



P&I ロス・プリベンション・ガイド

P&I Loss Prevention Bulletin

編集:日本船主責任相互保険組合 損害調査部/ロス・プリベンション推進部

The Japan Ship Owners' Mutual Protection & Indemnity Association
Claims Department/Loss Prevention and Ship Inspection Department

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ロスプリベンションのための基本的なルールとガイドライン

Basic Rules and Guidance for Loss Prevention

はじめに

当組合は、2008年4月本部ビル内にロスプリベンション推進部を新設しました。2008年7月にはジャパンP&Iニューズレターに重量貨物輸送に関する事故防止について紹介しました。一方、P&Iロス・プリベンションガイド(2002年10月第1号から2009年10月第17号)では、船舶の整備不足の問題、固体・液体バルク貨物や冷凍・冷蔵貨物の輸送上の問題、船員の疾病に伴う問題、走錨防止対策など、様々なテーマに注目して参りました。また、ジャパン P&Iニューズレター24号(2009年4月発行)では、金井達夫常務理事によるクレーム傾向と当組合の取り組みに関する論説を掲載致しましたが、



Introduction

As you will be aware, our Loss Prevention and Ship Inspection Department was opened within the principal office in Tokyo during April, 2008 and is now well established. In the July, 2008 issue of the Newsletter, there was an article giving the basic rules of loss prevention for heavy lift cargo and there have been 17 earlier Volumes of this P&I Loss Prevention Bulletin. In those Bulletins, the first of which was issued in October, 2002, there have been articles covering a number of topics, including poor maintenance, problems associated with both solid and liquid bulk cargoes, and with reefer cargoes, crew illness and, in Vol.17, anchor dragging. In the April, 2009, Issue 24 of the Japan P&I Newsletter there was an article by Mr Tatsuo Kanai, Executive Director, which dealt with Trends in Claims and Initiatives taken by the Association. That article includes a pie-chart which shows the proportion of the total of all claims for each of the various categories, and four categories account for 88.58% of the total - Cargo 42.63%; Crew 32.65%; Pier 11.13%; Collision 2.17%.

In view of this, we thought it might now be appropriate to go back to basics to remind ourselves what regulations, recommendations



この号に掲載した円チャートの示すように、カーゴクレーム42.63%、クルークレーム32.65%、港湾設備等損傷クレーム11.13%、衝突2.17%の4項目が、受理クレーム総件数の88.58%を占めております。

本号では原点に立ち返り、船舶運航においてどのような規定、勧告、ガイドラインなどに従うべきかなどの基本原則を考察しようと存じます。荷役作業、貨物の取り扱い、航法や船舶の取り扱い、乗組員の行動手順、堪航性／耐貨性／安全性を考慮した船舶整備等が関連の業務となります。原点に戻ること、本号が、当組合の発行物の補完となり、皆様のロスプリベンション推進のご参考になれば幸いと存じます。

IMOコードとガイドライン

SOLAS条約 - International Convention for the Safety of Life at Sea (海上における人命の安全のための国際条約) - はIMOの条約のうち最も重要な条約のひとつです。2004年以来頻繁に修正が加えられており、2009年の統合版が最新のものとなっています。SOLAS条約は、船舶の構造面での安全性、船舶の設備や艀装、貨物輸送、無線通信、航法や管理など、船舶の運航に関する必須条件を定めています。しかし、船舶の構造や設備については船級協会規則に従うべきである一方、貨物輸送その他の事項については、SOLAS条約が参照するIMOによる他の様々な規約(頻繁に改訂されている)に従うことになります。

MARPOL条約 - International Convention for the Prevention of Pollution from Ships (船舶による汚染の防止のための国際条約) - は、船舶の日常業務全般に影響を与えるもので、2006年の統合版が最新のものとなっています。MARPOL条約は、機関室からの残留物など船舶を発生源とするあらゆる種類の汚染に関する規則、オイルタンカー

and guidance must be followed during the operation of vessels and go through the basic principles to be remembered during the various shipboard operations which, of course, we all learned during our training. Those operations include cargo operation and care for the cargo, navigation and handling of the vessel, crew procedures and the maintenance of the vessel in a seaworthy, cargoworthy and safe condition. These basics will supplement past articles and will be referred back to in future articles, and will set out guidance and information intended to aid Loss Prevention.

As we go through the basics we will pose questions which should give food for thought.

IMO Codes and Guidelines

SOLAS - the International Convention for the Safety of Life at Sea - is one of the principal conventions of the IMO, the current edition being the Consolidated Edition 2009, but there are a number of amendments which have been published during the period since 2004. SOLAS incorporates requirements with regard to safety aspects of the construction, the equipment and fitting of a ship, and the operations of a ship including the carriage of cargoes, radio communications, navigation and management. It should be remembered that with regard to construction and equipment, the appropriate classification society rules should be followed. With regard to the carriage of cargoes and other topics, SOLAS directs the reader to the various codes published by IMO. Also, bear in mind that amendments are frequently published by IMO.

MARPOL - the International Convention for the Prevention of Pollution from Ships - the latest edition being the Consolidated Edition 2006, affects all ships and their day-to-day operation. MARPOL incorporates the regulations covering the various sources of ship-generated pollution, including residues from machinery spaces, the requirements for oil tankers, regulations with

に関する規則、汚水や廃物や油以外の汚染物質に関する規則など、広汎に汚染に関する問題を包括的に扱っています。また、貨物残留物や船艙の清掃により生じる汚染に関する規則も忘れてはなりません。

IMDGコード-International Maritime Dangerous Goods Code (国際海上危険物規則)-は2008年版が最新であり、危険物を9つのクラスと海洋汚染物質に分類した上で、個品輸送における輸送要件を詳細にわたり定めています。

IMSBCコード-International Maritime Solid Bulk Cargoes Code (国際海上固体ばら積貨物コード)-はBCコード(Code of Safe Practice for Solid Bulk Cargoes)に代わるものとして、2009年に公表され、これにより、IMOの他の規則や勧告の補正がなされています。IMSBCコードは固体ばら積貨物輸送に伴う危険を、不適切な貨物の積付、航海中の船舶の復原力の損失や低下、及び貨物の化学反応の3種に分類しています。また、このコードは13節と4付属文書で構成されており、はじめの13節では一般的な情報の他に積荷、貨物輸送、揚荷、乗組員の安全に関するガイドラインや、様々なテストや手順に関する説明があります。付属文書1は固体ばら積貨物の一覧表、付属文書2から4はテスト手順の詳細、固体ばら積貨物の性状及び物質リストになります。

CSSコード - Code of Safe Practice for Cargo Stowage and Securing (貨物の積付と固縛に関する安全実施基準)-は安全な貨物の積付と固縛に関する基本的な勧告を含む一般原則の他、悪天候対策に関するガイドラインや固縛設備の評価方法などの詳細を含むものです。固体や液体ばら積貨物以外を積載する船舶では、積荷固縛マニュアルの作成に関するガイドラインに従い、積荷固縛マニュアルを作成し本船内に保持する必要があります。

regard to other polluting substances, as well as by sewage and garbage. The possibility of pollution by cargo residues or cargo hold washings must also not be forgotten and regulations are included.

The International Maritime Dangerous Goods Code (IMDG Code), the latest edition being that of 2008, gives detailed requirements for the carriage of all classes of dangerous goods in packaged form, that is, not in bulk. The various commodities are divided into nine classes, with marine pollutants being in a separate section.

The International Maritime Solid Bulk Cargoes Code was published in 2009 and replaces the Code of Safe Practice for Solid Bulk Cargoes. This edition includes a supplement which gives other Codes and Recommendations published by IMO. The IMSBC Code sets out the hazards associated with the shipment of solid bulk cargoes which fall into three categories: improper distribution of the cargo; the loss of, or reduction in, stability of the vessel during the voyage; chemical reaction within the cargo. The IMSBC Code is set out in 13 sections and 4 appendices. In the 13 sections general information is given, followed by guidance upon loading, carriage and unloading of cargo, safety of personnel and details of the methods of various tests and procedures to be followed. Appendix no.1 gives the schedules for solid bulk cargoes and the other three appendices give further details of test procedures, the properties of solid bulk cargoes and lastly an index of materials.

The Code of Safe Practice for Cargo Stowage and Securing incorporates general principles for the safe stowage and securing of cargoes with details of basic recommendations to be followed, guidance with regard to actions in heavy weather and methods of assessing the efficiency of securing arrangements. Vessels which are designed to carry cargoes other than solid or liquid bulk cargoes should have on



1966年国際満載喫水線条約及び1988年議定書(2003年改定)- International Convention on Load Lines 1966, and Protocol of 1988 as amended in 2003 - は、海上での人命と財産の安全をはかるため、外航船において貨物の積載限度を定める満載喫水線に関する統一した原則や規定を設定しています。

ISMコード - International Safety Management Code (国際安全管理コード) - に沿った安全管理システム (Safety Management System -SMS-) に従って、船舶は運航しなければなりません。船舶運航者は、同コードの要請に従って船舶を運航し、船舶上には船舶運航や乗組員に関するすべての手順が備置される必要があります。

ISPSコード -International Ship and Port Facility Security (国際船舶港湾施設保安コード)- は2003年版が最新のものとなっています。これは国際的な枠組で安全保障上の脅威を感知し予防措置をとることを目的としています。これにより本船と港湾側双方による適切な要員の指定や保安対策の施行が必要となります。

1978年STCW条約に伴うSTCWコード-Seafarers' Training, Certification and Watchkeeping Code (船員の訓練及び資格証明ならびに当直基準に関する規則) は、船舶内で働く各船員につい

board a Cargo Securing Manual prepared in accordance with the Guidelines for the preparation of the Cargo Securing Manual.

The International Convention on Load Lines 1966, and Protocol of 1988 as amended in 2003, establishes the uniform principles and rules with regard to the load lines to which vessels on international voyages may be loaded, having regard to the need for safeguarding life and property at sea.

All vessels are to be operated in accordance with a Safety Management System, which is to comply with the International Safety Management Code (the ISM Code). The company operating the vessel must also be run in accordance with the requirements of the Code and on board the vessel there are to be procedures in place to cover all aspects of the operation of the vessel and the crew on board.

The International Ship and Port Facility Security (ISPS) Code, the latest edition being that of 2003, aims to establish an international framework in which security threats can be detected and preventive measures can be taken. This may be achieved by the designation of appropriate personnel on board and ashore and the putting into effect of security plans.

The Seafarers' Training, Certification and Watchkeeping Code, 1978 (STCW), together with the STCW Convention, gives in detail the minimum standard required to be maintained with regard to training and certification for seafarers for the various positions on board and manning levels required.

The procedures for Port State Control, 2000 edition, is intended to provide basic guidance on the conduct of Port State control inspections and afford consistency in the conduct of those inspections, the recognition of deficiencies of a ship, the equipment or its crew, and the application of control procedures. The procedures apply to all ships under the SOLAS,



て必要な訓練及び資格証明などの基準や配乗レベルを規定しています。

外国船舶監督手続(2000年版) - Procedure for Port State Control は、旗国による船舶管理検査に関する基本的なガイドラインを設定し、当該検査の各旗国間での一貫性を図るとともに、船舶とその設備や船員に関する問題点や検査手続の周知を図ることを目的としています。なお当該検査はSOLAS、満載喫水線、MARPOL、STCWや船舶のトン数測度に関する国際条約などに従い、全ての船舶を検査の対象としています。

復原性規則 - Code of Intact Stability-は、船種別に復原性の基準を定め、船上で必要となる情報や転覆に対する一般的な予防措置、天候に応じた運航手順などの要請をまとめています。

特定の種類の貨物については、運送取扱手順に関する基準やガイドラインなども公表されています。ばら積穀類の安全輸送に関する国際規則 - International Code for the Safe Carriage of Grain in Bulk-は船舶が穀物輸送を行うことについての要件や積載後の本船の復原性基準を定めています。甲板積木材運搬船に関する安全実施規則 1991年版 - Code of Safe Practice for Ships Carrying Timber Deck Cargoes, 1991-は、丸太や包装済木材等、様々な種類の木材に関するガイドラインや、その甲板上・下での輸送方法について定めています。BLUコード - Code of Practice for the Safe Loading and Unloading of Bulk Carriers(ばら積船の安全荷役に関する実施規則)-は、固体ばら積貨物の安全な積荷／揚荷作業のために、本船側と港湾側の要員が従うべきガイドライン及び手順を定めています。また、駆除剤は昆虫の進入防止やねずみや害虫の防除に一般的に使用されていますが、駆除剤の安全な使用方法に関する勧告 - recommendations for the safe use

Load Lines, MARPOL, STCW and Tonnage conventions.

The Code on Intact Stability contains the requirements for intact stability criteria for different types of ship and gives details of information required on board, general precautions against capsizing and operational procedures relating to weather conditions.

There are also publications which give requirements and guidance upon specific types of cargo and other operations. The International Code for the Safe Carriage of Grain in Bulk sets out specific requirements for vessels intending to carry grain and the stability requirement for those vessels when loaded. The Code of Safe Practice for Ships Carrying Timber Deck Cargoes, 1991, gives guidance for the various types of timber, including logs, packaged timber, etc., and for its carriage both on and under deck. The BLU Code - Code of Practice for the Safe Loading and Unloading of Bulk Carriers - gives guidance and procedures to be followed by those on board the vessel and those ashore during loading and unloading of a solid bulk cargo. Pesticides are often used for the control of insect infestation and the control of rodent pests and the recommendations for the safe use of pesticides in ships gives guidance on the various types of insecticides and fumigants and their safe methods of use. Other codes and guidelines deal with ballast water management, unitised cargoes and road vehicles on ro-ro ships.

Other IMO publications cover topics including pollution, salvage, wreck removal and associated matters, the operation of gas carriers, offshore supply vessels, high speed craft and fishing vessels, the collision regulations and such matters such as ships' routing, the code of signals and communications. A catalogue of all publications and a publications list which is regularly updated can be found at www.imo.org and follow the links (Publications Bookshop → Catalogue & Books Code Lists).



of pesticides in ships - は駆除剤や燻蒸剤の種類や安全な使用方法に関するガイドラインとなっています。他にも、バラスト水管理方法、RoRo船の貨物や車両に関する規則・基準などがあります。

IMOは、他にも汚染、海難救助、船骸撤去に関連する問題、ガス輸送船／海洋補給船／高速船／漁船などの運航や、衝突防止規則の他、航路選定、信号法や通信方法に関するものなど様々な事項について書籍を発行しています。発行物の最新のカatalogueやリストはIMOウェブサイト <http://www.imo.org> (Publication Bookshop → Catalogue & Book Code Lists) にてご覧いただけます。

ポイント:

- ・各機関士は油水分離装置の正しい使用方法を把握していますか。
- ・一般／特殊貨物の積荷の際、固縛強度の計算を行っていますか。また積載後、貨物の固縛状態はチェックされていますか。
- ・訪船者がある場合、船舶の保安手順は実行されていますか。
- ・乗組員が安全管理手順を熟知しているかどうかの確認をどのように行っていますか。

タンカー運航のガイドライン

IMOによるガイドラインや基準はタンカー運航の全てを網羅するものではありません。OCIMF - Oil Companies International Marine Forum (石油会社国際海事評議会) - はタンカーの安全促進を目的として、多くの勧告やガイドラインを公表しています。特に重要な公表物として挙げられるISGOTT - International Safety Guide for Oil Tankers and Terminals (オイルタンカーとターミナルに関する国際安全指針) - 2006年第5版は、

Questions:

- ・Do all the junior engineers know how to operate the oily water separator properly?
- ・During loading of general or project cargo, are lashing calculations carried out and after loading are all the securing arrangements checked?
- ・Is the vessel's security plan followed when visitors attend on board?
- ・How do you ensure that the crew are fully conversant with the SMS procedures?

Guides for Tanker Operations

The guides and requirements issued by IMO do not cover all aspects of tanker operations. The Oil Companies International Marine Forum (OCIMF) produces a number of publications which set out recommendations and guidance with the aim of enhancing safety in the tanker industry. The most notable of those publications is the International Safety Guide for Oil Tankers and Terminals (ISGOTT), 5th Edition, 2006, which has become the industry's standard reference for the safe operation of tankers and oil terminals. Amongst other things, it contains The Ship/Shore Safety Checklist, and guidelines for its completion.

Certain tanker operations which are covered by ISGOTT are covered in greater detail in sister OCIMF publications such as the 'Ship to Ship Transfer Guide - Petroleum, 4th Edition, 2005, which sets out advice for all of those involved in STS transfer operations. A complete list of OCIMF's publications can be found on their website - www.ocimf.com.

Other Information

In addition to all the various guides and regulations described above, additional information and assistance on many of these subjects and upon others can be obtained from the numerous books, manuals and papers published by maritime publishers, institutions and universities around the world and these

オイルタンカー及びターミナルの安全運航についての業界の標準となっており、船舶と港湾による安全チェックリストやその実施ガイドラインを含む内容となっています。

ISGOTTが提唱するタンカー運航手順の詳細はISGOTTの出版物でご参照頂けます。例えば、船舶間での貨物の瀬取り作業に関しては、船舶間瀬取りガイド石油編 2005年第4版- Ship to Ship Transfer Guide - Petroleum, 4th ed. 2005-があります。OCIMFの出版物のリストは www.ocimf.comにて閲覧可能です。

その他の情報

これまでに説明した様々なガイドラインや規定に関しては、多くの書籍やマニュアル、国内外の海事書籍出版社、団体、大学などの出版物でも情報を得ることが出来ます。是非、ご参照下さい。

覚えておくべき基本原則

船主、船舶管理者、船長及び乗組員が従うべき基本原則を以下にまとめました。主として、海事における常識やシーマンシップに由来するか、IMOの規則やガイドラインに定められているものです。

- ・旅客・貨物輸送・漁撈その他目的に関わらず、当該航海に対しあらゆる面で船舶の堪航性を確立すること。
- ・全ての乗組員が十分に訓練を受け、業務内容に習熟し、遂行する業務に必要な資格を保有していること。また、船員の構成は旗国により交付されるManning Certificateに従うこと。
- ・目的地までの貨物の安全輸送のため、船舶はあらゆる面で堪貨性を確立すること。船艙／タンクは貨物の輸送に適切なものであり、荷役装置、固縛装置、ハッチカバー、タンクの蓋、換気

should be consulted and the information used as and when appropriate.

Basic Principles to be Remembered

Below are set out the basic principles to be followed by the owners, managers, masters and crews of vessels. The principles are, primarily, common sense and good seamanship practice and the observance of the IMO Codes and Guidelines.

- ・The vessel should be in all respects seaworthy for the intended voyage, be it a cruise with passengers on board, for the carriage of cargo between ports or fishing trip.
- ・Every member of the crew, from the master to the most junior member, should be fully and appropriately trained and familiarised and should possess the required certificates for their job on board and the make-up of the crew should be in compliance with the Manning Certificate issued by the Flag State.
- ・The vessel should be in all respects cargoworthy and able to safely carry the cargo to the destination. The holds and/or tanks should be suitable and appropriate for the designated cargo and all equipment and machinery - cargo handling equipment, securing equipment, hatch covers, tank lids, ventilation, heating and temperature maintenance machinery - should all be in a thoroughly efficient and operational condition.
- ・All parts of the vessel and all machinery, fittings and equipment on board, variously in the engine compartment, steering flat, accommodation, on deck and elsewhere, should be fully maintained in an efficient and operational state. Planned maintenance should be arranged and carried out as appropriate and spares and loose equipment not in use should be properly and appropriately stored.
- ・All parts of the vessel should be kept in a condition which is safe for the crew members to carry out their routine activities and duties. Appropriate monitoring of all parts of the



装置、加熱装置や温度調節機器等、全ての設備や機械を良好で使用可能な状態に保つこと。

- ・機関室を始め操舵室、居住区、デッキその他船内各所の機器、艀装や設備などを十分に保守し使用可能な状態に保つこと。保守整備管理システムを確立、実行し、また予備機材を適切な場所に保管すること。
- ・船内の全ての場所を乗組員が安全に日常の活動や業務を行うことが出来る様、良好な状態に保つこと。また、乗組員の安全のため、船内業務内容及び作業場所の適切な監視をすること。
- ・各航海の計画は事前に行ない全ての面を網羅すること。航路選定を行ない、必要な航海情報を最新にし、船内に保持すること。貨物の輸送、荷役、積付、固縛、取扱は全て事前に計画し、継続チェックすること。航海前に機器、艀装、設備の定期メンテナンスを計画すること。
- ・避難訓練／船員訓練を計画実施し、乗組員の習熟を図ること。
- ・全ての船上作業は、環境汚染防止の原則に基づき行なわれること。
- ・船上作業に関する全記録を保持すること。甲機ログブックその他レーダー／換気装置／測深装置の日誌、その他保守、修理、船員業務や手順など必要に応じ、適切に記録すること。
- ・安全管理システムを常時遵守・実施すること。また、ISMマニュアルは全乗組員が何時でも参照可能な状態に保管し、乗組員は船内での各担当業務の手順を熟知すること。
- ・定期的な検査及び監査を必要に応じ適切に実施し、報告書を作成し、必要あれば適切な対応策をとること。

vessel and crew activities should be ongoing to ensure the safety of crew members.

- ・All aspects of each voyage should be thoroughly planned, from beginning to end. Passage planning should be completed and all the necessary nautical publications required for the voyage should be on board and corrected up to date. The carriage, handling, stowing, securing and care of the cargo should be planned and then monitored throughout. Routine maintenance of machinery, fittings and equipment should be planned for the intended voyage.
- ・Safety exercises and crew training should be arranged and completed in order that the crew are fully efficient and fully informed.
- ・All operations on board should be carried out in such a manner as to avoid pollution.
- ・Records of all operations on board should be kept. Deck and engine room logs should be kept throughout and other logs and, for example, radar, ventilation and soundings logs, should be kept and records of all maintenance and repair work, and of crew activities and procedures should be kept as appropriate.
- ・The safety management system should be in operation and should be followed at all times. The manuals should be kept on board and should be available to all crew members and all crew members should be familiar with procedures appropriate to their work on board.
- ・Routine inspections and audits should be carried out when necessary and appropriate and reports should be issued and appropriate actions taken where necessary.

Questions:

- ・Are all the relevant publications on board and available for reference?
- ・Are all the ship's certificates, plans, records and other necessary documents available on board and up to date?



ポイント:

- ・必要な書物が全て船内に保管され、閲覧可能な状態にありますか。
- ・本船の証明書、計画書、記録その他必要書類は最新のものまで全て船内に保持されていますか。

基本原則の実行

IMOの条約においては、船舶の安全な運航の基礎とすべく、様々なコードやガイドラインが発行されています。各旗国はそれら条約に署名又は承認し、条約の定めが旗国下の全船舶で施行される様に措置をとっています。旗国の独自の又は委嘱を受けた検査員により、条約上の証書の発行前に様々な検査を実施することもあります。

船級協会はIMOの条約の規定に沿った船舶の設計や構造に関する基準を設定しています。また船級協会の検査員は、船体と機器の状態が適切な保守・修理により基準を満たしていることを確認すべく、初期／定期検査を実行しています。この際船舶の状態が良好であれば船級は維持されますが、検査により基準が満たされていないことが確認されれば船級は停止又は抹消されることもあります。この様な船級協会による検査に加え、多くの旗国では条約上の検査の実施のため船級協会に検査を委嘱することがあります。

Implementation of the Basic Principles

The IMO Conventions, which are published in their various codes and guidelines, set out the basics for the safe operation of ships. Each Flag State signs or ratifies those conventions and has in place arrangements to ensure the provisions of the conventions are in force on board all vessels entered in their Registry. Flag States may have their own personnel to carry out the various inspections prior to issuing the statutory certificates or may authorise other organisations to undertake the work.

Classification Societies have rules for the design and construction of vessels which incorporate requirements under IMO Conventions. Classification Society surveyors will carry out initial and periodical inspections of the hull and of the machinery on board in order to establish that the required standards are being maintained by appropriate repairs and maintenance. If the vessel is in satisfactory condition, class will be maintained, whereas the society might suspend or withdraw the class of a vessel if not satisfied. In addition to Classification Society surveys, many Flag States appoint Classification Societies to carry out statutory surveys and inspections on their behalf.

Port States around the world have rights which allow inspections on board foreign vessels visiting their ports and vessels registered in the country of that port and Port State Control inspectors routinely attend on board to establish whether or not a vessel has on board the required certificates, and that those certificates are in date, and in order to establish the overall condition of the vessel. If the inspectors find anything which is not as required, they have the power to require rectification of deficiencies during one of a range of periods and, if appropriate, have the power to detain a vessel which does not comply with international requirements, until necessary repairs have been carried out such that the vessel does again comply.



寄港国は、入港する当該国及び外国籍の船舶を自由に検査する権限を持ち、寄港国の検査員により、船舶が必要かつ有効な証書を所持しているか、また船舶の状態は良好かなどの定期的な検査が実施されます。検査員は、船舶に不具合を発見した場合、一定の期間内で修繕する様勧告する権限を持ち、また国際的な規定に沿わない場合には、必要な修繕がとられ規定に従うまでの間船舶の出港を禁止することが出来ます。

このように船級協会／旗国／寄港国の委嘱検査員により、遠洋航海に臨む船舶の状態が、船体、乗組員、環境汚染防止などの面で良好であり、航海に適切な状態であることを確認するため検査が実施されています。これに加え、現地当局やこれらの機関により任命された検査員により貨物を安全に輸送する能力に関する検査も行われます。

乗組員の構成、貨物・乗客の輸送、漁業、船舶の保守・安全対策など、船舶運航上の責任は陸上の船会社や船上の乗組員らにあります。ISMコードは、船会社と船舶が安全で効率的な業務遂行を行なうための基本的な管理システムを立案しています。このコードは企業と船舶の必要に合致した独自の管理システムを企業自身が確立し、それに対する監査が陸上及び船舶の両方で実施されることを要請しています。これは、必要な業務が適切な状況で良好に実行されること、またそれら業務がこういった状況で何故実行されなかったのか、或いは何故不適切に実行されたのかなどを明確にし、後の対応に繋げていくことを目的としています。当該システムは組織内の監査に加え、組織外の定期監査により船舶と陸上の事務所の双方が監視され、それにより適当な証明書が発行されることとなっています。

Under the system of inspections by surveyors and inspectors employed or appointed by Classification Societies, Flag States and Port States, surveys and inspections are carried out on board vessels to ensure that a vessel which is engaged on an ocean voyage is in a condition suitable for the completion of that voyage in terms of the safety of the vessel, her crew and pollution prevention. Additionally, other inspections will be carried out by local authority surveyors, or surveyors appointed by those authorities, with regard to the ability of the vessel to safely carry the designated cargo.

The operation of a vessel, that is the organisation of the crew, the carrying of cargoes and passengers, fishing operations, the general maintenance of the vessel and safety aspects, remain the responsibility of the on-shore-based company and the crew on board. The ISM Code sets out a basic management system within which the shipping company and vessel can work safely and efficiently. The Code requires that the company develops its own management system, based upon its and the vessel's needs and requirements, and there must be auditing of operations both ashore and on board, first to ensure that the required operations are carried out when and as appropriate, second to ensure those operations are successfully and properly carried out and third to identify where, when and why operations are not being carried out as required, or are carried out incorrectly, so that corrective action can be taken when necessary. The whole system is monitored by in-house auditors and an external auditor will periodically carry out examinations both on board and within the company offices, following which appropriate certificates may be issued.

The ISM Code requires the company to develop a management system which suits the needs of the company and the vessels being managed with reference to safety and pollution

このように、ISMコードは各船会社の必要に応じた管理システムを構築し、船舶運航における安全と環境保護を計り、船舶による航海の完遂を行なうことを求めています。ISMコードの本来の目的は安全と汚染防止ですが、多くの企業により開発される安全管理システムは通常の航海での全業務及び活動を包括する内容となっています。

運用手順とその基準

これまでに説明した基本原則に従い、様々なIMOコードやガイドライン、船級協会の規定に沿った船舶運航のための様々な手順や規定について説明してまいります。

船舶職員

乗組員、つまり船長／航海士／機関士その他職員・部員の全員が必要な証書を所持し、各役職に適任でなければなりません。また本船に新しい乗組員が加わる場合、適切な引継ぎ期間を与え、業務を担当させる前に先ず必要な訓練を実施し、業務に関する知識確認を図らなければなりません。更に、各乗組員は安全管理システムに精通し、かつ他乗組員の役割と責任についても理解している必要があります。また、緊急事態での乗組員の対応の向上を計るため、航海中には安全訓練を実施する必要があります。船長や機関長は職員と部員を監視し、追加訓練をすべき乗組員がいる場合には、すぐ実施する必要があります。

メンテナンス

安全で効率の良い航海のため、船舶は常に堪航性／堪貨性を保つよう管理されなければなりません。機器や設備など船舶のあらゆる箇所は全て定期的な検査の上、必要であればメンテナンスや修理を施し、良好な状態を保つようにして下さい。

prevention and the voyages being undertaken by the vessels. Although the primary interests of the ISM Code are safety and pollution prevention, the safety management system developed by most companies will incorporate the full range of operations and activities undertaken on board during ordinary voyages.

Operational Procedures and Requirements

We will now go through the various procedures and requirements necessary for the running of an efficient vessel which will, when completed, ensure that on the one hand the basic principles set out above are followed, whilst on the other the requirements under the various IMO Codes and Guidelines and the Classification Society rules are complied with.

Ship's Personnel

The ship's crew, that is, the master, deck and engine officers and all ratings, should be fully qualified for the position they hold and should possess the required certificates. When a new crew member joins a vessel there should be an appropriate handover period and any necessary training and familiarisation should be completed before the crew member takes over the responsibilities of the position on board. Every crew member should be fully conversant with the safety management system of the vessel and should be aware of the responsibilities of others on board. During each voyage safety exercises should be arranged for the training of crew members and to improve their efficiency in dealing with emergency situations. The performance of the officers and ratings should be monitored by the master and chief engineer and if it is found that additional training is required by any of them, arrangements should be put in place to allow such training to be undertaken.

Maintenance

The vessel should be maintained in a seaworthy and cargoworthy condition in order to safely



甲板上、船首と船尾にはウインドラスや係船ウインチ、錨、錨鎖、係船索などがあります。主甲板にも係船ウインチや係船索がある場合もあります。ウインドラスやウインチを良好に保つことは投錨時や着岸作業時の事故防止となります。係船索には合成繊維やワイヤー、またそれらを組み合わせたものの等の種類がありますが、いずれにせよ損傷や摩耗、不具合のあるものは交換して下さい。錨鎖も同様に、定期的に検査の上、損傷や損耗に注意して下さい。

その他の甲板上機器や艀装も定期的に検査し、必要に応じて修繕を施して下さい。クレーンやウインチ、その他荷役設備に欠陥がある場合、故障や倒壊などが生じ、その結果乗組員や陸上から来た作業員が怪我をしたり船舶の他の設備や貨物に損傷を与えたりしかねず、またこれにより航海に遅れを来すことも有り得ます。露天甲板昇降口、船楼、甲板室やその他の区画周辺の風雨密扉、換気装置のカバー等は、対風雨性を保ち、良好な状態に保つことが大切です。航海中、船舶が波を受けた際シール部分より船艙や居住区等に海水が浸入し、貨物、備品、配電盤等に濡れ損害が発生することもあります。カバーや扉などはホーステストや超音波テスト等を定期的実施し、状態を確認してください。このような部分の水密生保持は満載喫水線条約により定められています。

主機、補機、操舵機の状態は、船級規則及び本船の保守計画に沿って管理して下さい。また、機械周辺等のバルブや配管に漏れがある場合、汚染や貨物損害、また不要な浸水などを招く可能性がありますので、それらを常に良好に保つことが大切です。

安全設備は国際安全設備証書に従い、定期的な検査や必要に応じたテスト及び保守を実施し、

and efficiently complete the intended voyage. All parts of the vessel, her machinery and her equipment should be routinely inspected to establish their condition and where necessary maintenance and repairs should be carried out.

On deck, forward and aft, there are the windlasses, mooring winches and other pieces of equipment, and the anchors, chains and mooring lines. Additionally, there might be mooring winches and mooring lines at locations on the main deck. The windlasses and winches should be kept in satisfactory working condition so that anchoring and mooring operations are completed without incident and the vessel is maintained alongside without incident. Mooring lines, be they synthetic fibre, wire or combination types, should be inspected for damage and wear, and defective lines should be renewed. Similarly, anchor chains should be regularly inspected for damage and wear.

Other on-deck machinery and fittings should be routinely inspected for defects and the necessary work carried out. The presence of defects or damages to cranes, winches or any other cargo-handling equipment might lead to failure or collapse of the equipment, which in turn might result in injury to members of the crew and/or on-shore personnel, might lead to damage to other parts of the ship's structure and fittings and/or cargo and is likely to lead to delays in the voyage. Weather deck hatchways, weather doors around the superstructure, deck houses and other compartments and ventilation covers should be kept in satisfactory, weather-tight condition, otherwise seawater will pass their seals and enter cargo compartments, stores or the accommodation and water damage to cargo, stores or other fittings such as electrical switchboards will occur during the voyage when seas are shipped on deck. Hose-testing or testing by ultrasonic equipment should be carried out regularly to establish the satisfactory condition of the various covers and doors. The

常に良好な状態を保ってください。

全ての検査やテストの記録は後に参考と出来るように適切に保管しておく必要があります。記録の際は正確かつ慎重に、必要な情報を全て記入して下さい。

荷役作業

荷役設備の準備、事前の荷役計画、そして船上での貨物の固縛と取扱に関し説明してまいります。

積荷前、船艙／タンクは、必要な程度にまで清掃し、積荷前検査で承認を得られる状態にして下さい。荷役設備の状態が基準を満たさない場合、清掃作業によるスケジュールの遅れが生じたり、前の貨物の残留物によるコンタミネーションにより損害が発生したりする可能性があります。

積荷前、船長は貨物の性状や取扱基準を把握しておく必要があります。また、貨物に応じた適切な積載計画を立てておくことが大切です。内容としては、撒積貨物を積載する場合はそれら貨物に対するバラスト水の排出手順等、タンカーに様々な貨物を積む場合はその順序等、重量物を積載する場合はクレーン操作やバラスト水移動手順等、そして多様な一般貨物を積載する場合は積荷順序等です。積荷作業中では、船舶の強度や安定性を都度計算の上、積荷作業中/作業後の船舶の安全を確認してください。



weather-tight condition of these items is, of course, a requirement under the Loadline Rules.

The main machinery, the various auxiliaries and the steering gear should be maintained in accordance with planned maintenance regimes and in accordance with the requirements of the Classification Society. Additionally, all valves and pipework within the machinery space and elsewhere should be in satisfactory working order to avoid leakages which could cause pollution, cargo damage or the unwanted flooding of compartments.

All safety equipment on board should be routinely examined, tested if and when appropriate, and any maintenance should be carried out to ensure that all such safety equipment is in a fully operational condition and in accordance with the International Safety Equipment Certificate. Records of all inspections and tests should be kept on the appropriate document for future reference, as and when needed. The records should be accurately and carefully filled out and all the required records should be included without any parts being ignored.

Cargo Operations

These include the preparation of the cargo compartments, the pre-planning of loading and off-loading operations and the securing and the care of the cargo while it is on board.

The cargo holds or tanks should be cleaned to the required standard for the cargo to be loaded, such that they will be found to be in an acceptable condition by any inspector carrying out a pre-loading survey. If the cargo compartments have not been cleaned to the required standard, delays might be encountered by the vessel during subsequent cleaning operations or damage will be sustained by the cargo loaded as a result of contamination by previous cargo residues.

Before loading a particular commodity, the master should be fully familiar with the cargo, its characteristics and the carriage requirements.



積荷／揚荷中は計画通りの安全な作業を実行すべく、全ての作業を監視し、陸上職員との連絡手段を確立／保持して下さい。船長は貨物に関する書類、輸送に関する説明書、目的地までの安全な貨物輸送のため必要なその他情報を全て入手して下さい。輸送に関する説明書がある場合は常にそれに従い、特に無い場合は通常考えられる適切な方法で輸送して下さい。貨物の性質上換気が必要な場合、天候や海象を考慮した上で換気を行ってください。貨物の性質上加熱や冷却をする場合、適宜貨物の状態を確認して下さい。尚、貨物の状態を確認する際は、他の密閉空間同様、貨物室内の酸素が不足している場合や、燻蒸剤を使用後はたとえ換気を行っても燻蒸剤が残っている場合がありますので、十分な注意が必要です。また換気、貨物の加熱や冷却、貨物の状態検査に関しては、後に参照出来るよう全て記録をしてください。

航海と航行

全航路につき航海前に計画を立ててください。必要な海図や出版物は全て船舶内に保持し、積荷港沖、沿岸海域、大洋航路を通り最終揚地までの安全航海に備えることが大切です。万が一、海図や出版物を船上に所持していない場合は航海前に必ずこれを取得してください。

航海中は船橋及び機関室内に適切な当直を立て、設備や機器の安全な操作に努めます。また、船橋や機関室での航海記録は、必要な情報を全て含むようにして下さい。船橋の航海記録に含めるべき内容としては、当直中の船舶の針路と位置、天候や海象、本船の動向その他適切と思われる情報等です。一方機関部では、当直中の主機／補機の状態に関する記録に加え、定期的なメンテナンスや燃料油の移動に関する記録もつけてください。

Pre-loading plans should be drawn up as appropriate for the cargo. Such a plan might include a loading and de-ballasting sequence if a bulk cargo is to be loaded, a loading/tank sequence if a number of products are to be loaded on a tanker, a crane operation and ballast transfer sequence for the loading of heavy lift items or a sequence of loading if the cargo comprises general cargo items. Calculations should be carried out with regard to the strength and stability of the vessel for each of the various stages of the loading operation to ensure the safety of the vessel throughout those operations and upon completion.

During loading and off-loading the operations should be monitored throughout and communications should be established and maintained with on-shore personnel to ensure the operations are carried out safely and in accordance with the agreed plan. The master should obtain all cargo documents, carriage instructions and information about the cargo necessary for its safety carriage to destination. Any carriage instructions provided should be followed, but if no specific carriage instructions are issued the cargo should be carried in the manner which is normally expected. Ventilation of the cargo should be carried out if required by the cargo and when weather and sea conditions permit. The cargo should be heated or cooled as is required and inspections of the cargo, if appropriate, should be carried out routinely. With regard to inspections, it should always be borne in mind that the atmosphere within the cargo compartment, like any other enclosed space, might be oxygen-deficient and fumigant might remain within a cargo compartment where in-transit fumigation of the cargo has been carried out, even after ventilation of a compartment has been completed. Records of all ventilation, heating or cooling of the cargo and inspections of the cargo should be kept for future reference.

航海中は適切な見張りを立て、航海機器を十分に使用する必要があります。海図に示された航法通りの航行を行ない、座礁や他の船舶やその他浮遊物体／水中物体への過度な接近や衝突を防止します。

記録

近年では記録の保持は絶対不可欠です。船上にて行われるテストや設備の保守、貨物の検査、貨物の取扱い、安全設備の検査やテストなどの記録は、後に参照出来るよう明白かつ正確に残しておくことが大切です。機器の故障などの際に不十分な記録からは原因解明が困難ですが、正しく記録していた場合、検査員が故障や損傷の原因を解明するための良い手助けとなります。

ポイント:

- ・船舶内の全ての機器に関する保守作業が継続して記録され、その記録が機器の実際の状態を正確に反映していますか。
- ・露天甲板上ハッチカバーの直近のテストはいつ実施されましたか。また、テスト結果に関する記録はありますか。
- ・タンク／船内空所の検査に関しどのような記録がつけられていますか。また、その結果は技術管理者に報告されていますか。
- ・安全管理システムは機能していますか。

今回はロスプリベンションに関する基本的規定やガイドラインに関し、出来る限り多くのものを紹介することに重点を置いたため、各項目に関し詳細までご紹介することが出来ませんでした。より詳しい情報が必要な場合には、IMOコードやガイドライン、その他の出版物等をご参照頂きますようお願い申し上げます。

The Voyage and Navigation

A full passage plan should be prepared for the voyage from berth to berth. All the appropriate and necessary charts and publications should be on board for the safe navigation of the vessel off the loading port, in any coastal waters, during an ocean passage and into the destination port and alongside the designated berth. If any of the charts and publications are not on board, copies should be obtained before commencement of the voyage.

During the voyage appropriate watches should be kept on the bridge and in the engine room to ensure the safe navigation of the vessel and the safe operation of all equipment and machinery. Bridge and engine room logs should be completed with all the necessary information. In the deck log the vessel's course and position, the weather and sea conditions being encountered, the vessel's motions in the seaway and other appropriate information should be recorded during each watch and other information as deemed appropriate should also be recorded. In the engine room log the performance of the main engine and auxiliaries should be recorded during each watch, together with other appropriate information including routine maintenance being carried out and the transfer of bunkers on board.

During every navigational watch a proper lookout must be kept and all appropriate navigational equipment must be used to ensure the vessel follows the required track as laid on the charts, to ensure the vessel does not go aground and to ensure the vessel does not approach too close to other vessels, other floating objects or submerged objects, that is, to ensure collision avoidance.



JAPAN P&I CLUB

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Records

Records are, these days, essential. Records of activities on board, including the testing and maintenance of equipment, inspections of cargo, care of the cargo, inspections and testing of safety equipment, and so on, should be clearly and accurately kept for future reference. Poorly kept records will cause difficulties during investigations into the causes of machinery failure or cargo damage, for

example, whereas well kept records will assist with such an investigation and will assist the surveyors in quickly finding the true cause of damage or failure.

Questions:

- Are the maintenance records for every piece of machinery on board kept up to date and do those records reflect the true condition of the machinery?
- When were the weather deck hatch covers last tested and is there a record of the results of that test?
- What records are kept of inspections in tanks and void spaces and are reports sent from the vessel to the technical managers?
- Does your SMS work?

In this article we have tried to cover as many aspects of the basic rules and guidance for loss prevention as we can, whilst not going into the finer detail of what is necessary. Needless to say, the information here is not exhaustive and we recommend the reader should consult the IMO Codes and Guidelines and other publications, etc., when more detailed information and guidance is needed.

協力:ブルックス ベル

With collaboration from Brookes Bell



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