, the mooring system is usually lightweight and designed for rapid deployment and recovery and, as such, may not be designed to hold the unit on location in severe gale/storm conditions.

Where the workscope is programmed to be conducted within 500m of an offshore Installation or where the workscope location may expose BP equipment to risk, a mooring analysis will be required to determine, or where already determined to substantiate, the operating weather parameters for the workscope (refer to Paragraph 3.2).

Note: The mooring analysis shall be conducted to determine the maximum safe weather parameters and not to determine if the mooring system can withstand the environmental forces as described in Section 3.

3.2 Environmental Limitations

The contractor shall be responsible for determining weather parameters that may be used as a guideline for:

- The suspension of operations
- The lifting of anchors

These parameters shall be discussed and agreed by: the contractor; BP Marine Logistics; the project management and, where necessary, endorsed by the Field Group Manager.

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3.3 Suspension of Operations
In deciding when to suspend operations, the following constraints shall be considered:

• The actual and anticipated environmental response of the unit and the subsequent risk to the integrity of the pipeline
• The forecasted weather conditions. Full consideration shall be given to the time taken to suspend operations and lift anchors prior to the onset of unsuitable weather
3.4 Lifting Anchors
In deciding when to lift anchors, the following constraints shall be considered:

• The forecasted weather conditions
• Whether the mooring system has been ‘insurance tested’
• The exposure to risk that the unit poses to offshore Installations and subsea Installations in the vicinity
• The opportunity to recover all moorings, be ‘on tow’ and clear of any obstructions, within the weather forecast timeframe. (The type of mooring system, the number of anchors deployed and the number of anchor handlers available)
4 Anchor Handling Vessels

Where the pipelaying/trenching barge requires to be moored, a minimum of two suitable anchor handling vessels shall be provided to assist, and a survey package incorporating a tug management system will be required when working in the vicinity of other subsea Installations, including pipelines.

These vessels shall be capable of working within the parameters agreed in Paragraph 3.2.

5 Dynamic Positioning (DP) Operations

5.1 Application
DP operations shall be carried out in compliance with Section 6.

6 The Role of the BP Marine Representative

The general terms of reference for a BP Marine Representative on a pipelaying or trenching vessel/barge are detailed below. More specific terms of reference shall be established once the workscope procedures have been finalised.

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Pre-mobilisation risk and hazard assessments will identify any requirements for a BP Marine Representative to be onboard the vessel while it is operating in a controlled area, in the vicinity of a BP pipeline, umbilical or flowline, or at any other time where marine advice is required.

The BP Representative has a particular responsibility to safeguard the commercial interests of BP. Additionally, the BP Marine Representative must safeguard the integrity of the unit, whenever the integrity of that unit may impinge upon the commercial interests of BP.

The word ‘responsibility’ when referring to the BP Marine Representative shall only relate to the giving of advice or by exercising his right to veto the commencement or cessation of an operation where the overall commercial interests of BP could be put at risk. It shall not normally be construed to mean that he has any direct control of the unit or its personnel, unless the workscope requires different ‘terms of reference’ which have been formally agreed by BP and the unit owner.

Prior to the commencement of an operation the BP Marine Representative shall communicate with the contracted forecasting centre to obtain an information update.

The BP Marine Representative shall continue to liaise with the forecasting centre until the safe completion of the operation.

The BP Marine Representative is responsible for ensuring that the agreed mooring, unmooring, towing and DP procedures are complied with.

When the anchor handling and tow vessels are chartered by, or on behalf of, BP the BP Marine Representative has the authority to control the movement and actions of these vessels. Routinely, however, the Pipelaying/Trenching Vessel/Barge Master/Offshore Installation Manager (OIM) would normally be expected to direct the vessel activity and the BP Marine Representative would retain his right of veto as mentioned above.

Where there is a requirement to deviate from an agreed procedure due to operational necessity or plant failure, the BP Marine Representative shall confer with the Vessel/Barge Master and other interested parties offshore and onshore and agree to a revised procedure that is an alternate safe system of work. This revised procedure shall satisfactorily safeguard the exposure to risk identified in the original procedure.

Whilst the unit is located within a controlled area or is in the vicinity of a BP pipeline, umbilical or flowline, the BP Marine Representative shall have the authority to veto:

• The movement of the unit and the anchor handling vessels
• The placement of anchors
Note: In some instances the Marine Controller for the controlled area will be required to approve the positioning of any anchors on the seabed.

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7 Local Fishing Grounds

Project management shall obtain advice from the BP Fishing Liaison Officer to determine whether the intended workscope adversely affects any local fishing agreements or substantially disrupts the activity of local fishing grounds.

At the risk assessment consideration should be given to having a Fisheries Liaison Representative onboard the pipelay vessel.

The BP Marine Representative shall always ensure that:

• Fishing vessels are kept advised of planned movements
• Agreed working procedures are complied with at all times
8 Inshore Works

The procedures drawn up for inshore works shall consider the accuracy of charted water depths. The expected draught of the vessel/barge and the availability of shallow-draught anchor handling vessels, shall always be taken into consideration when calculating the length of ‘beach/shore pull-wire’ that is required. An additional length shall be allowed to give a safe margin. If using DP vessels, contractors should be reminded of the effect of shallow water and amplitude wave effect.

9 Contingency Procedures

Contingency procedures shall be issued by the contractor. They shall be detailed ‘step-by-step’ procedures for the suspension of operations due to bad weather, mechanical equipment failure or system emergency.

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Section 12

Semisubmersible Crane Vessels

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1 Application

This section contains guidelines and instructions which shall relate to all Semisubmersible Crane Vessels (SSCVs) engaged in heavy lift operations.

Hazard risk assessment to be completed, together with project-specific procedures, prior to offshore operations. All interface documents to be developed to link the Safety Management Systems (SMSs) of the crane vessel and the Installation in order to ensure a safe operation.

2 Anchor Mooring Operations

2.1 General
The placement and recovery of anchors shall be carried out in compliance with Section 3.

As heavy lift crane operations are weather sensitive, the mooring system is usually lightweight and designed for rapid deployment and recovery. As such, it may not be designed to hold the unit in position in severe gale/storm conditions.

Where the workscope is programmed to be conducted within 500m of an offshore Installation, or where the workscope location may expose BP equipment to risk, a mooring analysis will be required to determine, or where already determined then to substantiate, the operating parameters for the workscope (refer to Paragraph 2.2).

Note: The mooring analysis shall be conducted to determine the maximum safe weather parameters and not to determine if the mooring system can withstand the environmental forces as described in Section 3.

2.2 Environmental Limitations
The contractor shall be responsible for determining weather parameters that may be used as guidelines for:

• The commencement of anchor laying operations
• The move to a stand-off position (where applicable)
• The lifting of anchors before the onset of bad weather
These parameters shall be discussed and agreed by the contractor, BP Marine Logistics, the project management and, where necessary, endorsed by the Field Group Manager.

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3 Anchor Handling Vessels

Where the SSCV is required to be moored, a minimum of two suitable anchor handling vessels shall be provided to assist, and a survey package incorporating a tug management system will be required when working in the vicinity of other subsea Installations, including pipelines. At times when the weather forecast is

unfavourable, both anchor handlers are to remain on location and be available for anchor handling operations.

Vessels shall be capable of working within the parameters agreed in Paragraph 2.2.

4 Dynamic Positioning Operations

SSCVs operating on dynamic positioning shall comply with the instructions and guidelines contained in Section 6.

5 Fendering

Adequate and suitable fendering shall be provided to moor the loadout barge alongside the SSCV.

6 Drawings

Detailed procedures and scale drawings shall be provided for each workscope. They shall demonstrate that there is an adequate obstruction-free lifting area and that the operation can be completed in a safe manner.

7 BP Marine Representative

The BP Marine Representative is BP’s sole authority on the unit with respect to marine operations. He will receive the full support of other BP personnel in pursuit of a safe and economic operation.

As such, the BP Marine Representative has the authority and responsibility to terminate, suspend or veto the commencement of any marine operation that he considers may be contrary to the pursuit of a safe and economic operation.

In pursuit of this he will carry out the following duties:

• Ensure a pre-move meeting is held onboard the unit and each anchor handling vessel
• Liaise and consult with the unit OIM/Towing Master
• Ensure that all marine operations are performed in a safe and effective manner

• Ensure that all reasonable precautions are taken to ensure the integrity of all assets in the vicinity of operations are not compromised or exposed to undue risk associated with the move
• Ensure that the OIM/Towing Master has imparted a clear understanding to all personnel as to the proposed operations, duties and responsibilities
• Ensure that 'toolbox' talks are held both onboard the rig and anchor handling vessels at appropriate stages throughout the operation to ensure that all personnel have a clear understanding of the activities to be undertaken at that stage, their own role and the risks and actions to mitigate them. The times of such talks should be recorded in both the operational log and vessel log
• Ensure that the passage plan selected is suitable after taking into account the draft of the unit and limited manoeuvrability of the tow
• Ensure that clear communications are established and maintained between the principal personnel participating in the operations
• Ensure that all marine incidents are reported to the BP Marine Logistics Department, Dyce without delay. Such reports shall initially be of a verbal nature made as soon as is practically possible after the occurrence of the incident. Thereafter, a written report shall be compiled and forwarded at the earliest opportunity in line with Section 2 of this Marine Operations Manual (UKCS-MAL-001)
• Maintain an accurate and complete operational log
• Ensure that where deviations from these procedures are considered necessary, a risk assessment is carried out prior to implementation. All details of the deviation shall be recorded in the operational log
• Ensure that Masters of anchor handling vessels are aware of their vessel's position in relation to subsea equipment and pipelines if applicable and that they maintain a suitable catenary for clearance when connected to the main tow bridle or whilst recovering or deploying anchors
• Ensure that Masters of towing vessels are aware of the tidal flow around the unit. Confirmation should be received that Masters have fully assessed the environmental conditions and their effect on the manoeuvrability of their vessels before approaching the unit to carry out any operation
• Ensure that manifests and equipment are checked upon arrival offshore. Defects or shortfalls shall be noted and reported to BP Marine Logistics Department, Dyce without delay
• Ensure an accurate record is maintained of all equipment used, damaged or lost
• Ensure that all equipment returned upon the completion of operations is properly and accurately manifested. Manifest copies shall be returned with the operational report
Note: BP Assets include not just physical assets but are also deemed to include BP's reputation. When considering the advisability of any course of action or decision, due consideration must be given to the consequences of that action or decision on BP's reputation.

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No marine operation will commence without the agreement and consent of the unit OIM/Towing Master, BP Marine Representative, BP Drilling Representative and BP Survey Representative. Each of these persons has the power of veto over the commencement of any marine operation or action, which he considers unsafe.

Rig OIM/Towing Master

The person in overall charge is the rig OIM, as documented onboard the unit.

He will retain his overall authority during the period of a location move and will decide when it is safe and practicable to commence rig-move operations within the normal limitations of the unit's Operations Manual. Prior to the move commencing, he shall ensure that the requirements of HSE Operations Notices 3 (Liaison with Other Bodies) and 6 (Reporting of Offshore Installation Movements) have been complied with.

The rig OIM/Towing Master:

• Has responsibility for the health, safety and welfare of all persons onboard
• Shall ensure that the preparation of the unit and all associated equipment, including any cargo stowed onboard is completed in a suitable manner
• Shall ensure that personnel are fit and competent to perform their allocated tasks, in particular the operation of winches and connection/disconnection of Anchor Handling Vessels (AHVs)
• Shall ensure that all personnel involved in the operation are aware of their duties, responsibilities and potential hazards associated with the operations
• Arrange to hold a pre-move meeting prior to commencing operations. All responsible persons involved in the rig move operations are to attend and their responsibilities are to be clearly defined
• Shall ensure clear communications are established between the principal participating parties
• Shall ensure all infield vessels are kept informed of operations
• Will confirm that all actions have been taken to prepare the unit for passage
• Will decide, in consultation with the BP Marine Representative, when it is safe and practicable to carry out unmooring operations and the rig tow within the limitations as stated in the unit's Operations Manual
• Give instructions to the assisting vessels directly or delegate to a competent person
• Shall ensure that a passage plan is in place prior to commencement of operations

• Shall ensure that all relevant parties are kept informed of the rig move status
• Shall ensure an accurate and complete operational log is maintained
• Shall liaise and confirm with the BP Marine Representative on all matters connected with the operations associated with the move
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• Shall ensure that where deviations from these procedures are considered necessary, a risk assessment is carried out prior to implementation. All details of the deviation shall be recorded in the operational log and carried out only when all parties are in agreement, as outlined in the BP Golden Rules Management of Change
• Shall ensure that move equipment is checked upon arrival offshore. Defects or shortfalls shall be noted and reported without delay
• Shall ensure an accurate record is maintained of all equipment used, damaged or lost
• Confirm that stability calculations have been conducted and are satisfactory for all stages of the operation
• The OIM shall also ensure that during the move all relevant guidance shall be observed which is applicable to the safe conduct of the operation. This will include but is not limited to the following:
- Rig/field SMS interface document
- Rig Safety Case
- Owner Marine Operations Manual
- Working Time Regulations, HSE Operations Notice 65
- BP Marine Operations Manual (UKCS-MAL-001)
-Hours of Work, Safe Manning and Watchkeeping, Merchant Shipping Notice M1767
- Safe Management and Operation of Offshore Support Vessels, UKOOA
Anchor Handling Vessel/Towing Vessel Master

Masters are ultimately responsible for the safety of their vessel, crew and tow where applicable.

Further, they are responsible for ensuring that all anchor handling and towing operations are conducted in a safe manner with due regard to safe working practices and the practices of good seamanship. In this respect they will hold toolbox talks or pre-job safety meetings with their crews prior to the commencement of any operations. These toolbox talks or pre-job safety meetings should address the specifics of the operation and should also include reminders to the crews of the safe practices to be followed when on deck and in particular when working with ropes, wires, shackles and other

equipment associated with the move and the general conduct of personnel during towing operations.

Particular attention should be paid to the use of gob wires and the exposure to the crew whilst fitting such wire. Should a gob wire or other stop wire be used for any reason then a requirement exists to confirm this to the BP Marine Representative prior to fitting. Confirmation must also be received that a review of the operation with the crew has taken place and that the completed risk assessment along with a list of attendees has been recorded in the vessel's log book and details reported to the Marine Representative prior to operations commencing.

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The Master should confirm to the BP Representative onboard the unit that a toolbox talk or pre-job safety meeting has taken place with all crew members prior to commencement of any operations.

Recent incidents have occurred whereby personnel have sustained serious injury whilst working on deck preparing equipment and whilst work/tow wires have been unsecured, thus resulting in wires sweeping across the deck violently at times and contacting crew members. Masters should reiterate to crews the importance of remaining clear of the work deck whilst the vessel is manoeuvring/towing and whilst wires and/or chains, remain unsecured in karm forks or sharks jaws.

Vessel Masters shall:

• Ensure that all crew members are fit and competent to perform their allocated tasks
• Ensure that all crew members are aware of their duties and responsibilities, and of the potential hazards associated with the operations
• Ensure that general operations of the vessel are in agreement with the UKOOA/Chamber of Shipping publication Guidelines for the Safe Management and Operation of Offshore Support Vessels
• Ensure that while manoeuvring near to or alongside the Installation, the AHV's bridge is manned by the Master/Mate and a second person. This second person should be capable of manoeuvring the vessel away from the Installation should the Master/Mate be incapacitated
• Ensure that all equipment mobilised on the vessel is accounted for and details of use passed to the BP Marine Representative

• Ensure that whenever possible, all equipment being returned to the shore base is prepared in a manner suitable for safe discharge
Note: Any mechanical breakdown that may affect the integrity of the tow shall be brought to the attention of the Towing Master and BP Marine Representative immediately.

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Section 13

Jack-up Drilling and Accommodation Units

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1 Application

This section contains guidelines which shall be followed by all offshore mobile self-elevating platforms (jack-ups) contracted to work for, or on behalf of, BP.

2 General

Mobile jack-up units are not generally designed to withstand severe weather conditions whilst on tow or whilst the legs are being jacked up or down. The commencement of any of these operations must be preceded by careful planning, the identification of an adequate weather window, the provision of adequate contingency plans and, depending on the passage length, the location of suitable emergency jacking locations.

3 Seabed Survey and Analysis

The rig Owner and Certifying Authority will require information and/or procedures on the following:

A seabed and shallow seismic survey, which will always be undertaken to ensure the area is clear of obstructions, to confirm the shallow geology, seabed contours and the exact water depth.

Where a jack-up is proposed to be positioned on a virgin site, then additional core data may be required to confirm seabed geology and to estimate the surface penetration of the legs.

Where available, data such as the strength and direction of tides and currents in the area, the contents of previous core samples, type of sand waves, etc, shall be used to estimate the movement of seabed surface material and possibility of scour to the spud can areas.

The seabed surface around the legs will be monitored for scouring by ‘eyeball’ Remotely Operated Vehicle (ROV) or diver deployment. The initial survey to check the leg penetration and spud-can scour will be conducted as soon as possible after arriving on location and at regular intervals thereafter. The database of information from the two initial surveys is then used to determine the frequency of further surveys. Scoured areas may be controlled by sand bagging/gravel bagging or by gravel dumping from a specialised vessel.

4 Technical Audit/Inspection

Any jack-up unit proposed to conduct a workscope shall be the subject of a BP technical audit/inspection to ensure fitness for purpose.

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5 Towing Procedures

Towing procedures shall be approved by the Owners and their Underwriters or the appointed Warranty Surveyors.

Tow vessel selection will be in compliance with the minimum bollard pull requirements of the Certifying Authority, and shall be suitable to effect the tow safely and efficiently and to position the unit within the required tolerance.

It is the owner's responsibility to ensure that the towing arrangement on the unit is fully certificated and in good order. The technical audit will identify if the towing brackets, mooring bitts, and bridle arrangement have been maintained in good order and are suitable for the intended passage and workscope.

The maximum weather parameters for the on-tow and jacking down condition are identified in the operations manual for the unit, and shall be complied with.

The passage plan for the tow shall include and identify ports of refuge and emergency jacking locations (where required) as a contingency against severe weather conditions. These jacking locations are normally identified by the Warranty Surveyors, and are selected as areas that have been identified, by side scan sonar or other historical data, as being safe and suitable for use.

6 Positioning the Unit on Location

The unit shall be positioned in accordance with agreed procedures which shall, where appropriate, comply with Section 3, and to the satisfaction of the BP Marine Representative.

The positioning operation shall take into consideration any tide and/or current forces that may affect the operation.

7 Lowering Legs – Elevating Hull

The maximum weather parameters detailed in the operations manual for lowering the legs and elevating the hull shall be complied with.

Pre-load or pre-drive procedures detailed in the operations manual shall be complied with.

The above operations shall be completed or supervised by a responsible person employed by the unit's Owner.

8 Access Bridge Operations
(Accommodation Units Only)

Refer to Section 5.

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9 Raising the Legs

The maximum weather parameters detailed in the operations manual for raising the legs and floating the hull shall be complied with.

Pre-tow stability, deck loading and hull integrity checks shall be completed by the responsible person nominated and employed by the Owner of the unit. Such calculations, checks and inspections shall comply fully with the requirements detailed in the operations manual, and any recommendations made by the Warranty Surveyor.

Prior to floating the hull, all non-essential items of moveable/portable equipment shall be removed from the unit and the remaining equipment shall be properly secured in accordance with the procedures detailed in the operations manual, and in compliance with good recognised practice.

10 BP Marine Representative

The BP Marine Representative is BP's sole authority on the rig with respect to marine operations. He will receive the full support of other BP personnel in pursuit of a safe and economic operation.

As such, the BP Marine Representative has the authority and responsibility to terminate, suspend or veto the commencement of any marine operation that he considers may be contrary to the pursuit of a safe and economic operation.

In pursuit of this he will carry out the following duties:

• Ensure a pre-move meeting is held onboard the unit and each Anchor Handling Vessel (AHV)
• Liaise and consult with the unit OIM/Towing Master
• Ensure that all marine operations are performed in a safe and effective manner
• Ensure that all reasonable precautions are taken to ensure the integrity of all assets in the vicinity of operations are not compromised or exposed to undue risk associated with the move
• Ensure that the OIM/Towing Master has imparted a clear understanding to all personnel as to the proposed operations, duties and responsibilities
• Ensure that 'toolbox' talks are held both onboard the rig and AH vessels at appropriate stages throughout the operation to ensure that all personnel have a clear understanding of the activities to be undertaken at that stage, their own role and the risks and actions to mitigate them. The times of such talks should be recorded in both the operational log and vessel log
• Ensure that the passage plan selected is suitable after taking into account the draft of the unit and limited manoeuvrability of the tow
• Ensure that clear communications are established and maintained between the principal personnel participating in the operations
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• Ensure that all marine incidents are reported to the BP Marine Logistics Department, Dyce without delay. Such reports shall initially be of a verbal nature made as soon as is practically possible after the occurrence of the incident. Thereafter, a written report shall be compiled and forwarded at the earliest opportunity in line with Section 2 of this Marine Operations Manual (UKCS-MAL-001)
• Maintain an accurate and complete operational log
• Ensure that where deviations from these procedures are considered necessary, a risk assessment is carried out prior to implementation. All details of the deviation shall be recorded in the operational log
• Ensure that Masters of AH vessels are aware of their vessel's position in relation to subsea equipment and pipelines if applicable and that they maintain a suitable catenary for clearance when connected to the main tow bridle or whilst recovering or deploying anchors
• Ensure that Masters of towing vessels are aware of the tidal flow around the unit. Confirmation should be received that Masters have fully assessed the environmental conditions and their effect on the manoeuvrability of their vessels before approaching

the unit to carry out any operation
• Ensure that manifests and equipment are checked upon arrival offshore. Defects or shortfalls shall be noted and reported to BP Marine Logistics Department, Dyce without delay
• Ensure an accurate record is maintained of all equipment used, damaged or lost
• Ensure that all equipment returned upon the completion of operations is properly and accurately manifested. Manifest copies shall be returned with the operational report
Note: BP Assets include not just physical assets but are also deemed to include BP's reputation. When considering the advisability of any course of action or decision, due consideration must be given to the consequences of that action or decision on BP's reputation.

No marine operation will commence without the agreement and consent of the rig OIM/Towing Master, BP Marine Representative, BP Drilling Representative and BP Survey Representative. Each of these persons has the power of veto over the commencement of any marine operation or action, which he considers unsafe.

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MARINE
OPERATIONS
BP MARINE
REPRESENTATIVE
BP DRILLING
REPRESENTATIVE
BP SURVEY
REPRESENTATIVE
MODU OIM MODU TOW MASTER
UKCSMAL001_010.ai

11 Warranty Surveyor

The Warranty Surveyor is appointed by the owners and acts on their behalf to ensure that the risk to the Underwriters is acceptable, and that the Owners comply with the warranty clauses in the insurance policy.

12 Anchor Handling Vessel/Towing Vessel Master

Masters are ultimately responsible for the safety of their vessel, crew and tow where applicable.

Further, they are responsible for ensuring that all anchor handling and towing operations are conducted in a safe manner with due regard to safe working practices and the practices of good seamanship. In this respect they will hold toolbox talks or pre-job safety meetings with their crews prior to the commencement of any operations. These toolbox talks or pre-job safety meetings should address the specifics of the operation and should also include reminders to the crews of the safe practices to be followed when on deck and in particular when working with ropes, wires, shackles and other equipment associated with the move and the general conduct of personnel during towing operations.

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Particular attention should be paid to the use of gob wires and the exposure to the crew whilst fitting such wire. Should a gob wire or other stop wire be used for any reason then a requirement exists to confirm this to the BP Marine Representative prior to fitting. Confirmation must also be received that a review of the operation with the crew has taken place and that the completed risk assessment along with a list of attendees has been recorded in the vessel's log book and details reported to the Marine Representative prior to operations commencing.

The Master should confirm to the BP Representative onboard the unit that a toolbox talk or pre-job safety meeting has taken place with all crew members prior to commencement of any operations.

Recent incidents have occurred whereby personnel have sustained serious injury whilst working on deck preparing equipment and whilst work/tow wires have been unsecured, thus resulting in wires sweeping across the deck violently at times and contacting crew members. Masters should reiterate to crews the importance of remaining clear of the work deck whilst the vessel is manoeuvring/towing and whilst wires and/or chains, remain unsecured in karm forks or sharks jaws.

Vessel Masters shall:

• Ensure that all crew members are fit and competent to perform their allocated tasks
• Ensure that all crew members are aware of their duties and responsibilities, and of

the potential hazards associated with the operations
• Ensure that general operations of the vessel are in agreement with the UKOOA/Chamber of Shipping publication Guidelines for the Safe Management and Operation of Offshore Support Vessels
• Ensure that while manoeuvring near to or alongside the Installation, the AHV's bridge is manned by the Master/Mate and a second person. This second person should be capable of manoeuvring the vessel away from the Installation should the Master/Mate be incapacitated
• Ensure that all equipment mobilised on the vessel is accounted for and details of use passed to the BP Marine Representative
• Ensure that whenever possible, all equipment being returned to the shore base is prepared in a manner suitable for safe discharge
Note: Any mechanical breakdown that may affect the integrity of the tow shall be brought to the attention of the Towing Master and BP Marine Representative immediately.

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13 Rig OIM/Towing Master

The person in overall charge is the rig OIM, as documented onboard the unit.

He will retain his overall authority during the period of a location move and will decide when it is safe and practicable to commence rig-move operations within the normal limitations of the unit's Operations Manual. Prior to the move commencing, he shall ensure that the requirements of HSE Operations Notices 3 (Liaison with Other Bodies) and 6 (Reporting of Offshore Installation Movements) have been complied with.

The rig OIM/Towing Master:

• Has responsibility for the health, safety and welfare of all persons onboard
• Shall ensure that the preparation of the unit and all associated equipment, including any cargo stowed onboard is completed in a suitable manner
• Shall ensure that personnel are fit and competent to perform their allocated tasks, in particular the operation of winches and connection/disconnection of AHVs
• Shall ensure that all personnel involved in the operation are aware of their duties, responsibilities and potential hazards associated with the operations
• Arrange to hold a pre-move meeting prior to commencing operations. All responsible

persons involved in the rig move operations are to attend and their responsibilities are to be clearly defined
• Shall ensure clear communications are established between the principal participating parties
• Shall ensure all infield vessels are kept informed of operations
• Will confirm that all actions have been taken to prepare the unit for passage
• Will decide, in consultation with the BP Marine Representative, when it is safe and practicable to carry out unmooring operations and the rig tow within the limitations as stated in the unit's Operations Manual
• Give instructions to the assisting vessels directly or delegate to a competent person
• Shall ensure that a passage plan is in place prior to commencement of operations
• Shall ensure that all relevant parties are kept informed of the rig move status
• Shall ensure an accurate and complete operational log is maintained
• Shall liaise and confirm with the BP Marine Representative on all matters connected with the operations associated with the move
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• Shall ensure that where deviations from these procedures are considered necessary, a risk assessment is carried out prior to implementation. All details of the deviation shall be recorded in the operational log and carried out only when all parties are in agreement, as outlined in the BP Golden Rules Management of Change
• Shall ensure that move equipment is checked upon arrival offshore. Defects or shortfalls shall be noted and reported without delay
• Shall ensure an accurate record is maintained of all equipment used, damaged or lost
• Confirm that stability calculations have been conducted and are satisfactory for all stages of the operation
• The OIM shall also ensure that during the move all relevant guidance shall be observed which is applicable to the safe conduct of the operation. This will include but is not limited to the following:
- Rig/field SMS interface document
- Rig Safety Case
- Owner Marine Operations Manual
- Working Time Regulations, HSE Operations Notice 65
- BP Marine Operations Manual (UKCS-MAL-001)
-Hours of Work, Safe Manning and Watchkeeping, Merchant Shipping Notice M1767
- Safe Management and Operation of Offshore Support Vessels, UKOOA
14 BP Survey Representative

The BP Survey Representative will:

• Liaise with the rig Towing Master and the BP Marine Representative with respect to navigation equipment status and position confidence
• Ensure that all AHVs equipped with Tug Master Systems (TMSs) have all subsea assets and hazards displayed on the navigation screen. This display should show the position of the AHV in real time in relation to these subsea assets and hazards. Should this not be possible or should the navigation screen fail to display the required information during the rig move, the rig Towing Master and BP Marine Representative are to be informed immediately
• In association with the BP Marine Representative, establish the 'as-laid' particulars for all anchor positions. Proposed and as-laid anchor positions shall be compared by plotting on the relevant charts to verify that no significant discrepancies exist
• Review and confirm information furnished by the survey contractor relating to the final position
• Monitor the performance and reliability of information furnished by the survey contractor
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• Ensure that as far as reasonably practical the survey contractor shall furnish and present navigational information in accordance with the BP Marine Representative's requirements
• Ensure that the relevant seabed surveys are undertaken, and that the reports prepared by the contractor are forwarded to the BP Marine Representative
15 Survey Contractor

The survey contractor will provide the required survey equipment. During the move the survey contractor will be responsible for providing constant data showing the position of the rig relative to BP equipment such as all pipelines, Installations, subsea equipment and hazards.

The survey contractor shall:

• Ensure that continuous navigational information is acquired and presented in a suitable manner to ensure the correct positioning of the rig. In particular, all information relating to hazards and obstructions in the vicinity of operations shall be clearly and unmistakably identified

• Except where otherwise agreed, ensure that navigational information required to support operations is continuously updated and available
• Maintain operational logs and records as directed by the Company survey representative
• Ensure that where relevant and required, information regarding the position of all support vessels is acquired and displayed in a suitable manner
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Addendum 1

Site-specific Marine Operations Documentation

The following are issued as stand-alone Level 4 documents. Hard copy versions follow this addendum and electronic links are available when this page is viewed online in the SMS website.

• Schiehallion Marine Operations
• Foinaven Marine Operations
• Clair Marine Operations
• Magnus Marine Operations
• Lomond Marine Operations
• North Everest Marine Operations
• ETAP Marine Operations
• Andrew/Cyrus Marine Operations
• Harding Marine Operations
• Miller Marine Operations
• Bruce Marine Operations
• NWH Marine Operations
• SNS Marine Operations
Site-specific Marine Operations Documentation
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