



CANADIAN ASSOCIATION
OF PETROLEUM PRODUCERS

STANDARD PRACTICE

Atlantic Canada Offshore Petroleum Industry Safe Lifting Practice Respecting:

Offshore Pedestal Cranes

Offshore Containers

Loose Gear

Other Lifting Devices

Operational Best Practices

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Disclaimer

This publication was prepared for the Canadian Association of Petroleum Producers (CAPP) by the Atlantic Canada Offshore Petroleum Safe Lifting Practices Committee comprising of representatives from the Canada-Newfoundland and Labrador and Canada-Nova Scotia Offshore Petroleum Boards, Lloyd's Register Group, ExxonMobil Canada Properties, EnCana Corporation, Petro-Canada, and the Canadian Association of Oilwell Drilling Contractors. While it is believed that the information contained herein is reliable under the conditions and subject to the limitations set out, CAPP and the task force do not guarantee its accuracy. The use of this publication or any information contained will be at the user's sole risk, regardless of any fault or negligence of the task force, CAPP or its co-funders.

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1.0 Overview

1.1 Purpose and Scope

The Atlantic Canada Offshore Petroleum Industry Safe Lifting Practice Respecting ‘Offshore Pedestal Cranes’, ‘Offshore Containers’, ‘Loose Gear’, ‘Other lifting Devices’ and ‘Operational Best Practices’ (Safe Lifting Practice) is the culmination of a joint effort among the offshore industry operators, drilling contractors, certifying authorities, and regulatory authorities. The resulting Safe Lifting Practice describes industry best practices related to lifting equipment and safe lifting operations on offshore installations operating in the Atlantic Canada Offshore Petroleum Area.

This Safe Lifting Practice is not intended to be employed for lifting equipment and safe lifting operations on vessels that do not require a certificate of fitness such as construction vessels and heavy lift vessels with the exception of the Operational Best Practices section which applies to offshore installations and the supply vessels and onshore supply bases servicing those offshore installations.

This Safe Lifting Practice does not address the training requirements for personnel involved in lifting operations.

This document is not intended to be all inclusive and simple adherence to this Standard Practice is not sufficient to ensure an operator’s or employer’s obligations are met pursuant to relevant applicable legislation. Operators and employers must exercise due diligence to ensure all equipment is compliant with regulations, fit for its intended purpose, appropriate procedures are in place and workers are properly trained to perform lifting operations safely.

To establish common Atlantic Canada practices, the Atlantic Canada Offshore Petroleum Safe Lifting Practices Committee (“the Committee”), examined and documented specifically:

1. Safe design requirements related to offshore pedestal cranes.
2. The design, manufacture, certification, testing, maintenance, and inspection of offshore containers.
3. The design, manufacture, certification, testing, and inspection of loose gear.
4. The design, manufacturer, certification, testing, and inspection of other lifting devices.
5. Operational best practices for lifting operations on offshore installations, supply vessels and supply bases.

The Committee will endeavor to review the Safe Lifting Practice periodically. The time between reviews should not exceed five years.

Comments or queries relating to the information presented in this document should be directed to the Atlantic Canada Manager, Canadian Association of Petroleum Producers, Suite 403, Scotia Centre, 235 Water Street, St. John's, NL, A1C 1B6, or by electronic mail to communications@capp.ca.

1.2 Terms and Definitions

For the purpose of this Safe Lifting Practice, the following terms and definitions apply:

API 2C	Specification for Offshore Pedestal Mounted Cranes.
API RP 2D	API Recommended Practice 2D, Operation and Maintenance of Offshore Cranes.
Boards	Canada-Newfoundland and Labrador Offshore Petroleum Board and Canada-Nova Scotia Offshore Petroleum Board
Atlantic Canada Offshore Petroleum Area	The Atlantic Canada Offshore Petroleum Area refers to the Newfoundland Offshore Petroleum Area as defined by the CNLAAIA and the Nova Scotia Offshore Petroleum Area as defined by the CNSAAIA.
Certifying Authority	As defined in the applicable Certificate of Fitness Regulations, meaning the American Bureau of Shipping, Bureau Veritas, Det Norske Veritas Classification A/S, Germanischer Lloyd or the Lloyd's Register Group.
Competent Person	A person who has extensive knowledge through practical and theoretical experience and training, and who has demonstrated the ability to troubleshoot and solve problems that impact on safety and asset integrity. The competent person will be able to detect defects or weaknesses during inspection of equipment and assess their importance as to the safety of such equipment and the user. Also, the competent person will, from time to time, seek specialists' advice and assistance and shall be capable of judging or supporting the opinions of others.
Crane Inspector for Offshore Pedestal Cranes	Third party inspectors assigned the responsibility for all or part of the quarterly and annual inspections of cranes as defined in API RP 2D should meet the test of the competent person as defined in this Safe Lifting Practice. Inspectors must have completed: <ul style="list-style-type: none"> • A technical degree, diploma or certificate. Examples of technical training include, but is not limited to the following: <ul style="list-style-type: none"> ○ An engineering degree in a relevant discipline ○ A journeymen trades certificate in a relevant discipline. ○ A technologist certificate in a relevant discipline. ○ A third class marine engineer or above • Theoretical and practical training as described in API RP 2D. • Training and at least one year of experience with the particular crane(s) or crane type(s) and particular aspects they have been assigned to inspect (e.g. electrical, instrumentation, mechanical and structural)
Crane Operator	Offshore Crane Operator
Installation	An accommodations installation, drilling installation, diving installation or

	production installation.
Loose Gear	Any gear by means of which a load can be attached to a lifting appliance but that does not form an integral part of the appliance or load.
Offshore Container	Defined in the DNV/EN rules and standards as, “portable unit for repeated use in transport of goods or equipment, handled in open seas, to, from or between fixed and/or floating installations and ships”. It includes transportable items such as tanks, tote tanks, cutting boxes, x-mas tree transport frames, coiled tubing units and skids.
Operator	A person or company who has applied for or has been issued a Work or Activity Authorization by either the Canada - Newfoundland and Labrador or the Canada - Nova Scotia Offshore Petroleum Board.
Payload	Maximum permitted weight of the cargo carried in the container.
Personnel Transfer	Transferring of personnel from one installation to another or to a vessel using a lifting appliance. Also referred to a marine transfer.
Shall	Indicates that the recommended practice has universal applicability to the specified activity or the activity referred to is mandatory and can be traced to a regulation or an API specification or standard practice reference made therein.
Should	Denotes a recommended practice: a) where a safe comparable alternative practice is available; b) that may be impractical under certain circumstances; or c) that may be unnecessary under certain circumstances or applications.
Third Party Inspector	<p>Third party inspectors assigned the responsibility for inspection of offshore containers and lifting gear should meet the test of the competent person as defined in this Safe Lifting Practice. In addition they shall have the following valid EVITA certification or equivalent:</p> <ul style="list-style-type: none"> • Wire Rope Examiners, and • Lifting Gear Inspection <p>Inspectors performing NDE work shall have CGSB qualifications or other recognized equivalent for the relevant NDE technique.</p>

1.3 Abbreviations

AISC	American Institute of Steel Construction
API	American Petroleum Institute
API RP	American Petroleum Institute, Recommended Practice
API Spec	American Petroleum Institute, Specification
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
BS	British Standard
CA	Certifying Authority
CGSB	Canadian General Standards Board
CNLAIA	Canada Newfoundland and Labrador Atlantic Accord Implementation Act
C-NLOPB	Canada-Newfoundland and Labrador Offshore Petroleum Board

CNSAAIA	Canada-Nova Scotia Atlantic Accord Implementation Act
CNSOPB	Canada-Nova Scotia Offshore Petroleum Board
CSA	Canadian Standards Association
DIN	Din Deutsches Institut fur Normung E.V.
DNV	Det Norske Veritas
EN	Européen de Normalisation (European Standard)
EVITA	Carl Stahl EVITA Ltd.
IADC	International Association of Drilling Contractors
IMDG	International Marine Dangerous Goods Code
IMO	International Maritime Organization
ISO	International Standards Organization
LEEA	Lifting Equipment Engineers Association
LOLER	Lifting Operations and Lifting Equipment Regulations (UK)
LR	Lloyds Register Group
NDE	Nondestructive Examination
NEC	National Electrical Code
OEM	Original Equipment Manufacturer
OSH	Newfoundland Petroleum Occupational Safety and Health Regulations, Draft 1989, and Nova Scotia Offshore Petroleum Occupational Health and Safety Requirements, Element 2, 2000.
SLI	Safe Load Indicator
SOLAS	Safety of Life at Sea
SWL	Safe Working Load
TDG	Transportation of Dangerous Goods (Code), Transport Canada
WLL	Working Load Limit

1.4 Roles and Responsibilities

1.4.1 Operators and Owners

Operators and installation owners are responsible for the implementation of this Safe Lifting Practice. They also have a duty to ensure that all lifting devices (offshore pedestal cranes, offshore containers, loose gear, and other lifting devices) are inspected, tested, maintained and operated in accordance with approved procedures by competent personnel.

1.4.2 C-NLOPB and CNSOPB

The Canada-Newfoundland and Labrador and the Canada-Nova Scotia Offshore Petroleum Boards use this Safe Lifting Practice as a benchmark in their

compliance auditing and monitoring activities for installations operating in the Atlantic Canada Offshore Petroleum Area.

1.4.3 Certifying Authority

The designated Certifying Authority for the offshore installation on which lifting devices are being used has the responsibility of monitoring the implementation of this Safe Lifting Practice.

The Certifying Authority for offshore containers has the responsibility for ensuring that offshore containers comply with this Safe Lifting Practice. Any major modifications or repairs to the load carrying structural members of offshore containers are to be approved by the offshore container Certifying Authority. Certifying Authority Surveyors assigned to certify offshore containers should meet the test of the competent person as defined in this Safe Lifting Practice.

1.4.4 Handlers and Operators of Lifting Devices

Handlers and operators of lifting devices, whether at the shore base or at the offshore installation, have the responsibility to ensure that the equipment with which they are working has been certified and marked in accordance with this Safe Lifting Practice, has been visually inspected for damage or corrosion and meets the current color coding.

Handlers and operators of lifting devices are responsible for ensuring that operation of this equipment is conducted in accordance with approved procedures.

1.4.5 Offshore Crane Operator

The crane operator is responsible for maintaining the crane log; performing daily crane inspection, testing and maintenance in accordance with API RP 2D and the manufacturer's recommendations; performing lift operations in accordance with documented procedures; and ensuring that crane and lifting equipment are operated safely. Whenever there is any doubt as to safety, the crane operator has the authority to stop and refuse to handle loads or continue operations as safety dictates.

The crane operator shall, prior to the start of a lift, ensure that:

- a) pre-use inspection has been completed;
- b) all lighting for lifting areas and crane is functional and adequate for lifting operations;
- c) noted deficiencies that affect the safe operation of the crane and lifting equipment have been corrected;
- d) brakes on mechanical cranes are operationally tested each time a load approaching the rated load is to be handled;

- e) the lift operation has been discussed with the crew involved in the lift;
- f) the load is slung properly;
- g) multiple part lines are not twisted around each other in such a manner that all of the lines will not separate upon application of load;
- h) communications and line of sight with the banksman have been established; and
- i) the correct load chart is being utilized for the lift

1.4.6 Banksman

The banksman is responsible for ensuring the load is properly prepared for the lift and the lift area is clear of personnel and obstructions; relaying instructions to the crane operator during operations; and maintaining an overview of the lifting operations area, including potential areas where the boom may come in contact with a fixed equipment or structure.

The banksman shall, prior to the start of a lift, ensure that:

- a) the cargo manifest including load weights is reviewed with the crane operator and rigger,;
- b) any piece of unidentified (missing or incorrect color code, SWL, tag number, etc.) or suspect lifting gear is rejected;
- c) containers and open baskets are inspected for deficiencies and to ensure goods are properly stowed;
- d) escape routes have been identified should a problem develop during the lifting operation;
- e) the lifting and receiving corridor is clear of obstructions and unassigned personnel;
- f) a clear line of sight is established unless it is a blind lift and method of communication is agreed between the banksman and the crane operator; and
- g) the load is being lifted directly up, that is, hook is over lift.

1.4.7 Rigger (Load Handler)

The rigger is responsible for ensuring that the rigging arrangements are suitable for the intended lift; connecting and disconnecting the load from the crane; and positioning the rigging for easy access after the load has been set down.

The rigger shall, prior to the start of a lift, ensure that:

- a) any piece of unidentified (missing or incorrect color code, SWL, tag number, etc.) or suspect lifting gear is rejected;
- b) sling legs are not twisted or snagged prior to hook-up;
- c) the shortest slings practical are used provided the load limit and internal angle as identified on sling tag are not exceeded;
- d) pins and shackles are properly secured;
- e) tag lines are installed where appropriate; and
- f) the load hooks, swivels and safety latches are working correctly.

The rigger shall not go near, under or touch the load until the crane operator has placed the load close to its final resting position.

1.4.8 Manufacturers and Suppliers

Manufacturers and suppliers of lifting devices referenced in this Safe Lifting Practice are responsible for ensuring that equipment delivered to the user is designed, manufactured, tested, marked, and where applicable, certified to meet the requirements described in this Safe Lifting Practice and to any other requirements requested by the end user.

1.4.9 Third Party Inspectors

Third party inspectors have the responsibility for inspecting lifting devices in accordance with the applicable code, standard, rule, or specification.

1.5 Regulatory Requirements

The following regulations/requirements apply to lifting equipment and operations on offshore installations operating in the Newfoundland and Labrador and Nova Scotia Offshore Petroleum Areas:

- a) Petroleum Installations Regulations
- b) Petroleum Occupational Safety and Health Regulations, Newfoundland, DRAFT, 1989 (Newfoundland only)
- c) Canada-Nova Scotia Offshore Petroleum Board, Nova Scotia Offshore Petroleum Occupational Health and Safety Requirements, December 2000 (Nova Scotia only)
- d) Certificate of Fitness Regulations
- e) Petroleum Drilling and Production Regulations

Newfoundland and Labrador and Nova Scotia regulations contain the same technical content and reference the same codes, standards and rules except as noted above.

1.6 Equivalencies

In exceptional circumstances, for example on a mobile installation, lifting equipment may be deemed acceptable for operations provided an equivalent level of safety can be established.

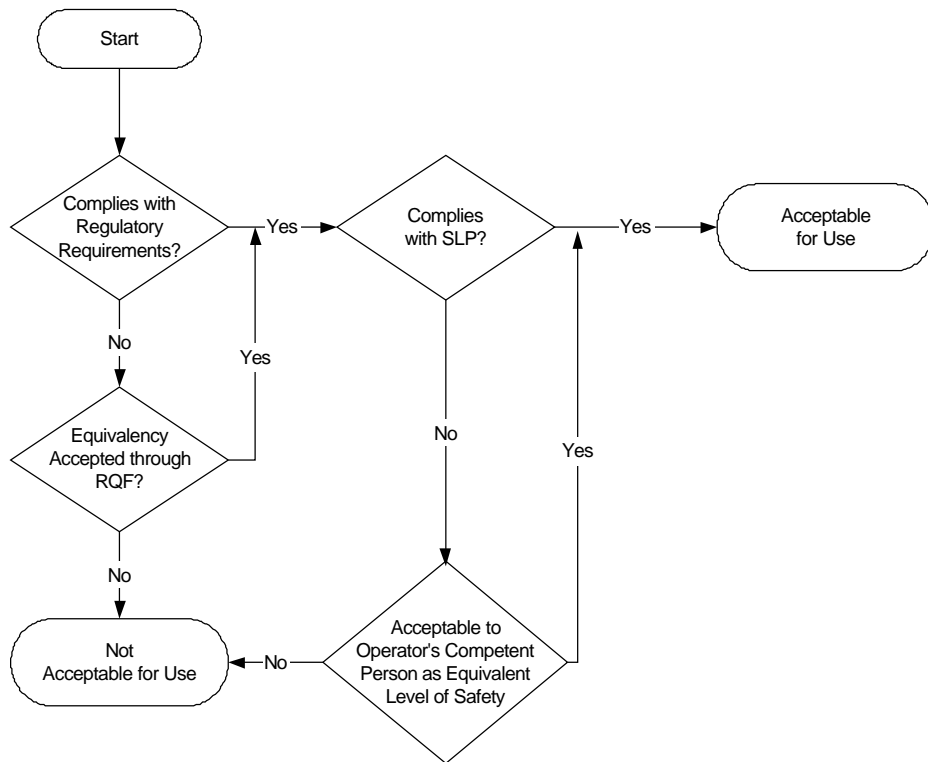
1.6.1 Regulatory Equivalencies

Equivalencies to the regulatory requirements including standards referenced in regulations may be granted on a case-by-case basis through the Boards' regulatory query process provided it can be demonstrated to the satisfaction of the Certifying Authority and the Chief Safety Officer of the relevant Board that it provides an equivalent level of safety.

1.6.2 Safe Lifting Practice Equivalencies

Equivalencies to the requirements listed in this Safe Lifting Practice, with the exception of regulatory requirements, may be granted on a case-by-case basis. Determinations of equivalency are left to the discretion of the operator. When making such a determination operators shall clearly document the basis for the equivalency and the level of management that approved the equivalency. As a minimum, the equivalency must be deemed acceptable to the Operator's Competent Person. All determinations of equivalency may be subject to review and audit by the Certifying Authority and the Boards.

Figure 1-1 Flowchart of Equivalency Process



2.0 Offshore Pedestal Cranes

2.1 Offshore Pedestal Cranes Design Codes and Standards

Offshore Pedestal Cranes installed on installations operating in the Atlantic Canada Offshore Petroleum Area are required by legislation to meet API 2C and API RP 2D.

Cranes designed and certified to the following internationally recognized rules and standards are also considered acceptable provided the minimum requirements of the latest edition of API 2C are met:

- a) EN 13852-1 Cranes, Offshore Cranes, Part 1—General Purpose Offshore Cranes.
- b) Det Norske Veritas, Rules for Certification of Lifting Appliances.
- c) Lloyd's Register, Code for Lifting Appliances in a Marine Environment.

2.2 Offshore Pedestal Cranes Design Requirements in Addition to API 2C

The following design requirements are in addition to those requirements specified in API 2C.

2.2.1 Safe Load Indicator

An electronic safe load indicator (SLI) shall be installed on all cranes and have as a minimum the following features:

- a) A display showing the following as a minimum:
 - SWL at any hook radius;
 - percentage of SWL on hook at any hook radius.
- b) Alarm settings programmed in the SLI are to be determined by the installation owner's competent person and agreed by the Certifying Authority.
- c) The SLI is to be programmed with load curves reflecting all operating modes, for example, static (onboard), dynamic (offboard) and personnel. Load curves for the crane are to be approved by the Certifying Authority; approved load curves are to be posted in the crane cab.
- d) All units in the SLI should be International System (SI) of Units.

2.2.2 Hoist Block

The hoist block should have a sealed bearing or external lubrication system.

2.2.3 Load Hook Latches for Cargo Lifts

Main load hoist blocks shall be equipped with a spring loaded latch or equivalent means of preventing the shedding of the sling.

Only ASME B30.10 self-locking eye hooks equipped with triggers that have a device preventing it from being accidentally activated shall be permitted in pennant construction.

2.2.4 Load Hook Latches for Personnel lifts

Load blocks that are used to hoist personnel shall be equipped with a spring latch hook that can be positively locked in the closed position with the insertion of a pin or other similar device.

Load hooks at the bottom of wire rope pennants shall be equipped with a spring latch hook that can be positively locked in the closed position with the insertion of a pin or other similar device. (Note: This is a clarification of API RP 2D and API 2C.)

ASME self-locking eye hooks shall not be permitted (Board Safety Notice No. 2004-01).

2.2.5 Boom and Load Hoists for Personnel Handling

If nameplates are not provided on boom and load hoists as required by API 2C 6th Edition, Section 8.1, documentation shall be provided to the Certifying Authority to demonstrate that either the hoist or the crane in its entirety has been approved for personnel hoisting.

2.2.6 Brakes

In addition to in-line braking systems specified in API 2C 6th Edition, Section 8.1, boom and load hoist winches hoisting personnel shall be equipped with an operationally independent secondary brake acting directly on the drum or acting independently of the main drive system. Where a geared transmission is placed between the main brake system and the drum, the transmission components shall be considered as brake components. Documentary evidence of the Certifying Authority acceptance of this arrangement shall be available.

New crane winches shall be fitted with braking systems that enable independent testing of each individual braking mechanism.

2.2.7 Drums

A method shall be provided to secure running wire to the winding drum such that it will pull out or away if a predetermined overload is reached. This may be due to the load hook snagging on a fixed object or supply vessel and is to be operable in conjunction with other safety systems.

2.2.8 Boom Control – Auxiliary Holding Device

The design of the auxiliary holding device shall be submitted to the Certifying Authority for review and approval.

If the holding system is based on the pawl and dog concept, then the system shall have lubrication points to ensure adequate lubrication.

2.2.9 Windows in Cabs and Enclosures

All windows shall be constructed of safety glass or equivalent material, as required by the OSH section 14.3(2), that will not break into sharp or dangerous pieces on impact.

Where front windows are not designed to support the weight of a person, safety bars or alternative devices shall be provided to prevent personnel from accidentally falling through the window. These devices shall not interfere with the crane operator's line of sight.

2.2.10 Boom Limiters

Cranes shall be fitted with:

- a) low and high boom angle limiters;
- b) boom down overload alarm and limit with capability to bring boom back to safe condition.

2.2.11 Anti-Two-Block (Over Hoist Limit)

The anti-two-block system shall be designed to ensure that no damage can be sustained to the running wire or other components during testing of the safety system.

2.2.12 Personnel Emergency Load Lowering

An emergency load lowering system, either permanent or loose items such as hand held hydraulic tools, shall be provided on cranes designated for personnel hoisting.

The emergency load lowering system shall be capable of lowering the minimum personnel load to a safe location in a time period not to exceed 60 minutes.

The emergency load lowering system shall be available at all times and tested annually.

2.2.13 Emergency Slewing

Either mechanical or procedural means should be provided for emergency slewing in case of power failure.

2.2.14 In-Service Loads

Cranes shall be designed for horizontal loads resulting from such environmental conditions as weather, waves, currents, and wind as anticipated in the Atlantic Canada Offshore Petroleum Area environment.

2.2.15 Access for Inspection

Means of accessing the boom tip for inspection shall be provided.

2.2.16 Wire Ropes

All wire ropes used on offshore pedestal cranes should meet the crane OEM's technical specifications. Any rope which differs from such OEM specifications shall be approved by the Certifying Authority. A program for inspection, maintenance and change out of wire ropes is to be developed by the facility operator's competent person and agreed by the Certifying Authority.

2.2.17 Fall Protection

Crane design and construction shall give consideration to aspects of fall protection. Particular attention shall be paid to guardrails, ladders, and floor or wall openings, for both internal and external personnel access.

Ladders that rotate with respect to other decks or structures shall be arranged so that fall protection is provided in all operating positions without creating additional hazards due to the relative movement.

Where ladders with safety cages are installed above intermediate platforms, the fall protection shall be arranged such that an operator cannot fall backwards between the ladder safety cage and the platform guardrail. This particular hazard is illustrated in IADC Safety Alert 01-44.

2.2.18 Gross Overload Protection

A gross overload protection system shall be installed.

2.3 Periodic Overload Testing of Cranes

An overload test should be conducted in accordance with the Certifying Authority not less than every 5 years.

3.0 Offshore Containers and Lifting Sets

3.1 Offshore Containers and Lifting Sets General Requirements

The general requirements for offshore containers are as follows:

- a) Offshore containers shall be designed, manufactured, tested, certified and marked as per DNV 2.7-1, Offshore Containers or EN 12079, Offshore Containers—Design, Construction, Testing, Inspection, and Marking.

NOTE: Containers certified to DNV 2.7.1 Annex 3 Offshore Containers for Use in Temperate Climates are not acceptable for general use in the Atlantic Canada Offshore Petroleum Area. Use of these containers would be considered a unique lift as per section 3.5

- b) Environmental factors, including but not limited to, design temperature, corrosive environment, and dynamic forces shall be taken into account. The design temperature of the container shall be stamped on the manufacturing data plate.
- c) The manufacturer of the units should keep the design and fabrication data for a period of five years. The owner or user shall keep design, manufacturing and certification records for as long as the container is in their operation.
- d) All repairs and modifications to the offshore container are to be performed in accordance with the rules or standard to which it was designed, constructed, tested, and certified.
- e) The lift sets for offshore containers shall be designed, selected, manufactured, tested, and marked as per the latest edition of DNV 2.7-1 or EN 12079. The certification documents issued by the supplier of the lift set shall be to the extent indicated in DNV 2.7-1 or EN 12079 and all other codes and standards listed within. The safety factor for the lifting set and its components shall be as specified by DNV 2.7-1, EN 12079, or by the manufacturer, or by the operator/owner, whichever factor of safety is greater.
- f) The lift sets are considered to be part of the container and cannot be removed, repaired or modified without the agreement of the Certifying Authority or third party who has issued the certification for the offshore container.
- g) Where practicable offshore containers should have forklift pocket. When fitted the pocket should be designed and fabricated in accordance with the relevant rule or standard to which the container is designed.

- h) Where practical the sling master link should be accessible from deck level (refer to DNV 2.7-1 April 2006 Sec 8.3)

Other rules and standards referring to non-lifting parts of the unit may be applicable, for example, CSA B51, ASME Pressure Vessel Code, TDG, IMO IMDG Code, DNV 2.7-2, or NEC.

3.2 Offshore Containers and Lifting Sets Certification Requirements

The certification and documentation requirements for an offshore container are as follows:

- a) an “Offshore Container Certificate” or “Certificate of Conformity” issued by a Certifying Authority.
- b) an “Offshore Container Certificate” or “Certificate of Conformity” issued by a third party (other than the owner/user) manufacturer, inspection and testing or engineering company who is audited on a regular basis by a Certifying Authority and found competent¹ to issue such a certificate. In addition, the third-party manufacturer, inspection and testing or engineering company shall have an acceptable quality assurance system, compliant to ISO 9000 or industry recognized equivalent and preferably be certified (or registered) to that standard.
- c) The “Offshore Container Certificate” or “Certificate of Conformity” referred to in section 3.2 a) and 3.2 b), shall include the particulars of the offshore container (description or name, ID number, serial number, dimensions, etc.), design temperature, design code, and any other limitations or remarks. The lift set shall also be specified in the certificate. Any significant repairs or alterations are cause to reissue or amend the certificate.

3.3 Offshore Containers and Lifting Sets Inspection & Testing Requirements

Offshore containers shall be inspected regularly in accordance with the rules or standard to which they were designed, constructed, tested, and certified. The lifting tests are to be witnessed by the Certifying Authority for the container. Non-destructive testing reports are to be reviewed by the Certifying Authority for the container.

The visual examinations of offshore containers should include confirmation that the lift sets on the container match those stated on the container certificate.

¹ The competency of a manufacturing, inspection and testing, or engineering company shall be assessed by a Certifying Authority to ensure that the company employs qualified personnel in the applicable area of expertise, has applicable processes and procedures in place, has any required software packages and a suitable Quality Assurance (QA) system. In addition, the company shall also be able to demonstrate that audits have been performed as per the company's own QA system.

Non-lifting parts of the offshore container may be subjected to inspection as per the requirements of other relevant rules, codes or standards.

The handler of offshore containers shall carry out a pre-use check. The purpose of the pre-use check is to ensure that the offshore container has appropriate certification and periodic inspection records (by means of the plates and accompanying documentation) and is carrying no more than the maximum allowable payload. In addition, it ensures no gross damage or defects are present on either the container or the lifting set. The inspection plate is not marked during this type of inspection.

3.4 Offshore Containers and Lifting Sets Inspection and Testing Documentation

A certificate documenting the testing and thorough examination of the container will be issued by a competent third party (other than the owner/user), which is audited annually by a Certifying Authority and found competent to issue such a certificate. Alternatively, the company can assure its competency by means of membership in an appropriate organization or society recognized by the Boards or the designated Certifying Authority or by demonstration of qualification of the independent third-party inspectors performing the test and examination. In addition, the company in question shall have an acceptable quality assurance system compliant to ISO 9000 or industry equivalent and preferably be registered or certified to the same. This certificate will be issued after the actual examination or test has been completed in its entirety and the inspection plate on the container appropriately hard stamped (marked) and dated.

The certificate shall include confirmation that the requirements for inspections as per the relevant rule or standard, DNV 2.7.1 or EN 12079, are met.

3.5 Unique Offshore Container Lifts

For one-off lifts of uncertified units, a review shall be performed before the operation proceeds to identify hazards and appropriate mitigations. The review may be a risk assessment or other formal process carried out in accordance with procedures approved by the operator and agreed by the Certifying Authority of the offshore installation to which the offshore container is to be transported. A competent third-party company, on behalf of the offshore installation operator, may carry out the review.

3.6 Existing Offshore Containers

To remain in service, an existing offshore container shall comply, as a minimum, with the following requirements:

- a) Requirements in Section 3.1.

or

- b) Have design and manufacturing records indicating that the offshore container is fit for purpose in the Atlantic Canada Offshore Petroleum Area. The existing records shall be subjected to an engineering appraisal and result in the issuance of a certificate as per section 3.2. Certifying Authorities or third party (other than the owner/user) manufacturer, inspection and testing or engineering company who meet the requirements of 3.2b), can carry out the appraisal of the existing records and issuance of the certificate.
- c) In the event that the material of the primary structure of the offshore container does not satisfy the demands of a cold temperature environment, but is otherwise structurally acceptable, such limitations shall be made obvious on the documentation and on the unit itself. The markings on the units shall leave no doubts as to the limitations of the offshore container. Such units will be restricted in use accordingly. The restrictions shall be specified as a result of an appraisal as described in 3.6b) and be clearly written on the certificate.
- d) Ongoing inspection, testing and certification requirements to be as specified in sections 3.3 and 3.4.

4.0 Loose Gear

4.1 Loose Gear General Requirements

4.1.1 Codes, Standards, Rules and Specification

Table 4-1 lists applicable codes, standards, rules, and specifications for loose gear as well as additional requirements and documentation. Other codes, standards, rules, and specifications may be used if deemed appropriate by the Operator's Competent Person.

4.1.2 Certification & Documentation

The general requirements for certification and documentation for loose gear are as follows. Additional requirements specific to different types of loose gear are included in Table 4-1.

4.1.2.1 Markings

The following information shall be marked on the item:

- a) safe working load or working load limit;
- b) manufacturer's logo or mark;
- c) serial number or manufacturer's traceability number.

4.1.2.2 Documentation

The certificate and documentation for the item should include:

- a) description of the material and heat treatment if applicable for all parts of the item;
- b) code, standard or industrial practice to which the design, fabrication and testing of the items supplied complies;
- c) date of manufacture;
- d) proof load test applied (as per manufacturer's recommendation);
- e) testing information including name of person declaring test has been performed; date and place of test; model, serial number, and last date of calibration of testing machine; and code, standard or industrial practice to which the testing equipment complies;
- f) statement of conformity;
- g) design and manufacturing traceability information as applicable—

- destruct test results of batch or prototype indicating actual and nominal breaking load,
- batch production number,
- inspection certificate as per EN10204 type 3.1;

h) temperature rating.

Table 4-1 Requirements for Loose Lifting Gear

Description	Reference Code / Standard/Rules	Additional Requirements/Documentation
Beams—lifting beams, spreader beams, lifting frames	BS 2853 ASME B30.20 LR, Code for Lifting Appliances in a Marine Environment DNV, Rules for Certification of Lifting Appliances	SWL • 10 Tonne: Certificate of Compliance in accordance with EN 10204, type 3.2. To be certified by the Certifying Authority. SWL < 10 Tonne: Certificate of Compliance in accordance with EN 10204, type 3.1.
Clamps—beam and plate lifting	ASME B30.20 (clamps below hooks) ASME B30.16 (beam clamps) DNV, Rules for Certification of Lifting Appliances Lifting Equipment Engineers Association	
Drum Lifters	ASME B30.20	
Eye bolts and Swivel Hoist Rings	ASTM A-574 and UNC-3A ASME B30.26 BS 4278 DIN 912 and ASME/ANSI B18.3.1M Din 582 DNV, Rules for Certification of Lifting Appliances ISO 3266 ISO 3268 Lifting Equipment Engineers Association, Sect. 19 LR, Code for Lifting Appliances in a Marine Environment	
Hoists—manual chain, lever chain, manual trolleys	ASME B30.16 and ASME HST-2 ASME B30.21 and ASME HST-3	Inspection Certificate as per EN 10204, type 3.1 for load bearing parts including load chain.

Description	Reference Code / Standard/Rules	Additional Requirements/Documentation
Hooks—below the crane hook	ASTM B30.10 DNV, Rules for Certification of Lifting Appliances LR, Code for Lifting Appliances in a Marine Environment	Charpy Impact Test results at a temperature suitable to the facilities design temperature. SWL • 10 Tonne or for personnel lifts: Certificate of compliance in accordance with EN 10204, type 3.2. To be certified by the Certifying Authority. SWL < 10 Tonne: Certificate of compliance in accordance with EN 10204, type 3.1. CNSOPB Safety Notice #2004-1 – related to trigger guards
Jacks and Rams	ASME B30.1	
Slings—chain	ASME B 30.9 ASTM A 391M-96 ASTM A 906-A 906M BS 3114 BS 4942 Part 1 & 6 EN 818-5:1999 LR, Code for Lifting Appliances in a Marine Environment DNV, Rules for Certification of Lifting Appliances ISO 3056 Lifting Equipment Engineers Association, Sect.13	Certificate of compliance in accordance with EN 10204, type 3.1. Composite load test (where sling components are load tested separately) is acceptable for mechanically assembled chain slings. Master links, quad master links, chain, connecting links and shackles to be supplied with an Certificate of compliance in accordance with EN 10204, type 3.1, including but not limited to, Charpy Impact Testing results at a temperature suitable to the facilities design temperature. Master link sub-assembly and shackles to be individually serialized and load proof tested.
Slings—flat woven webbing	ASME B 30.9 EN 1492-1 Standard compiled by the “Web Sling & Tie Down Association, Inc. 1993 (WSTDA) Lifting Equipment Engineers Association, Sect. 15	Minimum factor of safety to comply with the relevant code/standard/or rules. In no case shall the factor of safety be less than 6:1.

Description	Reference Code / Standard/Rules	Additional Requirements/Documentation
Slings—round man-made fiber	ASME B 30.9 BS 6668 Part 2 EN 1492-2 DNV, Rules for Certification of Lifting Appliances Lifting Equipment Engineers Association, Sect. 16 LR, Code for Lifting Appliances in a Marine Environment	Minimum factor of safety to comply with the relevant code/standard/or rules. In no case shall the factor of safety be less than 6:1.
Slings—wire rope	API Spec 9 API 9B ASME B 30.9 BS 463 Part 1 BS 6210 BS 6166 Part 1 EN 13414 DNV, Rules for Certification of Lifting Appliances ISO 2408 ISO4309 ISO 8792 ISO 7531 Lifting Equipment Engineers Association LR, Code for Lifting Appliances in a Marine Environment Note: See Safe Lifting Practice Section 3 for requirements for lift sets on offshore containers.	All termination fittings to be quenched and tempered material.

Description	Reference Code / Standard/Rules	Additional Requirements/Documentation
Sling termination and rigging hardware, i.e. shackles, ferrules, shackle pins links	ASME B 30.9 ASME B30.26 BS 3032 BS 3551 BS 6994 DNV Rules for Certification of Lifting Appliances—Loose Gear Federal Specifications (US) RR-C- 271D ISO 2415 ISO 2731 LR, Code for Lifting Appliances in a Marine Environment NOTE: only shackles fitted with locking nuts and pins shall be used	Charpy Impact Test results at a temperature suitable to the facility's design temperature.
Sockets—poured	API 2C API 9B ASME B30.9 BS 463 Part 1 & 2 DNV, Rules for Certification of Lifting Appliances ISO 3189 ISO 17558 LR, Code for Lifting Appliances in a Marine Environment	
Sockets—wedge	API 2C ASME B30.26 API RP 2D BS 7166 ISO 3189	
Snatch Blocks	API 8A ASME B30.26 BS 4018 DNV, Rules for Certification of Lifting Appliances	

Description	Reference Code / Standard/Rules	Additional Requirements/Documentation
Turnbuckles	ASTM F1145 ASME B30.26 BS 4429 DNV, Rules for Certification of Lifting Appliances	Turnbuckle use should be restricted to static load applications.
<p>Note: Design temperature of the lifting equipment to be considered by the competent person when selecting lifting equipment for use on the facility</p> <p>Note: Work scope for certification of lifting gear by the certifying authority may involve design appraisal and survey during fabrication</p>		

4.2 Loose Gear Inspection and Testing Requirements

4.2.1 Inspection and Testing Requirements

Loose gear shall be inspected regularly by third party inspectors in accordance with the rules or standard to which it was designed, constructed, tested, and certified. Inspection and testing frequency should take place at intervals not exceeding those listed in Table 4-2.

The inspection and testing program for loose gear shall be part of the inspection program that is approved by the Certifying Authority in accordance with the Certificate of Fitness Regulations.

Table 4-2 Inspection and Test Schedule

Description	Visual	NDE	Load Test
Beams—lifting beams, spreader beams, lifting frames	6 Monthly	Annually after load test	Taken into service for first time and annually thereafter or device to be marked that it is not to be used until tested.
Clamps—beam and plate lifting	6 Monthly	N/A	Taken into service for first time.
Eye bolts and Swivel Hoist Rings	6 Monthly	N/A	N/A
Hoists—manual chain, lever chain, manual trolleys	12 Monthly	N/A	Following overhaul.
Hooks—below the crane hook	6 Monthly	N/A	Taken into service for first time.
Jacks and Rams	12 Monthly	N/A	As recommended by Third Party Inspector.
Slings—chain	6 Monthly	N/A	Taken into service for first time and following any repairs.
Slings—flat woven webbing	6 Monthly	N/A	Representative sample tested in accordance Transport Canada. TP 12245E.
Slings—round man-made fiber	6 Monthly	N/A	Representative sample according to Transport Canada. TP 12245E. when taken into service for first time.
Slings—wire rope	6 Monthly	N/A	Taken into service for first time Note: See Safe Lifting Practice Section 3 for requirements for lift sets on offshore containers.
Sling termination and rigging hardware, i.e. shackles, ferrules, shackle pins links	6 Monthly	N/A	N/A
Sockets—poured and wedge	6 Monthly	N/A	Taken into service for first time
Snatch Blocks	6 Monthly	N/A	N/A
Turnbuckles	6 Monthly	N/A	N/A
Note: A NDE or other suitable inspection and testing may be specified by the assigned third party inspector based on the results of the visual inspection.			

4.2.2 Pre-Use Check

The handler of the loose gear shall carry out a pre-use check. The purpose of the pre-use check is to ensure that the loose gear complies with the current colour

code, has appropriate certification and an SWL-rating suitable for the load to be lifted. In addition, it ensures no visible damage or defects are present. An inspection report is not required.

4.2.3 Inspection and Testing Documentation

Inspection reports shall be issued and signed by the third-party inspector.

The inspection report shall include:

- a) the date of inspection or test performed;
- b) identification of the loose gear that was inspected or tested;
- c) identify any safety observations, including statement of whether the loose is acceptable for use;
- d) what repairs, if any, were performed and who performed them;
- e) the code, standard or rule to which the inspection was performed;
- f) the name and qualifications of the third-party inspector;
- g) the signature of the third-party inspector.

4.2.4 Colour Coding

All loose gear shall be colour coded to identify inspection status while in use. The colour coding shall be applied to the devices after they are inspected or certified by a third party. Where practical the colour coding in Table 4-3 should be applied.

Table 4-3 Colour Coding

Year	Time Period	Color
Even Years	Jan 01 - Jun 30	Yellow
	July 01 - Dec 31	Green
Odd Years	Jan 01 - Jun 30	Pink
	July 01- Dec 31	Blue
Broken, damaged or defective loose gear		Red

NOTE: implementation period of one month permitted

All traces of paint from former colour coding should be removed or completely painted over.

Permanent oil or epoxy enamel spray or brushed paint shall be used where practicable. Over-spray is to be avoided. Coloured status tags may be used. It

should be noted that the brushed paint tends to be clearer, last longer and is neater for surrounding equipment.

Broken or defective loose gear shall be removed from the work site and quarantined for authorized persons to repair or discard.

5.0 Other Lifting Devices

5.1 Other Lifting Devices General Requirements

5.1.1 Codes, Standards, Rules and Specifications

The applicable codes, standards, rules and specification for lifting devices are described in Table 5-1.

5.1.2 Certification & Documentation

The general requirements for certification and documentation requirements for lifting devices are as follows. Additional requirements specific to different types of lifting devices are included in Table 5-1.

5.1.2.1 Markings

The following information is to be marked on the item:

- a) safe working load or working load limit;
- b) unique identification mark such as a serial number or manufacturer's traceability number;
- c) devices intended for personnel lifts to be marked "For Personnel Lifting Only".

5.1.2.2 Documentation

The certificate and documentation accompanying the item should include, as applicable:

- a) description of the material and heat treatment if applicable for all parts of the item;
- b) code, standard or industrial practice to which the design, fabrication and testing of the items supplied complies;
- c) date of manufacture;
- d) proof load test applied (as per manufacturer's recommendation);
- e) testing information including name of person declaring the test has been performed; date and place of test; model, serial number and last date of calibration of testing machine; and code, standard or industrial practice to which the testing equipment complies;
- f) statement of conformity;
- g) design and manufacturing traceability information—

- destruct test results of prototype indicating actual and nominal breaking load,
- serial number or batch production number as appropriate,
- inspection certificate as per EN10204, type 3.1;

d) temperature rating.

Table 5-1 Requirements for Lifting Devices

Description	Reference Code / Standard/Rules	Additional Requirements & Documentation
Cranes—Mobile (lattice and telescopic boom cranes)	CSA Z 150 ASME B30.5	Certified by the Certifying Authority for use on the specific installation.
Crane—Overhead and Gantry	ASME B30.2 ASME B30.11 ASME B30.16 ASME B30.17 CSA B167	SWL • 10 Tonne: To be certified by the Certifying Authority.
Drilling Hoisting Tools and Equipment	API Spec 8A	
Forklifts	CSA B335-04	
Man-riding Work Baskets including lift sets	DNV Rules for Certification of Lifting Appliances LR, Code for Lifting Appliances in a Marine Environment Other certification scheme accepted by the Boards.	EN 10204, type 3.2 Certification issued by Certifying Authority stating "Suitable for Man-riding". Label to be affixed stating "Man-riding Only". Load hooks in load path connecting the basket to the hoisting mechanism shall be capable of being locked and pinned to ensure the connecting shackle will not dislodge from the hook. Secondary means of fall arrest shall be provided.

Description	Reference Code / Standard/Rules	Additional Requirements & Documentation
Pad Eyes Fixed to Permanent Structures	<p>CSA S473 for loads and load combinations, CSA S471 for general requirements, and CSA S16.1 for design check</p> <p>or</p> <p>API RP2A and AISC for design check.</p>	<p>SWL • 10 Tonne: Certificate of compliance in accordance with EN 10204, type 3.2 for material. Certifying Authority certification for the fabrication and installation of the pad eye.</p> <p>SWL < 10 Tonne: Certificate of compliance in accordance with EN 10204, type 3.1 for material. Welding, NDE and load test documentation to be maintained by the operator.</p> <p>Pad-eyes and anchorages used for man-riding operations shall be designed with a factor of safety against breaking of 10.</p> <p>Pad-eyes are to be marked with SWL.</p> <p>Register of pad eyes should be maintained on an installation to aide in inspection and maintenance</p> <p>Pad Eyes are to be load tested and NDE'd on initial installation and after any welded repair.</p>

Description	Reference Code / Standard/Rules	Additional Requirements & Documentation
<p>Personnel Transfer Devices (for marine transfers)</p>	<p>DNV Rules for Certification of Lifting Appliances</p> <p>LR, Code for Lifting Appliances in a Marine Environment</p> <p>Other certification scheme accepted by the Boards.</p> <p>Other certified units should be considered as back-up/emergency equipment (e.g. collapsible billy pughes).</p>	<p>Certificate of Compliance in accordance with EN 10204, type 3.2.</p> <p>The unit should:</p> <ul style="list-style-type: none"> • be made of a solid construction or assembled to a solid construction; • protect personnel from falling by allowing them to ride on the inside either standing or seated. <p>The unit shall:</p> <ul style="list-style-type: none"> • be certified by a third party (Lloyds, DNV, ABS) in accordance with their rules for lifting appliance rules of transferring personnel. Certificate to state "Suitable for Personnel Transfer".; • be fabricated using corrosion-resistant materials suitable for use in marine environment and design temperature suitable for the installation's design temperature (general –20°C). <p>The manufacture shall supply:</p> <ul style="list-style-type: none"> • operating procedures and a training package for the device; • maintenance and inspection procedures.

Description	Reference Code / Standard/Rules	Additional Requirements & Documentation
Winches—cargo	ASME B30.7	SWL • 10 Tonne: To be certified by the Certifying Authority.
Winches (stand-alone)—personnel lifting	API 2C EN 13852 DNV, Rules for Certification of Lifting Appliances LR, Code for Lifting Appliances in a Marine Environment	<p>Manufacturer certificate of conformity stating winch is suitable for man-riding.</p> <p>Winch to be certified by a CA for man-riding.</p> <p>Plate to be affixed to the winch body stating “Approved for Man-riding Only”.</p> <p>Minimum load factor of safety of 3 against stall out capacity.</p> <p>Shall have a secondary brake system independent of main drive.</p> <p>Hoist system shall have independent shut-off mechanism located between power source and hoist unit to ensure that all hoist motion can be stopped quickly.</p> <p>Overload and over-hoist limit safety devices should be installed.</p> <p>Overspeed limit safety device should be installed on electric powered winches.</p> <p>Drum guards and spooling devices should be fitted.</p> <p>Means for emergency load lowering shall be provided.</p>

Description	Reference Code / Standard/Rules	Additional Requirements & Documentation
Wire rope (cranes, lifeboat falls)	API 2C API 9A API RP 2D API RP 9B EN 13414 Parts 1 and 2 General Slings DNV, Rules for Certification of Lifting Appliances ISO 4309 ISO 10425, LR, Code for Lifting Appliances in a Marine Environment	Information to be marked on the item: <ul style="list-style-type: none"> • Manufacturer's name or logo; • SWL or WLL of the rope to be hard stamped on a metal tag; • Reel number from which rope has been cut. Other Documentation: <ul style="list-style-type: none"> • Certificate issued by a Certifying Authority; • Destruct test results indicating actual and nominal breaking loads.
Lift Points on Equipment	CSA S473 for loads and load combinations, CSA S471 for general requirements, and CSA S16.1 for design check or API RP2A and AISC for design check.	
<p>Note: Design temperature of the lifting equipment to be considered by the competent person when selecting lifting equipment for use on the facility</p> <p>Note: Work scope for certification of lifting gear by the certifying authority may involve design appraisal and survey during fabrication</p>		

5.2 Other Lifting Devices Inspection and Testing Requirements

Lifting devices shall be inspected regularly in accordance with the rules, code or standard to which they were designed, constructed, tested, and certified and any additional inspection requirements contained in Table 5-2. The inspection and testing

program for lifting devices shall be part of the inspection program that is approved by the Certifying Authority as required by the Certificate of Fitness Regulations.

Table 5-2 Additional Inspection and Testing Requirements for Lifting Devices

Description	Additional Inspection & Testing Requirements
Drilling Hoisting Tools and Equipment	Newfoundland Offshore Area Guidelines for Drilling Equipment. Note: Implementation of the Guideline is required by the C-NLOPB for drilling installations operating in the Newfoundland and Labrador Offshore Petroleum Area.
Pad Eyes	<p>Pad eyes are to be load tested and a certificate issued by the CA for the installation:</p> <ul style="list-style-type: none"> • When pad eye is installed or 1st taken into service, or • After a structural repair to correct a defect / damage (e.g welding repair or replacement) and prior to use <p>Pad eyes are to be:</p> <ul style="list-style-type: none"> • Removed after use, or • Visually inspected and the result reported by a competent person annually, or • Visually inspected and reported by a competent person prior to use, unless an inspection report or certificate can be provided which indicates the pad eye has been inspected and accepted within the last 12 months. • Based on the result of the visual examination a competent inspector may specify NDE to verify the integrity of the device.
Personnel Transfer Devices (for marine transfers)	<ul style="list-style-type: none"> • Annual visual inspection by third party inspector 6-monthly visual inspection by a competent person
Winches—cargo	ASME B30.7, Base Mounted Drum Hoists.
Winches—personnel lifting	<p>API RP 2D.</p> <p>OSH Element 2 Parts 4 and 14.</p>
Wire rope —lifeboat falls	Lifeboat falls shall be end for ended and replaced in accordance with SOLAS
Lift Points on Equipment	The lifting point must be visually inspected pre-use by the handler/operator for damage or deterioration

5.2.1 Pre-Use Check

The handler or operator of the lifting device shall carry out a pre-use check. The purpose of the pre-use check is to ensure that the lifting device has appropriate

certification and periodic inspection records and is lifting no more than the safe working load. In addition, it ensures no visible damage or defects are present. An inspection report is not required.

5.2.2 Inspection and Testing Documentation

An Inspection report shall be issued and signed by the third-party inspector.

The inspection report shall include:

- a) the date of inspection or test performed;
- b) identification of the lifting device that was inspected or tested;
- c) any safety observations including statement of whether the lifting device is acceptable for use;
- d) repairs, if any, that were performed and who performed them;
- e) the code, standard or rule to which the inspection is performed;
- f) the name and qualifications of the third-party inspector;
- g) signature of the third-party inspector.

6.0 Operational Best Practices

6.1 Operational Best Practices General Requirements

6.1.1 Documented Processes

Operators shall have documented processes in place that specify company expectations and minimum requirements with respect to the key factors that impact on safe lifting operations, including, but not limited to the following:

- a) identification of ownership, responsibility, and accountability;
- b) organization, planning and performance of lifting operations;
- c) maintenance including repairs and inspection of lifting equipment;
- d) management of contractors and third-party equipment owners;
- e) training and competency assessment.

6.1.2 Lifting Equipment Register

A register of lifting equipment shall be kept current at the relevant offshore installation or shore base. Equipment listed in the register should include, but not be limited to the following:

- a) crane running and standing wire;
- b) bridles;
- c) load hooks;
- d) pennant;
- e) loose shackles larger than 10 Tonne SWL capacity;
- f) multi-purpose slings, casing slings, sling sets, master links, sub link sets;
- g) spreader beams or similar lifting devices;
- h) monorails, trolleys and chain lifts;
- i) pad eyes;
- j) personnel transfer devices;
- k) BOP handling system;
- l) derrick lifting equipment, including man-riding winches, tuggers, and tong counter weights;

- m) emergency lifting devices such as confined space tripods.

The register should contain the following information for each piece of lifting equipment:

- a) location;
- b) description;
- c) date when first taken into service;
- d) unique identification number;
- e) certificate number;
- f) date last inspected and tested;
- g) degradation notes;
- h) SWL.

6.1.3 Offshore Installation Safe Lift Zones

A diagram shall be available that identifies the following:

- a) location of the offshore installation cargo handling cranes and capacities;
- b) location, area, and capacity of landing areas;
- c) blind lift areas;
- d) obstructions to crane operations;
- e) restricted swing areas.

6.1.4 Communications

6.1.4.1 General

All personnel involved in the lifting operation on offshore installations, offshore supply vessels and shore bases shall know the hand and communication signals and protocol for controlling crane operations.

6.1.4.2 Hand Signals

An agreed method of hand signals shall be used on offshore installations, offshore supply vessels and shore bases. All personnel involved in lifting operations on offshore installations, supply vessels and shore bases shall know the hand signal for "emergency stop". If no other hand signal

standard practice has been established by the installation the hand signals described in API RP 2D shall be adopted.

6.1.4.3 Radio Communication

During cargo handling to and from a supply vessel there shall be direct radio contact between the crane operator, the banksman and supply vessel personnel involved in the lift.

The crane operator and banksman shall maintain two-way radio communication when performing blind lifts.

The operator shall establish protocol for the use of two-way radio communication.

Radio command and protocol should be clearly understood by the users involved in the lifting operation

6.2 Safe Lifting Operating Practices

Safe lifting operating practices that have evolved through experience shall be taken into consideration during the development of procedures. Such practices are classified below and discussed separately:

- a) general safe lifting operating practices (inboard and outboard lifts);
- b) cargo handling on the installation;
- c) loading/offloading supply vessels;
- d) handling drilling tubulars;
- e) non-routine lifts;
- f) use of tag lines.

Additional guidance on safe lifting practices can be found in International Association of Oil and Gas Producers document "Lifting and Hoisting Safety Recommended Practice, Report #376."

6.2.1 General Safe Lifting Operating Practices (Inboard and Outboard Lifts)

The following shall be considered for all lifts:

- a) All lifts except those classified as routine shall be completed under a permit to work system.

- b) Blind lifts that are considered complicated or complex shall only be completed under an approved job safety analysis that has been reviewed and signed off by all participants prior to start of the lifting operation.
- c) Daily pre-use inspections shall be completed on the cranes at the start of each shift in accordance with API RP 2D and the manufacturer's recommendations.
- d) The load to be lifted shall be within the SWL capacity of the crane as listed in the approved load chart at all boom radii.
- e) Where fitted, the lift mode for the safe lift indicator shall be set to static mode for onboard lifts, to the appropriate dynamic mode for outboard lifts, and to personnel transfer mode for personnel transfer lifts.
- f) All safety limit devices shall be fully operational prior to the start of lifting operations unless equivalent alternate arrangements are in place; crane safety devices shall not be overridden without a hazard assessment and risk analysis. The device overridden shall be initiated under a work permit, to be reviewed at the start of each shift and recorded in the crane log.
- g) Crane safety alarms shall be strictly adhered to at all times. Actions should be taken immediately to place the crane function in a "safer condition" should a safety limit alarm or a cut-out limit engage.
- h) The crane operator shall only respond to signals from the banksman assigned to oversee the lifting operation unless an emergency stop signal is given.
- i) The banksman shall maintain a clear line of sight with the crane operator at all times; if the line of sight is broken for any reason, the lifting operation should cease immediately and resume only at the crane operator's discretion after communication is re-established.
- j) In the case of blind lifts the assigned banksman should make every effort to maintain visual contact with the crane operator and the rigger at the load.
- k) The banksman should always defer if necessary to a line of sight with the crane operator rather than with the rigger or additional banksman.
- l) API RP 2D recommends that if the view of the primary banksman is obstructed, that an additional banksman be provided, in which case communications protocols shall be agreed before the lift.
- m) The banksman shall not perform any other duties during lifting operations.
- n) Banksmen and riggers shall wear high-visibility vests or clothing. High-visibility gloves should be used to communicate hand signals.

- o) Lifts shall only be made with lifting gear that can be identified by an identification tag, serial number if applicable, SWL details, and current color code.
- p) Only the assigned rigger shall attach and detach the load from the load hook.
- q) Where loading and unloading operations are being undertaken outside of an approved landing area, or through hatch ways, the area should be barriered off and signs posted until the lifting operations have been completed.
- r) The crane operator shall stop the lifting operations if the weather conditions exceed approved limits or otherwise become a hazard to the safe lifting operation.
- s) Containerized loads should only be positioned in approved landing areas of known load bearing capacity. Approved storage and landing areas should be identified by non-skid surface and the borders clearly marked.
- t) Loose items lifted by lifting appliances shall be transported in open top baskets or other approved transportation devices.
- u) Flat woven webbing slings should not be used for general cargo or container handling. Where wire rope may cause damage to the lifted component, flat woven webbing slings may be used during an inboard lift to lift such equipment as a heavy valve into place for further assembly.
- v) Container doors should be secured at all times when not in use.
- w) Placement of containers or other equipment on installations shall not impede the emergency escape routes or block access to safety equipment.
- x) Offshore pedestal cranes shall not be operated while the helicopter is landing or taking off. The boom should be positioned and secured against swinging so there will be no interference with flight operations. Further guidance can be found within the UK CAA's CAP 437 *Standards for Offshore Helicopter Landing Areas* Section 6.

6.2.2 Loading and Offloading Supply Vessels (Outboard Lifts)

Loading and offloading of cargo on supply vessels shall only be performed when it is safe to do so.

The following shall be considered for loading and offloading supply vessels:

- a) A cargo manifest shall be prepared at the shore base for outbound lifts. The manifest shall be made available to the offshore crane operator prior to unloading the supply vessel.

- b) A cargo manifest shall be completed at the offshore site for inbound lifts and shall be provided to the shore base.
- c) The cargo manifest shall include the weights of each load, a description of the load and identification of any hazardous materials.
- d) The dynamic mode shall be set for outboard lifts. The dynamic mode indicator shall be set for the latest recorded significant sea state condition. If only one dynamic mode is programmed into the safe load indicator then it should equate to the maximum significant sea state condition permitted for the crane.
- e) The crane operator shall establish radio communication with the supply vessel personnel assigned to oversee the lifting operation from the vessel deck.
- f) Signaling methods and protocol shall be verified between the crane operator, installation banksman and vessel personnel assigned to oversee the lifting operation.
- g) The supply vessel shall have sufficient vessel thrust capacity to keep the vessel on station during the lifting operation.
- h) The crane boom should be maintained at an angle sufficient to allow clearance with the supply vessel if the supply vessel drifts away from vertical while in the final stages of completing the lift.
- i) The vessel rigger and banksman should wear bright reflective vests over their coveralls so that the crane operator can keep track of their movements. Strobe lights on the helmet or shoulders of personnel involved in the lifting operation on the supply vessel have proven to be an effective means of visual contact by the crane operator during dawn and dusk intervals.
- j) If the supply vessel moves outside the installation loading area the crane operator should cease the lifting operation immediately and resume only when conditions are favorable to ensure a continued safe lifting operation.
- k) The load shall be raised or lowered over water as much as practicable rather than over the supply vessel aft deck.
- l) Lifting operations should be undertaken under adequate lighting conditions to ensure adequate visibility between personnel on the supply vessel and crane operator.
- m) Personnel on the supply vessel shall only approach the lift to detach the sling from the load hook after the crane operator has placed the lift in its final resting place on the vessel deck and the crane operator has communicated to vessel personnel that it is safe to detach. After detaching

the sling from the load hook, the “all clear to retrieve the load hook” signal can be given to the assigned signaler on the vessel who will, in turn, signal the crane operator to lift the hook at his discretion.

- n) Personnel on the supply vessel should stand well clear of the load once it has been attached to the crane load hook, then give the “all clear to lift the load” instruction to the vessel signaler who will, in turn, signal the crane operator to lift at his discretion.
- o) The crane operator should only respond to instructions from the banksman, unless an emergency stop signal or instruction is given. Any person in the work place may give the emergency stop signal or instruction.
- p) Consideration should be given to the placement of heavy lifts on the supply vessel to accommodate the crane boom angle and the SWL required for the lift.
- q) Containers and other transportation devices should be secured on supply vessels in such a way that personnel do not have to move between loads to release the load binders.
- r) Priority lift(s) on supply vessels should be located so that they can be removed without releasing other deck cargo sea fastenings.

6.2.3 Handling Tubular Goods

The following shall be considered for handling tubular goods:

- a) Certified tubular transportation devices or skids should be used where practicable and particularly when transporting tubular goods with an outer diameter of less than 140mm.
- b) Flat woven webbing slings should not be used to bundle, lift and transport tubular goods. Webbing slings are difficult to choke properly and, depending on the type of eye, may loosen and become slack around the tubular goods bundle when the weight of the load comes off the sling.
- c) The tubular goods sling set should be assembled with two equal length legs of the same construction wire rope and SWL, heavy duty reeving hard eyes or thimbles at the load end, terminated at the top with soft loops which can be shackled together and placed in load hook. Alternatively, the soft loops may be placed directly in load hook.
- d) Only tubular goods of the same diameter should be bundled together into a lift if it is not in a transportation device.
- e) To ensure that the load does not shift, tubular goods greater than 127mm, where practical, should be bundled into odd numbers of joints in an effort

to compact them together so that the middle joints are gripped by the outer ones and less likely to slide loose.

- f) When slinging a tubular goods bundle each leg of the sling set should be double wrapped around one end of the bundle one quarter the way in from each end. The top end of the sling leg should be threaded through the reeving sleeve in the choke mode and secured. A drop forged wire rope clip (bull dog or other clip) should be placed above the reeving eye to prevent the wire rope from slipping through the eye thereby slacking off when the load is lowered to its resting position.
- g) The live end of the wire rope at the bundle should be kept from being positioned under the first wrap and under other bundles.
- h) Excessively long tubulars such as riser joints may require tag lines to assist with control of the load. Tag lines should be attached at the very ends of the bundle.
- i) Temporary storage of tubular goods on the installation should be stacked or segregated by pipe posts. Height of tubular bundles should not exceed the height of the structural pipe post.

6.2.4 Non-Routine Lifts

Procedures shall be developed and implemented to identify the requirements for non-routine lifts. The procedure should include the following:

- a) identification of the type of lifts that are considered to be non-routine—non-routine lifts should include heavy lifts;
- b) requirement for non-routine lifts to be planned by competent persons;
- c) roles and responsibilities for planning, approving and performing non-routine lifts;
- d) the requirement for weather condition limitations to be identified for each lift.

Non-routine lifts shall be performed under the permit to work system and include a job safety analysis.

It should be ensured that the load is stable and within the SWL capacity of the crane at all planned boom angles and the landing area is suitable for the load before proceeding with the lift.

Where practical in non-routine inboard lifts, the load should be lifted from its initial position a few inches and held there for a short period of time to assess the weight and stability of the load.

6.2.5 Use of Tag Lines

The use of tag lines may pose additional hazards to personnel involved in the lifting operation that should be assessed prior to starting the lifting operation.

The following shall be considered for the use of tag lines:

- a) Tag lines shall be free of knots.
- b) Tag lines shall not be looped around the wrist or any other part of the body.
- c) Tag lines shall not be temporarily attached or looped around adjacent structures in an attempt to control the load.
- d) A rigger shall not go near or beneath a load to retrieve a tag line.

The following should be considered for the use of tag lines:

- a) Tag lines should not be used during routine backloading of supply vessels.
- b) Tag lines should have the ends sealed so that the ends do not fray.
- c) A rigger should be assigned to each tag line.
- d) Tag lines should be attached to the very end(s) of a long load.
- e) The length of tag lines should be such that the rigger can be in a safe location for the duration of the lift.
- f) Tag lines should never be used as the means to control the lift during adverse weather conditions.
- g) Tag lines should be held so that the rigger can easily release the line if the load swings. This is to prevent throwing the rigger off balance or into a more dangerous position.
- h) Tag lines should not be detached from the load until the crane operator and banksman have positioned the load in its final location, with no load on the lifting gear.

6.3 Handling Offshore Containers

This section identifies additional requirements for handling offshore containers.

6.3.1 Offshore Container Loading and Handling

6.3.1.1 Receiving Containers at Shore Base Facilities for Transshipment

For containers that have been sealed for security purposes, reasonable efforts are to be made to confirm the container cargo is secured.

Closed but not sealed containers arriving at the shore base should be opened and checked to ensure the cargo is secure and unlikely to shift during transit.

6.3.1.2 Certification Date

There should be sufficient time left in the certification period stamped on the container plate to permit the container to return from the offshore installation prior to the expiry date. In the event a container is located offshore after the expiry date has passed, the following course of action shall be followed:

- a) Place a placard or sticker on the front of the container with a statement similar to the following: "Container is out of certification and is not to be returned offshore until recertified".
- b) Manifest the container to shore indicating that it is out of certification.
- c) Notify the competent person responsible for lifting on the installation that an expired container has been identified. The competent person shall either:
 - i. complete the inspection of the container in accordance with the test method described in this Safe Lifting Practice (Sec 3.0), or
 - ii. evaluate the container to determine if it is fit for a one-time lift, when empty, to return to shore base. Upon receipt at the Shore Base, the container is to be identified and segregated, or otherwise controlled to prevent its accidental reuse prior to recertification.

6.3.1.3 Bottom Lift Pad Eyes

Skid mounted equipment or other lifting devices fitted with pad eyes on the bottom outside frame should be lifted with the use of a spreader bar and sling set in cases where the load could interfere with the sling set. When the center of gravity is above the lift points a spreader beam should be used to stabilize the load.

6.3.2 Pre-Use Check

A pre-use check shall be completed prior to lifting an offshore container. Guidance for the contents of the pre-use check is provided in Appendix 2.

6.4 Personnel Lifting

This section identifies additional requirements for personnel lifting operations, including personnel transfers by crane and man-riding operations.

6.4.1 Certified Equipment

Any equipment used for personnel lifting operations shall be designed, fabricated, maintained, inspected, and certified in accordance with the requirements of this Safe Lifting Practice.

6.4.2 General Lifting Practices

Personnel lifts should only be undertaken when it is not practicable to accomplish the task by less hazardous means. Personnel lifts, where practical, should be eliminated by design or the hazards mitigated by such means as erecting scaffolding platforms.

Documented procedures shall be in place for all lifts involving personnel. Procedures shall:

- a) identify when personnel lifting operations should take place;
- b) identify the person who authorizes personnel lift;
- c) outline the duties and responsibilities of all participants;
- d) identify that all personnel lifts are to be undertaken under a work permit;
- e) include the requirement for a hazard analysis to identify hazards associated with personnel lifting. The hazard analysis shall be specific for the installation and lifting equipment being used. The hazard analysis should be reviewed by all participants at a “tool box talk” and signed off and dated by each participant—the hazard analysis should include the consideration of simultaneous operations;
- f) describe training requirements of each individual assigned to plan, manage, participate in and supervise the personnel lifting operation—personnel being transferred or lifted should receive appropriate training on use of the man-riding work basket or personnel transfer device and their safety components;
- g) list equipment requirements to ensure a safe lifting operation and require equipment to be used for personnel lifting operations to be used for that purpose only;
- h) identify rescue and recovery arrangements;
- i) identify that the rescue and recovery equipment shall be readily available during the lift operation;
- j) identify that rescue and recovery arrangements are to be practiced at regular intervals;

- k) list personal protective equipment to be worn;
- l) define the environmental limitations for personnel lifting;
- m) describe the communication protocol between the participants, including communications with the rescue team and in the case of personnel transfer, with the vessel;
- n) include inspection, testing and maintenance procedures, along with pre-use inspection requirements;
- o) include the requirement that personnel lifts shall only be conducted where there is line of sight between the equipment operator and the banksman and between the banksman and the person being lifted;
- p) include the requirement that test lifts without personnel shall be performed where there is a confined space, potential for snagging or other hazard.

6.4.3 Pre-Use Inspections

The pre-use inspection shall include the following:

- a) verification that inspection and certification of the personnel lifting or transportation device is current;
- b) verification that any loose gear used in the lift has current colour coding;
- c) visual examination of all lifting components to ensure that no visible damage or defects are present;
- d) verification that secondary safety devices (for example, safety pendant or lanyard) are installed;
- e) lockable latches are pinned in the locked position to secure the sling in the bowl of the hook;
- f) personnel being lifted have been briefed or trained on the use of the device;
- g) hazard analysis and work permit have been completed.

6.4.4 Personnel Lifting Operations using Cranes

The following are additional requirements for personnel lifting operations using cranes including personnel transfers and work over the side conducted from work baskets suspended from a crane:

- a) Crane operator and banksman shall have a clear view of the loading and landing area. The deck of the vessel shall be cleared of all cargo in the loading and landing area.

- b) The banksman shall be positioned so as not to lose sight of the personnel lifting device during the lift.
- c) A tag line should be affixed to the personnel lifting device. The tag line should have a minimum length of 3m.
- d) A safety pendant or lanyard shall be installed between the crane wire (above the load block) and the upper master link of the sling assembly if a crane is used.
- e) The vessel used for personnel transfers shall have sufficient thruster capacity to maintain station during transfer operations.
- f) Means of protecting the personnel transfer devices from weather and physical damage when stored should be provided. Particular note shall be made of means of protecting devices manufactured from fiber or nylon netting from ultraviolet degradation.
- g) A sub-link assembly and master link should be used to connect a four-legged sling to the load block when using work baskets.
- h) Load hooks in the load path connecting the basket to the lifting mechanism shall be capable of being locked and pinned to ensure the connecting shackle will not dislodge from the hook under any load.
- i) The standby vessel shall be in close attendance and the crew of the fast rescue craft shall be notified prior to personnel transfers or work over the side .

6.4.5 Man-Riding Operations

The following are additional requirements for man-riding operations:

- a) An independent fall protection system shall be designed, approved, and installed at locations where man-riding in a harness may be required.
- b) Moving or rotating equipment shall not be operated in or near the area of the man-riding operation. Boundaries and limitations for simultaneous equipment operation shall be identified in the procedure.
- c) A log of man-riding activities should be maintained and the method outlined in the procedure.
- d) Fixed wire stabbing boards are optional and may be used as required.
- e) Bosun chairs are not recommended for lifting personnel.
- f) Safety lanyards should be of such a length that if activated the fall shall not be greater than 0.6m.

- g) Full body harnesses shall be used when lifting personnel on a man-riding winch. A shock absorbing lanyard between the Dee ring and the lifting hook is optional but not recommended, particularly if the associated vertical fall arrest line to which the person is attached is made of fibrous material.
- h) A banksman shall be used at all times during man-riding operations.
- i) Man-riding operations using winches should not be performed through mouse holes.

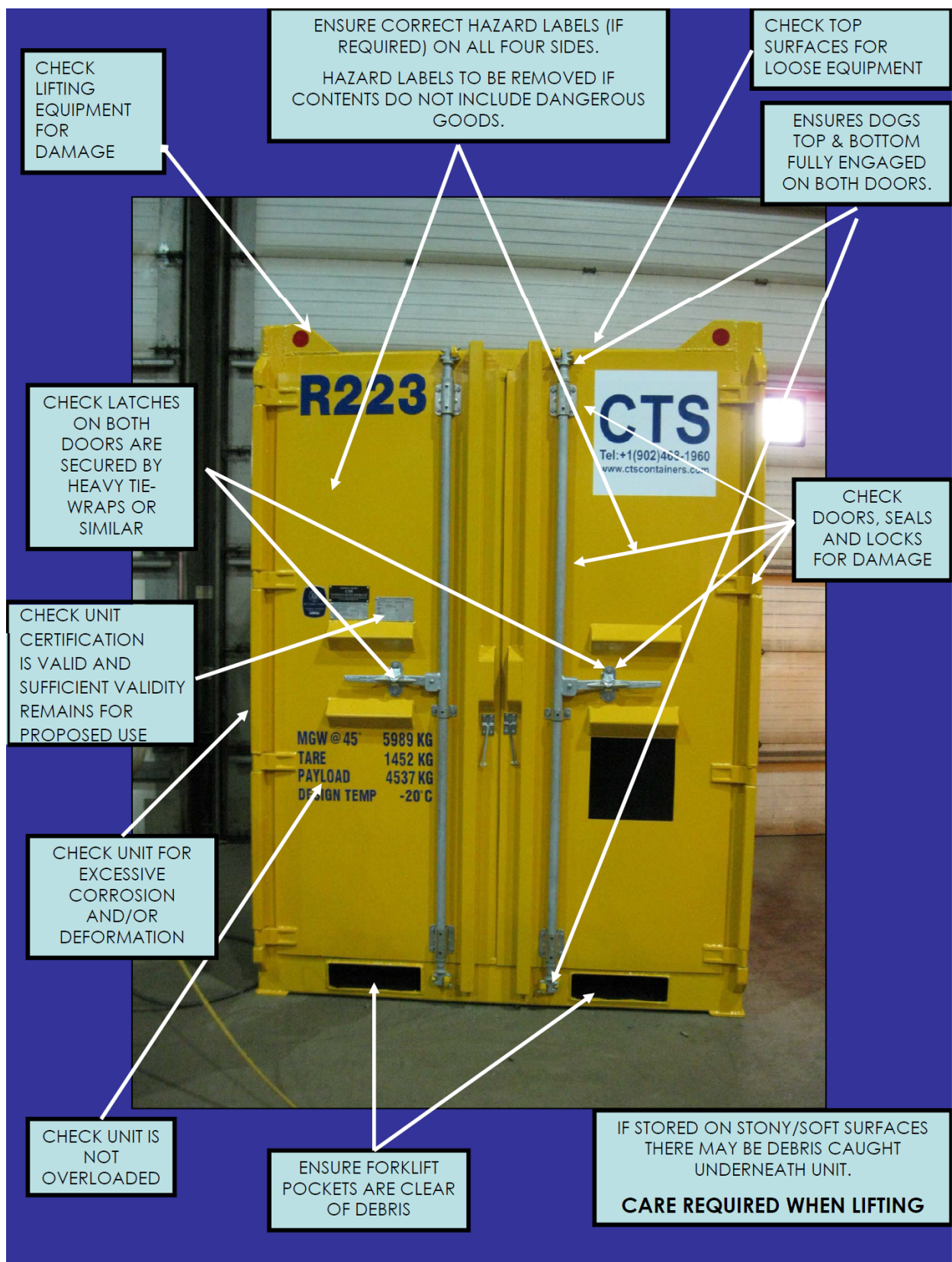
Appendix 1: Terms of Reference

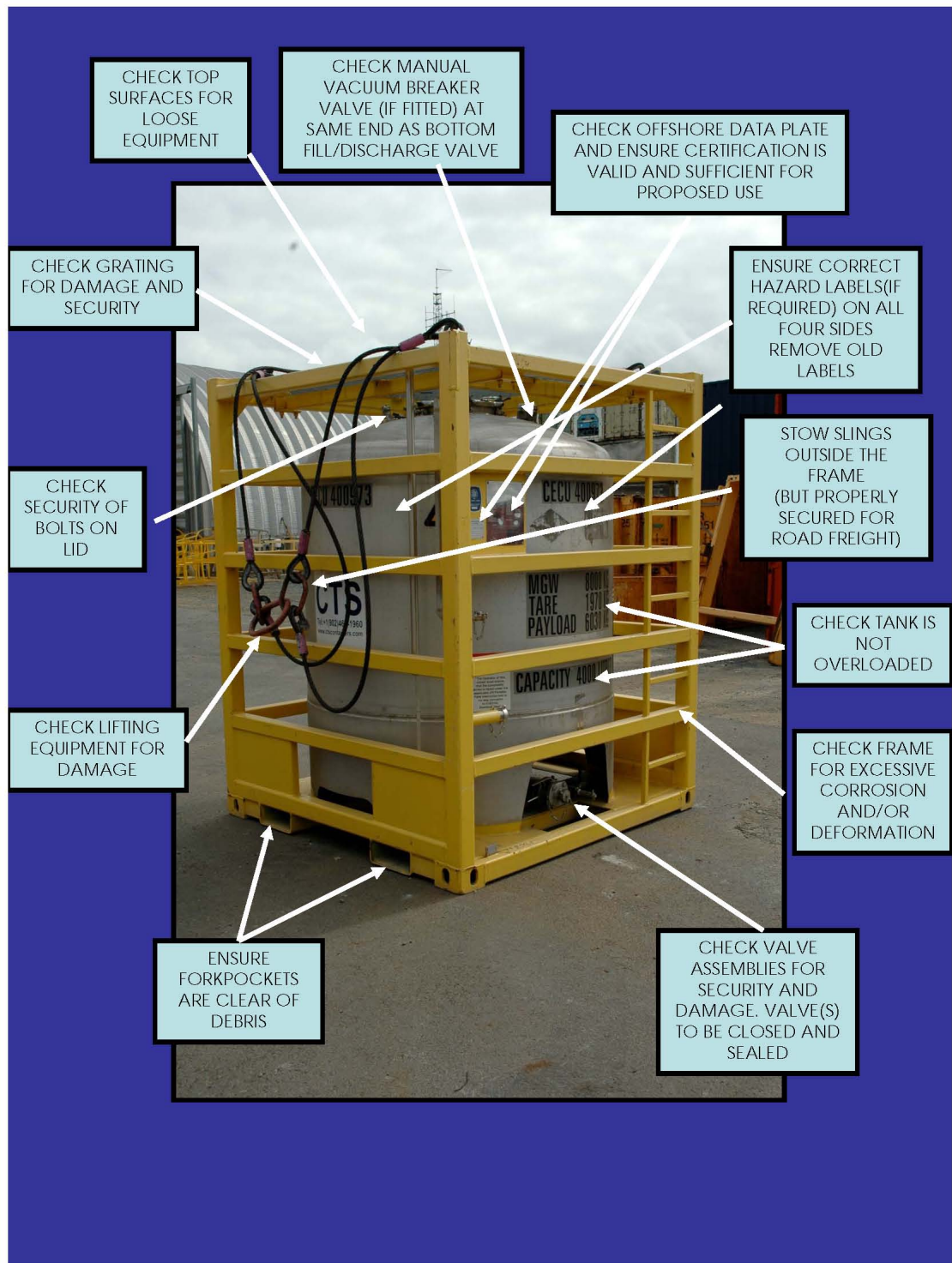
The Atlantic Canada Offshore Petroleum Safe Lifting Practices Committee

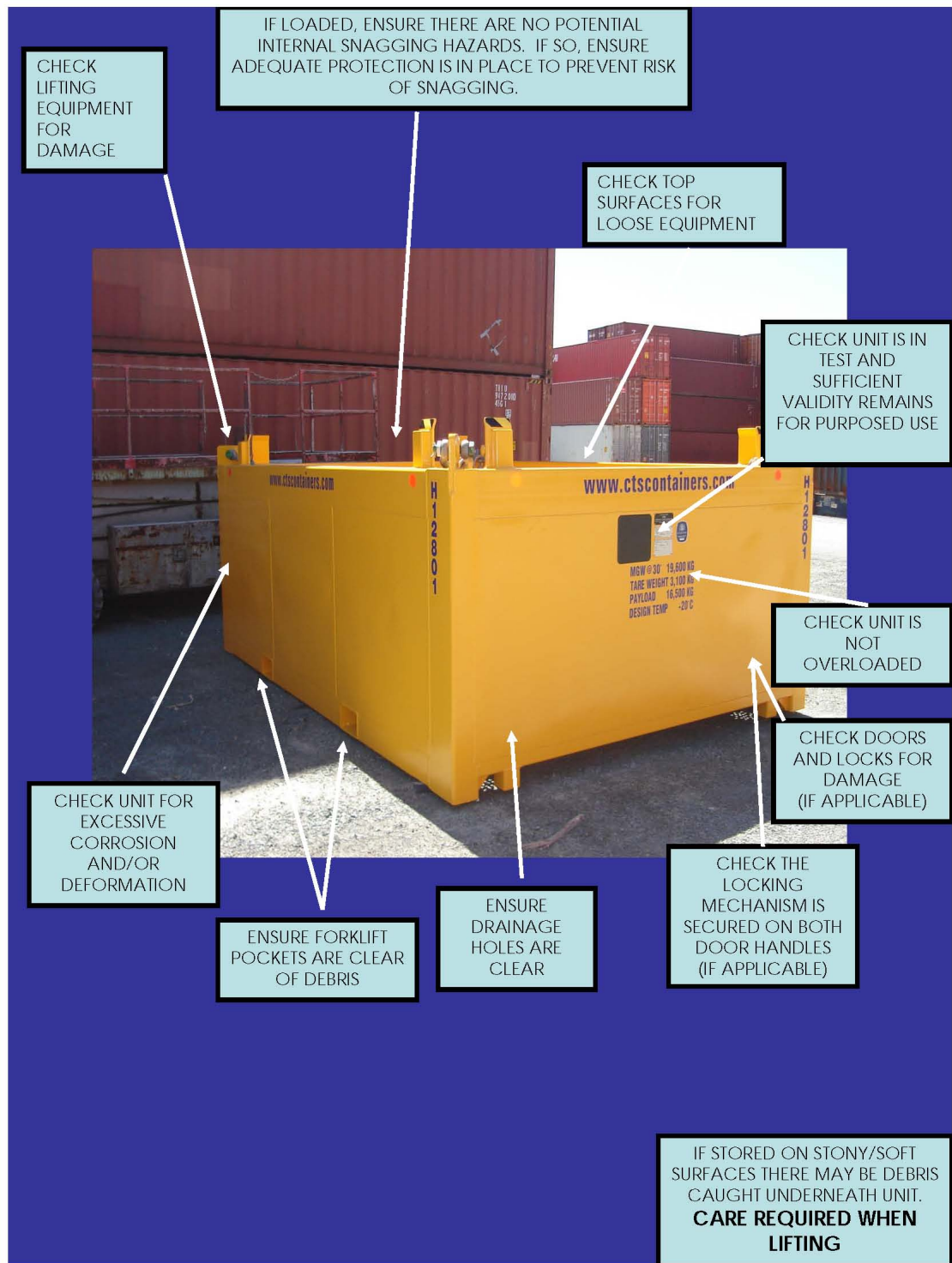
Terms of Reference

1. The Atlantic Canada Offshore Petroleum Safe Lifting Practices Committee (the Committee) is ***formed voluntarily*** by the Canada–Newfoundland Offshore Petroleum Board; the Canada–Nova Scotia Offshore Petroleum Board (the Boards), the Canadian Association of Oilwell Drilling Contractors (CAODC), the Canadian Association of Petroleum Producers (CAPP) and representatives of the Certifying Authorities (CAs) to develop and maintain the Atlantic Canada Offshore Petroleum Safe Lifting Practices (the Practices). The appointed members of the committee will be named by their respective organizations.
2. The Committee shall be made up of one representative from each of the Boards, one representative of the CAODC, four representatives of CAPP and one representative from the CAs. The committee will select a Chairperson from the CAPP representatives.
3. The Committee may retain the services of a competent consultant and/or a CAPP employee to act as secretary and to write, edit and maintain the ***Practices*** in accordance with the wishes of the Committee. The secretary shall schedule and issue agendas for all meetings and maintain records of all Committee decisions under the supervision of the Chairperson.
4. Named members may have alternates attend meetings in their absence. However a Quorum will consist of four “named members” and must include a representative from ***at least*** one of the Boards. All committee decisions will be made by consensus or named members.
5. The Committee reports to the CAPP Safety Sub-Committee. All major decisions ***made, and*** any public documents produced, by the Committee will be referred to CAPP and the Boards for ratification.
6. The Committee will also consult other key stakeholders, such as Transport Canada and marine industry representation during the development of the Practices. The Committee will consult other affected parties such as offshore workforces and training institutes as and when necessary. Every reasonable effort will be made to consult affected parties before decisions are made.
7. The Atlantic Canada Offshore Petroleum Safe Lifting Practices, ***once ratified by the Boards***, will apply to all offshore petroleum operations that are authorized by the Boards ***to the extent the Practices are consistent with the requirements laid down in applicable legislation. The Committee will endeavor to incorporate the best industry practice in the development and maintenance of the Safe Lifting Practices.***
8. CAPP is the custodian of the Practices.
9. The Committee will formulate a timeline and identify the key deliverables for ratification by the Boards and the CAPP Safety Sub-Committee by the end of May 2005. These will form part of the Scope of Work and are to be based upon the identification of project milestones.

Appendix 2: Guidance for Pre-Use Check of Containers







Appendix 3: List of References

List of References:

The latest version of the applicable standard should be used.

1. API RP 2A, Recommended Practice for Planning, Design and Constructing Fixed Offshore Platforms.
2. API RP 2D, Recommended Practice for Operation and Maintenance of Offshore Cranes.
3. API Spec 2C, Specification for Offshore Pedestal Mounted Cranes.
4. API Spec 8A, Specification for Drilling and Production Hoisting Equipment.
5. API RP 8B, Recommended Practice for Hoisting Tool Inspection and Maintenance Procedures.
6. API Spec 9A-04, Specification for Wire Rope.
7. API RP 9B, Recommended Practice on Application Care and use of Wire Rope for Oil Field Service.
8. ASME Boiler and Pressure Vessel Code.
9. ASME B18.3.1M-1986(R2002), Socket Head Cap Screws.
10. ASME B30.1, Safety Code for Jacks.
11. ASME B30.2, Overhead and Gantry Cranes—Rope Running Hoist.
12. ASME B30.7, Base Mounted Drum Hoists
13. ASME B30.9, Standard on Slings.
14. ASME B30.10, Hooks.
15. ASME B30.11, Monorails and Underhung Cranes.
16. ASME B30.16, Overhead Hoists (Underhung).
17. ASME B30.17, Overhead and Gantry Cranes—Underhung Hoist.
18. ASME B30.20, Standard for Below-the-Hook Lifting Devices.
19. ASME B30.21, Manually Lever Operated Hoists.
20. ASME B30.26, Rigging Hardware.
21. ASME HST-2, Performance Standard for Hand Chain Manually Operated Chain Hoists.
22. ASME HST-3, Performance Standard for Manually Level Operated Chain Hoists.

23. ASTM A391/A391M-01, Standard Specification for Grade 80 Alloy Steel Chain.
24. ASTM A574, Standard Specification for Alloy Steel Socket-Head Cap Screws.
25. ASTM A906/A906M-02, Standard Specification for Grade 80 and Grade 100 Alloy Steel Chain Slings for Overhead Lifting.
26. ASTM F1145, Standard Specification for Turnbuckles, Swaged, Welded, Forged.
27. BS 2853:1957, Specification for the Design and Testing of Steel Overhead Runway Beams.
28. BS 3032:1958 01, Specification for Higher Tensile Steel Shackles.
29. BS 3114, Specification for Alloy Steel Chain, Grade 80; Polished Short Link Calibrated Load Chain for Pulley Blocks.
30. BS 3551:1962, Specification for Alloy Steel Shackles.
31. BS 4018:1966, Specification for Pulley Blocks for Use with Wire Rope for a Maximum Lift of 25 tonf in Combination.
32. BS 4278:1984, Specification for Eyebolts for Lifting Purposes.
33. BS 4429:1987, Specification for Rigging Screws and Turnbuckles for General Engineering, Lifting Purposes and Pipe Hanger Applications.
34. BS 463-1:1958. Specification for Sockets for Wire Ropes; Inch Units.
35. BS 463-2:1970, Specification for Sockets for Wire Ropes; Metric Units.
36. BS 4942 Part1, Short Link Chain for Lifting Purposes; Specification for General Conditions of Acceptance.
37. BS 4942 Part 6, Short Link Chain for Lifting Purposes; Specification for Grade T8 Calibrated Chain.
38. BS 6166-1:1986, Lifting Slings; Methods of Rating.
39. BS 6210:1983, Code of Practice for the Safe Use of Wire Rope Slings for General Lifting Purposes.
40. BS 6668-1:1986, Textile Lifting Slings, Specification for Lifting Slings for General Service Made from Certain Natural and Man-made Fibre Ropes.
41. BS 6944, Specifications for Steel Shackles for Lifting and General Engineering Purposes Grade M4.
42. BS 7166:1989, Specification for Wedge and Socket Anchorages for Wire Ropes.

43. CNSOPB Board Safety Notice No. 2004-01.
44. CAN/CSA B167 Overhead travelling cranes – Design, inspection, testing, maintenance and safe operation
45. CAN/CSA B335-04, Safety Standard for Lift Trucks.
46. CAN/CSA S16.01, Limit States Design of Steel Structures.
47. CAN/CSA S471, General Requirements, Design Criteria, the Environment, and Loads.
48. CAN/CSA S473, Steel Structures, Offshore Structures.
49. CAN/CSA Z 150, Safety Code on Mobile Cranes.
50. CSA B51-M1991, Boiler, Pressure Vessel, and Pressure Piping Code.
51. DIN 582 (2003), Eye Nuts.
52. DIN 912, Hexagon Socket Head Cap Screws.
53. Det Norske Veritas (DNV), Rules for Certification of Lifting Appliances.
54. Det Norske Veritas (DNV) 2.7-1, Offshore Containers.
55. Det Norske Veritas (DNV) 2.7-2, Offshore Service Containers.
56. [EN 818-5:1999, Short Link Chain for Lifting Purposes; Safety; Chain Slings; Grade 4.](#)
57. [EN 1492-1:2000](#), Textile Slings; Safety; Flat Woven Webbing Slings, Made of Man-made Fibres, for General Purpose Use.
58. EN 1492-2:2000, Textile Slings; Safety; Roundslings, Made of Man-made Fibres, for General Purpose Use.
59. [EN 10204](#):2004, Metallic Materials; Types of Inspection Documents.
60. [EN 12079](#), Offshore Containers—Design, Construction, Testing, Inspection and Marking.
61. [EN 13414-1](#):2003, Steel wire rope slings. Slings for General Lifting Service.
62. [EN 13852-1:2004](#), Cranes; Offshore Cranes; Part 1 General Purpose Offshore Cranes.
63. Federal Specifications (USA) RR-C-271D(1), Chain and Attachments, Welded and Weldless.
64. IMO, International Maritime Dangerous Goods Code.

65. International Association of Oil and Gas Producers, Lifting and Hoisting Safety Recommended Practice, Report #376.
66. ISO 2408:2004, Steel Wire Ropes for General Purposes—Minimum Requirements.
67. ISO 2415:2004, Forged Shackles for General Lifting Purposes - Dee Shackles and Bow Shackles.
68. ISO 2731, DEE Shackles.
69. ISO 3056:1986, Non-Calibrated Round Steel Link Lifting Chain and Chain Slings—Use and Maintenance.
70. ISO 3189, Sockets for Wire Ropes for General Purposes
71. ISO 3266:1984, Eyebolts for General Lifting Purposes.
72. ISO 3268, Plastics - Glass-Reinforced Materials - Determination of Tensile Properties.
73. ISO 4309:2004, Cranes, Wire ropes; Care, Maintenance, Installation, Examination and Discard.
74. ISO 7531:1987, Wire Rope Slings for General Purposes—Characteristics and Specifications.
75. ISO 8792:1986, Wire rope Slings—Safety Criteria and Inspection Procedures for Use—International Restrictions.
76. ISO 10425:2003, Steel Wire Ropes for the Petroleum and Natural Gas Industries—Minimum Requirements and Terms for Acceptance.
77. ISO 17558, Steel wire ropes, Socketing Procedures, Molten Metal and Resin Socketing Lloyd's Register, Code for Lifting Appliances in a Marine Environment.
78. Lifting Operations and Lifting Requirements Regulations 1998, (SI 1998 No. 2307).
79. Newfoundland Offshore Petroleum Area Guidelines for Drilling Equipment.
80. Newfoundland Offshore Petroleum Area Occupational Safety and Health Regulations—DRAFT, 1989.
81. Nova Scotia Offshore Petroleum Area Occupational Health and Safety Requirements—Element 2, 2000.
82. Transport Canada Marine Safety Directorate TP 12245E, Web Sling Standard.
83. UNC-3A, Aerospace Industries Association, National Aerospace Standard -Screw Cap, Socket Head Hexagon, Corrosion Resistant Steel.