

IMO

第41回 訓練当直基準小委員会報告書

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財団法人 海技振興センター

Ⅱ

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証明書の発給及び登録

海上航行業務の承認

5　　条約により要求されている海上航行業務の承認にあたっては、海上航行業務における業務への最初の精通は別にして、当該業務の目的は、船員が適切な監督の下で、得ようとする資格に関する実際の作業、手順、日常業務を練習し、指導されることであることに留意し、当該業務は得ようとする資格に関連するものであることを確保しなければならない。

訓練課程の承認

6　　訓練課程と訓練計画を承認するにあたり、締約国は、このコード A 部の脚注に示された種々の IMO モデル訓練課程がそれらの訓練課程及び計画を準備するにあたり、支援となり得ることを考慮すべきであり、勧告された学習目的が適切に担保されることを確保しなければならない。

登録の電子化手法

7　　第 I/2 規則 15 に基づく電子登録簿の維持において、締約国及び会社が以下のことを確認できるよう、登録簿への電子的アクセスを制御する規定を設けなければならない。

.1　証明書、裏書又は他の資格が発給された船員の名前、関連の番号、発給の日付及び期間終了の日付

.2　受有者が従事できる職務区分及び制限事項
.3　受有者が遂行し得る職務、認められた水準及び制限事項

証明書登録のためのデータベース作成

8　　証明書の登録及び裏書の維持に関する改正された STCW 条約第 I/2 規則 14 の要件を実施するにあたって、標準データベースは第 1/9 規則に従って関係する全ての情報が記録され、利用できるように作成される必要はない。

9　　第 I/2 規則に従って、次の情報は必ず書面又は電子的に記録され、利用出来るようにしなくてはならない。

.1　**証明書の現状**

有効
停止
取消し
報告のあった滅失
損傷

データ変更日を含む変更情報の記録は保存する

.2　**証明書の詳細**

船員の名前
生年月日
国籍
性別
できれば写真
関係公式書類の番号
発給日
失効日
前回更新日
免除事項の詳細

.3　**資格の詳細**

STCW 能力基準（例：第 II/1 規則）
職務区分
職務細目
責任の水準
裏書
制限事項

.4 **身体検査の詳細**

資格証明書の発給又は更新に関連する最新の身体検査証明書の発給日

A-I/3 節
沿岸航海を規律する原則

1　当該締約国の旗を掲げ、沿岸航海に従事する船舶における有効な証明書の発給に対し、特にコード A 部第 II 章及び第 III 章に記載の能力基準表の第 2 欄に列挙する事項を変更するために、締約国が沿岸航海を定義する場合は、すべての船舶の安全と保安及び海洋環境への影響を考慮しつつ、次の要素を考慮すること。

.1 船舶及び従事する取引の種類
.2 船舶の総トン数と主推進機関のキロワット（kW）表示の出力
.3 航海の態様と期間
.4 避難港からの最大距離
.5 船位決定機器の有効範囲と精度
.6 沿岸航海区域の一般的な天候状態
.7 捜索と救助に対する船舶設備及び沿岸通信施設
.8 特に船上での技術的保守に係る陸上サポートの有無

2　常に近隣締約国の指定沿岸航海域を航行するものとの理由で沿岸航海に従事する船舶は、その航海を世界規模に拡げないこと。

A-I/4 節
監督手続

1～5　（省略）

6　　海上人命安全条約（SOLAS）第 XI/2 条において規定されているように、保安に関わる能力の評価は、明確な根拠がある場合においてのみ、特定の保安任務をもった船員に対して実施される。その他のすべての場合は、船員の証明書又は/及び裏書の確認は制限される。

A-I/5 節
国内規定

（省略）

A-I/6 節
訓練及び評価

（省略）

A-I/7 節
情報の送付

1　　（省略）

第1部－最初の情報送付

2　　第 1-7 規則の発効から 1 年以内に、締約国は、条約に十分かつ完全な効果を発揮させるため、次の内容を含む報告をしなければならない。

.1　条約執行の責任を有する省庁、部門又は政府機関の連絡先情報及び組織図

1.2～1.7　　（省略）

第2部－その後の報告

3　　（省略）

4　　各締約国は第 I/8 規則 2 に基づき行われた評価の結果を、当該評価の完了後 6 ヶ月以内に報告しなければならない。この評価報告書には以下の情報を含めなければならない。

.1　評価を行った者の資格及び経験（例：受有する資格証明書、船員及び独立した評価者としての経験、海事訓練及び評価の分野における経験、資格証明システムの執行経験、その他の関連資格・経験）

.2　独立した評価のための付託事項及び評価者への付託事項

.3　独立した評価の適用範囲下にある訓練機関・施設のリスト
.4　下記項目を含む、独立評価の結果

.1　次の事項に関する検証：

.1.1　改正事項を含む条約及び STCW コードの全適用規定が、当該締約国の資質基準システムの下で A-I/8 節 3.1 に従って対応されていること。そして
.1.2　すべての国内的管理・監視措置及び追跡活動が初期の計画と文書化された手続きに基づいており、かつ、A-I/8 節 3.2 に定義された目的を確実に達成する上で効果的であること。

.2　次のことについての簡単な記述：

.2.1　独立評価の過程において見出された何らかの不適合（もしあれば）
.2.2　確認された不適合に対処するために推奨される是正措置
.2.3　確認された不適合に対処するために実施された是正措置

〔同報告は、締約国からの要請があり次第、機関によって提供される。〕

5　締約国は、第 I/7 規則に基づく初期の情報送付に関する報告あるいは第 I/8 規則に基づく以前の報告に含まれていなかった措置で、その後条約及び STCW コードに対して必須となった改正点を実施するために何らかの措置が講じられた場合は、それを報告しなければならない。

6　条約及び STCW コードに対して強制事項となった改正を実施するために講じられた措置に関する情報は、以下のうち該当するものを含んでいなければならない。

.1　改正の遵守を確保するために講じられた法的及び管理上の措置についての要約
.2　改正を遵守するために実施された課程、訓練プログラム、試験及び評価の簡潔な要約
.3　改正によって要求される訓練及び試験、身体適正及び能力の評価を公認、認定又は承認するためにとられる手続きの簡潔な概要
.4　改正要件を満たすために要求される再教育訓練及び更新訓練の簡潔な概要
.5　改正を実施するための措置と、第 I/7 規則 1 及び/又は第 I/8 規則 2 のうち該当

するものに準じて以前提出された報告書に含まれる既存の措置との比較

第3部－有識者会合

7～8　（省略）

9　第 I/8 規則 3 によりいずれかの締約国から報告を受け取った場合、事務局長は第 7 項に基づいて保存している名簿の中から有識者を指名して当該報告書を検討し、以下のことについて彼らの見解を得る。

.1　同報告書が完全なものであり、第 A-I/8 節 3 に基づいて当該締約国が知識、理解、技能及び能力の修得並びに評価活動について、また資格証明制度（裏書及び更新を含む）について独立した評価を実施したことを明示しているかどうか。

.2　同報告書が以下のことを明示するに足る内容か：

.2.1　評価者が妥当な資格を有しており、

.2.2　付託事項は以下のことを確保する上で明確であったか。

.2.2.1　改正事項を含む条約及び STCW コードの全適用規定が、当該締約国の資質基準制度に従って対応されていること。そして

.2.2.2　第 I/8 節 1 に基づいて明確に定義された目的の実施が関連活動の全範囲にわたって検証可能であること。

.2.3　独立した評価の過程でとられた手続きが、訓練システム、能力評価、及び船員の資格証明のうち当該締約国に該当する事項の中にある不適合を確認する上で適切であったかどうか。

.2.4　何らかの著しい不適合を是正するために採られた措置が時機に適い、適切なものであったかどうか。

10　（省略）

11.1～11.2　（省略）

.3　第 5 項の下で提出された STCW 条約及びコードに対する改正を実施するために講じられた措置についての報告書、及び

.4　（省略）

第4部－海上安全委員会への報告

12～13　（省略）

14　　第 1/7 規則 2 に基づき事務局長が集めた情報を提出する立場にない場合には、当該締約国は海上安全委員会に対し、本節によって提出された情報及び 10 及び 11 に基づき表明される見解を考慮して、第 1/7 規則 3 により期待される行動を求めることができる。

A-I/8 節
資質基準

国内的な目的及び資質基準

1～2　（省略）

3　　締約国は、次の事項を検証するため、知識、理解、技能及び能力の獲得及び評価並びに資格証明制度の管理についての独立した評価を、5 年を超えない一定期間毎に実施しなければならない。

.1　改正を含む条約及び STCW コードの適用可能なすべての規定が、資質基準制度によって対応されていること。

.2～.4　　（省略）

A-I/9 節
身体基準

1　　第 I/9 規則により要求されている船員の身体適性基準を確立するに際し、締約国は船員のさまざまな職務に留意しつつ、表 A-I/9-1 に記載の実務上の最小視力、表 [A-I/9-2] に記載の最小身体能力及び本コードの B-I/9 節に記載の指針を勘案しなければならない。これらの基準は、これから海事職を志望する者と、既に海上勤務に就いている船員との間では区別がある。例えば前者については、分野によってはより高い基準を設定することが妥当である一方、既に海上勤務に就いている船員については基準を幾分低く設定することが妥当な場合もある。これらの基準はまた、当該身体検査証明書の有効期間中に船員が自分の任務を効果的に遂行する上での能力を制限する傷害又は疾病を選別する必要性も考慮に入れなければならない。

2　　船員の身体適性検査は、締約国によって承認された適切な資格と経験を有する医師によって実施されなければならない。

3　　各締約国は医師を承認するための規定を確立しなければならない。承認された医

師の登録簿は締約国によって維持され、他の締約国、会社及び船員からの要請があり次第提供されなければならない。

4　各締約国は、本コードの B-I/9 節の規定を勘案しつつ、身体適性検査の実施及び証明書の発給に関する指針を備えていなければならない。各締約国は、船員の異なる任務を勘案しつつ、承認された医師に与えられる身体基準の適用に関する自由裁量の量を決定しなければならない。但し例外として、表 A-I/9-1 に記載の補正遠距離視力、近・中距離視力及び色彩視力のための実務上の最小視力基準については自由裁量はない。

5　検査の結果、身体適性基準に満たない、あるいは、時間・仕事の分野・航行海域等の点で彼らの労働能力に限度が課された船員については、各締約国は、規則に照らして再検査の権利を船員に与えるための方法や手続きを確立しなければならない。

6　第 I/9 規則 3 に規定される検査は、最小限、次の事項を含んでいなければならない。

.1　認可当局及び同文書発給のための要件
.2　船員情報
　.2.1　名前：(姓、名、ミドルネーム)
　.2.2　生年月日：(日 / 月 / 年)
　.2.3　性別：(男 / 女)
　.2.4　国籍
.3　承認された医師による申告
　.3.1　診断の時点で身元確認文書を照合したことの確認：肯 / 否
　.3.2　聴力は STCW A-I/9 の基準に合っている：肯 / 否
　.3.3　補聴器無しの聴力は充分か？　肯 / 否
　.3.4　視覚明瞭度は STCW A-I/9 の基準に合っているか？　肯 / 否
　.3.5　色彩視力*は STCW A-I/9 の基準に合っているか？　肯 / 否
　　.3.5.1　前回の色彩視力検査日
　.3.6　当直任務に適しているか？　肯 / 否
　.3.7　適性について限界や制約はあるか？　無 / 有
　　「有」の場合は、具体的な限界や制約は何か
　.3.8　当該船員は海上勤務によって悪化する惧れ、同船員をそのような勤務に対して不適にする惧れ、あるいは船上の他の人々の健康を阻害する惧れのある身体条件を免れているか？：　肯 / 否
　.3.9　検査日：(日 / 月 / 年)

.3.10　証明書の有効期限：（日 / 月 / 年）

.4　発給当局の詳細

.4.1　発給当局の公印（名称を含む）
.4.2　権限を与えられた者の署名

.5　船員の署名　－ *同証明の内容及び A-I/9 節 5 に基づいて再検査する権利について当該船員が知らされてことを確認の上*

7　　身体検査証明書は当該発給国の公用言語で記載しなければならない。もし、同言語が英語以外の場合は、診断書は英訳も含んでいなければならない。

表 A-I/9-1
船員に対する実務上の最小視力基準

STCW 条約の規則	船員の区分	補正[1]遠距離視力		近・中距離視力	色彩視力[3]	視野[4]	夜盲[4]	複視（二重視）[4]
		片方の眼	他方の眼	両眼：矯正又は裸眼				
I/11 I/1 I/2 I/3 I/4 I/5 VII/2	船長、甲板部職員及び当直勤務を要求される甲板部員	0.5[2]	0.5	船舶の航行に必要とされる視力（例：海図及び水路図誌の参照、船橋計器の使用、航行援助装置の確認）	注 5 参照	正常視野	暗闇の中で全職務を通常通り遂行するのに必要な視力	特に重要な条件無し
I/11 III/1 III/2 III/3 III/4 III/5 III/6 III/7 VII/2	すべての機関部職員、電気技士（職員、部員）及び機関当直担当の部員	0.4	0.4	近接して計器を読取り、機器を操作し、必要に応じてシステム・部品を確認するための視力	注 6 参照	十分な視野	暗闇の中で全職務を通常通り遂行するのに必要な視力	特に重要な条件無し
I/11 IV/2	GMDSS 無線通信士	0.4	0.4	近接して計器を読取り、機器を操作し、必要に応じてシステム・部品を確認するための視力	注 6 参照	十分な視野	暗闇の中で全職務を通常通り遂行するのに必要な視力	特に重要な条件無し

注：

1 スネレン十進表記法による数値。

2 未検知の眼病の危険性を低減するためには、片眼の数値が少なくとも 0.7 であることが望ましい。

3 国際照明委員会（CIE-143-2001）の「運輸業のための色彩視力要件に関する国際勧告」の定義による。

4 初期診断の所見で指摘があった場合、臨床視力専門医による評価を条件とする。

5 CIE 色彩視力基準の 1 又は 2。

6 CIE 色彩視力基準の 1、2 又は 3。

表 A-I/9-2

新人及び経験船員に対する最小限の身体能力評価[3]

船内業務、職務の結果又は条件	**関連身体能力**	**身体検査員は、志望者が以下のようであれば得心する[4]**
船上での日常的な動き： - 移動甲板上 - 階と階の間 - 区画と区画の間 *本列には注 1 が適用*	バランスを保ち機敏に動く はしごや階段の昇り降り 甲板の昇降口をまたぐ（例：600mm の高さ） 水密扉の開け閉め	バランス感覚に障害がないこと 正常な動作及び運動の妨げとなる身体的障害がなく、又は、病気にかかっていないこと - 自力で垂直梯子及び階段の昇り降り - 自力で高い敷居を跨ぐ - 自力でドアの閉鎖装置の操作ができること
船上の日常業務： - 手工具の使用 - 船の備品の移動 - 天井の作業 - バルブ操作 - ４時間の当直に耐える - 密閉区画での作業 - 警報、警告、指示への対応 - 言葉による意思疎通 *本列には注 1 が適用*	器械装置を操作する力、器用さ及び根気 荷を揚げ、引き、運ぶ（例：18kg） 上へ手を届かせる 長時間立ち、歩き、警戒する 制限区画で作業し、制限開口部（例：600mm × 600mm）を通る 物体、形状、信号を目視で識別する 警告や指示を聞き分ける 口頭で物事を明確に説明する	船舶の安全航行に必須の日常任務を遂行する能力を低下させる、定められた健康障害や診断された身体状態を持たないこと。 以下の能力がある： - 腕を上げたままの作業 - 時間立ち、歩く - 密閉区画へ進入する - 視力基準を満たす（A-I/9-1） - 監督当局が定めた聴力基準を満たすか国際的指針を勘案する - 通常の会話を行う
船上での緊急任務[6]： - 脱出 - 消火 - 退避 *本列には注 2 が適用*	救命胴衣又はイマーションスーツの着用 煙の充満した区画からの脱出 呼吸具の使用を含む消火任務への参加 退船手続きへの参加	船舶の安全航行に必須の非常事態任務を遂行する能力を低下させる、定められた健康障害や診断された身体状態を持たないこと。 以下の能力がある： - 救命胴衣又イマーションスーツの着用 - はって進む - 温度の差を感じる - 消火機器の操作 - 呼吸具を着用する（任務の一部として要求される場合）

注：

1　上記の表の第 1 列と 2 列は、(a) 通常の船内業務、職務細目、事象及び状態；(b) 船員その他の乗組員の安全に必要と看做される対応身体能力；(c) 船員の異なる任務及び船員がそのために雇用された船内作業の性質に留意しつつ、身体適正を評価する医師が用いる高レベル基準を説明している。

2　上記の表の第 3 列は、(a) 通常の船内業務、職務細目、事象及び状態；(b) 船員その他の乗組員の安全に必要と看做される対応身体能力；(c) 船員がそのために雇用された各種の異なる船内作業の性質に留意しつつ、身体適正を評価する医師が用いる高レベル基準を説明している。

3　本表は、あり得るすべての船内条件あるいは不適格な身体条件に対応することを意図したものではない。締約国は当該の船員区分（「甲板部職員」、「機関部員」など）に適用される身体能力を具体的に指定しなければならない。個人あるいは専門的又は限定された任務を持つ者のための特別な事情には、しかるべき考慮を払う必要がある。

4　もし疑わしい場合は、医師は客観的な試験（もしあれば）により、あるいは当該者を他に付託することにより、当該の傷害の程度を定量化しなければならない。

5　「助力」という用語は、当該の業務を遂行するために他の人の力を利用することを意味する。

6　「非常事態任務」という用語は、退船、消火、及び各船員が要員の生存を確保するために採る措置など、非常事態へのあらゆる対応状況を指す。

A-I/10 節
証明書の承認

（省略）

A-I/11 節
証明書の更新

専門的能力

1　第 1/11 規則で要求される持続的な専門的能力は、次の事項のいずれかによって検証する。

.1　少なくとも次の期間、受有する証明書に係る職務細目を行う承認された海上航行業務を、行ったことがあること。

.1.1　過去 5 年間に合計 12 ヶ月、又は

.1.2　更新直前の 6 ヶ月間に合計 3 ヶ月、又は

.2～.3　（省略）

.4　承認された一つの訓練課程又は複数の訓練課程を良好に修了していること、又は

.5　（省略）

2　（省略）

3　第 1/11 規則 3 で要求される持続的なタンカーの専門的能力は、次の事項のいずれかによって検証する。

.1　過去 5 年間に合計して少なくとも 3 ヶ月の期間、受有する証明書に係る職務細目を行う承認された海上航行業務を、行ったことがあること。

.2　承認された一つの訓練課程又は複数の訓練課程を良好に修了していること。

A-I/12 節
シミュレータの使用を規律する基準

（省略）

A-I/13 節
試験の実施

（規定なし）

A-I/14 節
会社の責任

1～2　　（省略）

3　　会社は、船長、職員その他 Ro / Ro 旅客船上で特定の任務に指名された乗組員が務めるべき資格、果たすべき任務及び責任に見合った能力を獲得するために必要とされる精通する訓練を修了していることを、本コードの B-I/14 節に記載の指針を勘案しつつ確保しなければならない。

A-I/15 節
経過規定

（規定なし）

第Ⅱ章
船長及び甲板部に関する基準

A-Ⅱ/1 節
総トン数 500 トン以上の船舶において甲板部の当直を担当する職員の資格証明のための最小限の要件

（省略）

脚注

* 課程の作成に際しては、関連する IMO モデル課程が助けとなる。

脚注

* 訓練記録簿の作成に際しては、関連する IMO モデル課程及び国際海運連盟（ISF）作成の類似の文書が助けとなる。

表 A-Ⅱ/1
総トン数 500 トン以上の船舶において甲板部の当直を担当する職員の最小限の能力基準の詳細

職務細目　運用水準における航海

第 1 欄	第 2 欄	第 3 欄	第 4 欄
能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
航海の計画・航行及び船位の決定	**天文航法** 船位を測定するために天体を観測する能力 **地文航法及び沿岸航法** 次を利用することにより船位を測定する能力 .1　陸標 .2　灯台、標識、浮標等の航行援助施設 .3　風、潮汐、海流及び推定速力を考慮した推測 海図及び水路誌、潮汐表、水路通報、無線航行警報、船舶の航路情報等の航海用の図誌及び情報に関する十分な知識並びに利用する能力 **船位測定及び航法のための電子装置** 電子航法装置を使用することにより船位を測定する能力	試験及び次の一以上から得られた証拠による評価 .1　承認された海上履歴 .2　承認された練習船履歴 .3　適切な場合、承認されたシミュレータ訓練 .4　承認された実験設備訓練 次を使用すること 水路図誌目録、海図、航海用書誌、無線航行警報、六分儀、方位鏡、電子航法装置、測深機、コンパス	航海用の海図及び書誌から得られた情報を関連付け正確に解釈し、適切に適用すること航海上のすべての危険の可能性を正確に認識すること 船位決定方法の主要な方法は、通常の環境と状況に最も適したものとすること 計器と測位システムの許容誤差内で船位を決定すること 主要な船位決定法によって得られた情報の信頼性を、適切な間隔でチェックすること 航海情報の計算と測定は正確であること 選択された海図は航行区域に応じた最大の縮尺のものとし、海図と書誌は利用可能な最新の情報に基づいて改補されていること 航法システムの作動確認は、製造者の指針と航海の実態に従うこと

能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
航海の計画・航行及び船位の決定（続き）	**音響測深器** 装置を操作する能力並びに情報を正しく利用する能力 **磁気コンパス及びジャイロ・コンパス** 磁気コンパス及びジャイロ・コンパスの原理に関する知識 天体及び地物を使用して、磁気コンパス及びジャイロ・コンパスの誤差を決定し、その誤差を考慮する能力 **操舵制御装置** 操舵制御装置及びその取扱い、手動から自動へ及びその逆の切り換えの手順に関する知識 最適な制御のための調整 **気象** 船舶に備え付けられる気象測器から得られる情報の利用並びに解釈の能力 種々の気象システムの特徴、通報手順及び記録方式に関する知識 入手可能な気象情報を利用する能力		磁気コンパス及びジャイロ・コンパスの誤差を決定し、針路と方位に正確に適用すること 操舵モードの選択は、気象、海象、船舶交通状況及び意図する操船に最も適するようにすること 気象状態の観測は、正確かつ航路に応じたものであること 気象情報を、正確に解釈し、適用すること

第 1 欄	第 2 欄	第 3 欄	第 4 欄
能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
安全な航海当直の維持	**当直** 国際海上衝突予防規則の内容、適用及び趣旨に関する十分な知識 航海当直の維持に当たり遵守すべき基本原則に関する十分な知識 効果的な船橋共同作業手順に関する十分な知識 安全な航海当直を維持するための航海計器から得られる情報の利用 狭視界航行技術についての知識 船舶通報制度の一般原則及び VTS 手続きに基づいた通報の利用	試験及び次の一以上から得られた証拠による評価 .1　承認された海上履歴 .2　承認された練習船履歴 .3　適切な場合、承認されたシミュレータ訓練 .4　承認された実験設備訓練	当直の実施、引継及び交代は認定された原則、手順に従うこと いかなる場合においても、認定された原則、手順に従った方法で適切な見張りを維持すること 灯火、形象物及び音響信号は海上衝突予防規則の要件に従っていること及び正確に認知されること 交通、船舶及び環境の監視の間隔、範囲は認定された原則、手順に従うこと 船の航海に関する動静、行動の適切な記録を残すこと 航海安全の責任が常に明確に定められること（船長が船橋内にいる場合又は水先人乗船中の場合を含む。）

第 1 欄	第 2 欄	第 3 欄	第 4 欄
能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
安全な航海当直の維持（続き）	**ブリッジリソースマネジメント** 次を含むブリッジリソースマネジメントの原則に関する知識： .1　リソースの配置、任務及び優先順位決定 .2　効果的なコミュニケーション .3　明確な意志表示とリーダーシップ .4　状況認識力の習得と維持	次の一以上から得られた証拠による評価： .1　承認された訓練 .2　承認された海上履歴 .3　承認されたシミュレータ訓練	必要な業務を遂行するため、的確な優先順位でリソースが配置され、任務が割当てられること コミュニケーションが、明瞭かつ明確であること 曖昧な決定及び／又は行動に対しては、適切な確認行動と回答が行われること 効果的なリーダーシップ行動が認められること チーム構成員が、現在及び予測される船舶の状況及び航路の状況並びに周辺の環境について正確な理解を共有すること
安全な航海維持のためのレーダ及び ARPA の使用 **（注）** ARPA を使用する訓練・評価は、ARPA 搭載を求められない船舶に乗組む者には要しない。この制限は、当該船員に発給される裏書に反映される。	**レーダ航法** レーダ及び ARPA に関する基礎知識 レーダを操作し及び使用する能力並びにレーダから得られる情報を解読し分析する能力 これらの知識及び能力には、次の事項に関するものを含む。 次の事項を含む性能 .1　性能及び精度に影響を及ぼす要因	承認されたレーダ及び ARPA シミュレータ訓練に加え海上履歴から得られた証拠による評価	レーダ及び ARPA から得られた情報を、機器の性能限界及び周囲の状況及び状態を考慮しつつ、正確に解釈し、解析すること

第 1 欄	第 2 欄	第 3 欄	第 4 欄
能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
安全な航海維持のためのレーダ及び ARPA の使用（続き）	.2　始動時及びその後における画面の調整 .3　情報の誤表示、偽象、海面反射等の探知、レーコン及び SARTs の探知 次の事項を含む使用法 .1　レンジ及び方位、他船の針路及び速力、横切り船、行会い船又は追越し船との最接近時刻及び最接近距離 .2　危険な映像の識別 　他船の針路及び速力変更の探知 　自船の針路及び若しくは速力又はその双方の変更の影響 .3　国際海上衝突予防規則の適用 .4　プロッテイング技術及び相対運動及び真運動の概念 .5　平行カーソルの利用 ARPA の典型的タイプ、表示特性、性能基準及び ARPA の過信による危険 次の事項を含む ARPA を操作、使用する能力並びにレーダから得られる情報を解析、分析する能力		他の船舶との著しい接近及び衝突を避けるための動作は国際海上衝突予防規則に基づくこと 針路及び／又は速力の変更の決定は、適時にかつ航海の実態に基づいて行うこと 船の針路・速力の調整は、航海の安全を維持するように行うこと 通報はいかなる場合でも、船員の常務に従って明確に、正確にかつ認識できるようにすること 操船信号は、適切な時機に、国際海上衝突予防規則に基づいて行うこと

第 1 欄	第 2 欄	第 3 欄	第 4 欄
能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
安全な航海維持のためのレーダ及び ARPA の使用（続き） **（注）** ARPA を使用する訓練・評価は、ARPA 搭載を求められない船舶に乗組む者には要しない。この制限は、当該船員に発給される裏書に反映される。	.1　システムの性能と精度、追跡能力と限界及び計算遅延 .2　操作上の注意事項及びシステム試験の利用 .3　目標捕捉の方法とその限界 .4　真ベクトルと相対ベクトル、他船情報及び危険区域のグラフ表示 .5　情報の収集と解析、危険な映像、除外区域及び試行操船		
航海の安全を維持するための ECDIS の使用 注：ECDIS を使用する訓練・評価は、ECDIS を搭載しない船舶に乗組む者には求められない。 この制限は、当該船員に発給される裏書に反映される。	**ECDIS を使用する航海** 次の事項を含む、ECDIS 操作の能力と限界についての知識： .1　電子海図（ENC）、データの精度、提示規約、表示オプション及びその他の海図データフォーマットの完全な理解 .2　過度な依存の危険性 .3　現行の性能基準で要求されている ECDIS の機能についての習熟	試験及び次の一以上から得られる証拠による評価 .1　承認された練習船履歴 .2　承認された ECDIS シミュレータ訓練	安全航海に貢献する方法で ECDIS 上の情報を監視すること 装置及びすべての接続しているセンサー（連動している場合はレーダと AIS を含む）及び卓越している状況・条件を勘案しつつ、ECDIS から得られる情報（レーダオーバーレイ及び・又はレーダ追跡機能を含む）が正しく解釈・分析されること

第 1 欄	第 2 欄	第 3 欄	第 4 欄
能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
航海の安全を維持するための ECDIS の使用（続き） 注：ECDIS を使用する訓練・評価は、ECDIS を搭載しない船舶にのみ乗組む者には求められない。 この制限は、当該船員に発給される裏書に反映される。	次の事項を含む、ECDIS 操作及び ECDIS から得られる情報の解釈及び分析についての技能： .1　正しい作動及び適切な設定値の調整を含む、種々の装置を統合した航海システムの機能の使用 .2　船位、海域表示、モード及び方位、表示された海図データ、航路監視、利用者が作成した情報レイヤー、連絡先（AIS 及び/又はレーダ追跡と接続されている場合）、及びレーダオーバーレイ機能（接続されている場合）についての情報の安全な監視と調整 .3　他の方法による船位の確認 .4　座礁防止、他船及び特別海域への接近、海図データの完全性及び海図最新化状況、バックアップ措置に関する警報パラメータを含む、操作手順との一致を確保するための諸設定の効率的な使用		ECDIS で制御された航路維持機能（搭載されている場合）を通じて船の針路と速度を調節することにより航海の安全が維持されていること コミュニケーションが常に船員らしく明瞭・簡潔に行われること

第 1 欄	第 2 欄	第 3 欄	第 4 欄
能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
航海の安全を維持するための ECDIS の使用（続き）	.5　設定と設定値を現状に合うように調整すること .6　安全水域及び危険水域への接近、流向及び流程、海図データ及び縮尺の選定、航路の妥当性、他船の接触の検知及び処理、センサーの保全状況を含む、ECDIS、使用中の状況認識		
非常時の対応	**非常装置** 非常事態における旅客の保護及び安全に関する注意事項 衝突及び乗揚げ後にとるべき初期動作 損傷の初期評価及び損傷制御 遭難者の救助、遭難船への支援及び港内で発生した非常時への対応に引続く手順の認識	試験及び次の一以上から得られた証拠による評価 .1　承認された海上履歴 .2　承認された練習船履歴 .3　適切な場合、承認されたシミュレータ訓練 .4　実地訓練	非常事態の種類と範囲を敏速に認識すること 初期動作及び操船は非常配置計画に基づき、状況の緊急性と非常事態の状態に応じて行うこと
海上における遭難信号への対応	**捜索と救助** 国際航空海上捜索救難マニュアル（IAMSAR）の内容に関する十分な知識	試験並びに実地教習又は適切な場合、承認されたシミュレータ訓練から得られた証拠による評価	遭難又は緊急信号を直ちに認識すること 非常配置計画及び服務規定による指示が履行され、遵守されること

第 1 欄	第 2 欄	第 3 欄	第 4 欄
能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
文書及び会話において IMO 標準海事連絡用語集及び英語を使用すること	**英語** 職員が、海図その他の航海用の図誌を利用し、気象情報並びに船舶の安全及び運航に関する情報及び通報を理解し、かつ他船、海岸局及び VTS センターと通信し、IMO 標準海事連絡用語集（IMO SMACP）を使い理解する能力を含む、多言語を話す乗組員と共働しつつ職員としての任務を遂行する活動を可能にする英語に関する適切な知識	試験並びに実地教習から得られた証拠による評価	船舶の安全に関する英語版の航海用図書及び通報を正確に解釈、立案すること 連絡は明確であり、理解できること
視覚信号による情報の送信と受信	**視覚信号** 1972 年 COLREG 条約附属書 IV 及び国際信号書の付録 1 に定める遭難信号 SOS 並びに国際信号書に定める視覚信号の一字信号をモールス発光信号により送信し及び受信する能力	実地教習及び/又はシミュレーションから得られた証拠による評価	責任範囲内の通信は、一貫して良好であること

第 1 欄	第 2 欄	第 3 欄	第 4 欄
能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
操船	**操船** 次の事項に関する知識 .1　載貨重量、喫水状態、トリム、速力及び余裕水深の旋回圏及び停止距離に及ぼす影響 .2　風及び潮流の操船に及ぼす影響 .3　海中転落者の救助のための操船法と手順 .4　船体沈下及び浅い水域の影響並びにこれらと同様の影響 .5　錨泊及び係留の適切な手順	試験及び次の一以上から得られた証拠による評価 .1　承認された海上履歴 .2　承認された練習船履歴 .3　適切な場合、承認されたシミュレータ訓練 .4　適切な場合、要員が乗組める船舶モデルによる承認された訓練	通常の操船において、船舶の推進、舵及び操舵機の運用が安全限界を超えないこと 船の針路と速力の調整は、航海の安全を維持すること

職務細目　運用水準における貨物の取り扱い及び積付け

第 1 欄	第 2 欄	第 3 欄	第 4 欄
能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
貨物の積込み、積付け、固定、輸送中の状態及び荷揚げの監視	**貨物の取扱い、積付け及び固定** 船舶の耐航性及び復原性に関する貨物（重量物を含む。）の影響についての知識 ばら積み貨物、危険及び有害貨物を含む貨物の安全な取扱い、積付け及び固定並びに人命と船舶の安全に対するそれらの影響に関する知識 荷役中の効果的な連絡体制を確立し及び維持する能力	試験及び次の一以上から得られた証拠による評価 .1　承認された海上履歴 .2　承認された練習船履歴 .3　適切な場合、承認されたシミュレータ訓練	貨物の輸送は、貨物計画又はその他の文書に基づいて行われること。また安全規則/規定、機器操作指示書、及び積付け制限によって確立されたものであること 危険及び有害貨物の取扱いは、国際規則及び安全慣行に関する基準及びコードに基づくこと 連絡は明確であり、理解できかつ一貫して良好であること
貨物槍、ハッチカバー、バラストタンクの検査並びに欠陥及び損傷報告	次の場合に際してもっとも共通して招く損傷及び欠陥の状態を説明する知識（注 1）及び能力 .1　積み卸し作業 .2　腐食 .3　厳しい天候状況 与えられた時間内にすべての部品をカバーするために船舶のどの部品が完全に検査されなければならないかを明確に述べる能力 船舶の安全に重要な船体構造の要素/詳細の確認	試験及び次の一以上から得られた証拠による評価 .1　承認された海上履歴 .2　承認された練習船履歴 .3　適切な場合、承認されたシミュレータ訓練	当該検査は定められた手川頁で実施され、主要な欠陥、損傷が発見され、適切に報告されること 欠陥及び損傷が全く発見されない場合は、試験から得られた証拠は手順に付随した十分な能力及び船舶の部品の通常と欠陥又は損傷の状態を区別する能力を明確に示すこと

（注 1）　甲板部の職員は船舶の検査についての資格を持つ必要はないと理解されるべきである。

第 1 欄	第 2 欄	第 3 欄	第 4 欄
能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
貨物槍、ハッチカバー、バラストタンクの検査並びに欠陥及び損傷報告（続き）	貨物室、バラストタンク内の腐食の原因、腐食の確認及び防止法を明確に述べること 検査の手順についての知識 欠陥と損傷の確実な探知方法を説明する能力 「強化された検査プログラム」の目的の理解		

職務細目　運用水準における船舶の運航管理及び船内にある者の保護

第 1 欄	第 2 欄	第 3 欄	第 4 欄
能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
汚染防止要件の遵守の確保	**海洋環境の汚染の防止及び汚染防止手順** 海洋環境の汚染の防止のためにとるべき措置に関する知識 汚染防止措置及びすべての関連機器 海洋環境の保護を促す措置の重要性	試験及び次の一以上から得られた証拠による評価 .1　承認された海上履歴 .2　承認された練習船履歴 .3　承認された訓練	船内モニタリング操作と MARPOL の要件の遵守の確保手順を完全に遵守すること 環境面での好評を維持するための措置
船舶の耐航性の維持	**船舶の復原性** 復原性、トリム及び応力に関する表及び曲線図並びに応力計算機についての実用的な知識並びにこれらの図表及び応力計算機を使用する能力 浮力が一部失われた場合にとるべき基本的な措置に関する知識 水密性の原理に関する知識 **船舶の構造** 船舶の主要な構造部材に関する一般的知識及び船舶の各部の正式な名称	試験及び次の一以上から得られた証拠による評価 .1　承認された海上履歴 .2　承認された練習船履歴 .3　適切な場合、承認されたシミュレータ訓練 .4　承認された実験設備訓練	復原性は、すべての載貨状態において、IMO 復原性基準を完全に満たすこと 船舶の水密性の確保・維持は、認定された慣行に従うこと

第 1 欄	第 2 欄	第 3 欄	第 4 欄
能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
船内における防火、火災制御及び消火	防火及び消火設備 防火に関する知識 防火操練を計画する能力 火災の分類・化学的作用に関する知識 消火システムに関する知識 火災の際に取るべき措置（油システム関連の火災を含む。）	第 A-VI/3 節に記載の承認された消火訓練及び経験から得られた証拠の評価	非常事態の種類と範囲を敏速に認識し、初期動作は、船舶の非常時の措置及び非常配置計画に従うこと 退船、非常閉鎖及び遮断手順は非常時の状況に応じて行い、敏速に履行すること 報告の優先順位、レベル及び時間間隔及び乗船者への周知は、非常事態の状況に関連し、事態の緊急性に反映させること
救命設備の運用	救命 退船操練を計画する能力及び救命艇及び救命いかだ、救助艇、それらの進水装置と配置並びに救命用無線機、衛星系 EPIRBs、SARTs、イマーションスーツ及び防寒装具を含むそれらの艤装品の操作に関する知識 海上における生存技術に関する知識	A 部第VI/2 節 1 から 4 に規定する承認された訓練及び経験から得られた証拠による評価	退船及び生存に関わる状況における行動は、状況に適応したものであり、かつ安全に関する認められた慣行及び基準を遵守するものであること
船内における応急手当	医療 医療便覧及び無線による助言を実際に利用する能力、特に、船内で発生するおそれのある事故及び疾病が生じた場合に医療便覧及び無線による助言に基づき有効な措置をとる能力	A 部第VI/4 節 1 から 3 に規定する承認された訓練から得られた証拠による評価	疾病の可能性のある原因、種類及び程度又は状態の認識は敏速であり、取扱いは、生命への危険を最小限にするものであること

第 1 欄	第 2 欄	第 3 欄	第 4 欄
能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
法的要件を遵守するための監視	海上における人命の安全及び海洋環境の保護に関する IMO 関連条約の基本的で実際的な知識	承認された訓練又は試験から得られた証拠による評価	海上における人命の安全及び海洋環境の保護に関する法的要件を正確に認識すること
リーダーシップと管理技能の適用	船上要員の管理と訓練についての実用的知識 関連する海事国際条約、勧告及び国内法令に関する知識 次を含む、職務及び業務分担の管理ができる能力； .1　企画立案及び調整 .2　要員配置 .3　時間及びリソースの制約 .4　優先順位決定 効果的なリソースマネジメントを適用する知識と能力 .1　リソースの配置、任務及び優先順位決定 .2　船内及び陸上での効果的なコミュニケーション .3　チーム構成員の経験を考慮した決定 .4　動機づけを含む、明確な意思表示と態度及びリーダーシップ .5　状況認識力の習得と維持	次の一以上から得られた証拠による評価 .1　承認された訓練 .2　承認された海上履歴 .3　実践的な証明	乗組員に職務が割当てられ、期待される作業基準及び行動について関係する各人に対して適切な方法で知らされること 訓練目標及び活動が、現在の能力及び資質並びに運用要件の評価に基づいていること 業務運用が適用される規則に従っていることが実証されること 必要な業務を遂行するため、的確な優先順位でリソースが配置され、業務が計画されること コミュニケーションが、明瞭かつ明確であること 効果的なリーダーシップ行動が認められること チーム構成員が、現在及び予測される船舶及び運航状況並びに周辺の環境について正確な理解を共有すること 決定が状況にもっとも効果的であること

第 1 欄	第 2 欄	第 3 欄	第 4 欄
能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
リーダーシップと管理技能の適用（続き）	意志決定技能を適用するための知識と能力： .1　状況及びリスクアセスメント .2　策定した選択肢の認識と検討 .3　行動方針の選択 .4　成果の有効性評価		
人員及び船舶の安全に貢献すること	個々の生存技術に関する知識 防火に関する知識と消火活動及び消火に関する能力 初歩的な救急処置に関する知識 個々の安全と社会的責任に関する知識	A-VI/1 節 2 に記載の承認された訓練及び経験から得られた証拠の評価	適切な安全・保護具が正しく使われること 人員と船舶を保護するために策定された手順及び安全作業行動が常に遵守されていること 環境保護のために策定された手順が常に遵守されていること 緊急事態を認識してからの初期行動及びその後の行動が、確立された緊急事態対応手順に適合していること

A-Ⅱ/2 節
総トン数 500 トン以上の船舶の船長及び一等航海士の資格証明のための最小限の要件

（省略）

表 A-Ⅱ/2
総トン数 500 トン以上の船舶の船長及び一等航海士の最小限の能力基準の詳細

職務細目　管理水準における航海

第 1 欄	第 2 欄	第 3 欄	第 4 欄
能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
航海計画及び航海の指揮	大洋航路選定で認められた方法により、あらゆる状況下に対応した航海計画や航行を計画する場合、次の事項を考慮すること 例えば .1　制約のある水域 .2　気象状態 .3　氷海 .4　視界制限状態 .5　分離通航方式 .6　海上交通サービス（VTS）海域 .7　潮流の影響が大きい海域 航路設定の一般規定に基づいた航路 船位通報制度及び VTS 手続きの一般原則に基づいた報告	試験及び次の一以上から得られた証拠による評価 .1　承認された海上履歴 .2　適切な場合、承認されたシミュレータ訓練 .3　承認された実験設備訓練 次を使用すること 水路図誌目録、海図、航海用書誌及び船舶要目	航海に求められる機器、海図、航海用書誌を揃え、安全航海の実施に適切であること 航路計画の根拠が関連資料及び図誌から得られた事実と統計的データにより裏付けされること 船位、針路、航程及び時刻の計算は正確であり、その精度は航海機器に伴う許容範囲内であること。 すべての航海の危険を正確に認識すること

能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
船位の決定及び各手段によって得られた決定船位の精度	**あらゆる状況における船位の決定** .1　天体観測による船位の測定 .2　地物の観測による船位の測定（船位測定の結果の精度を評価するための適切な海図、水路通報及びその他の図誌を利用する能力を含む。） .3　新しい電子航法装置の使用。それらの装置の作動原理、性能の限界及び誤差の原因並びに情報表示の誤りの識別及び正確な位置を得るための補正方法に関する特有の知識	試験及び次の一以上から得られた証拠による評価 .1　承認された海上履歴 .2　適切な場合、承認されたシミュレータ訓練 .3　承認された実験設備訓練 次を使用すること .1　海図、航海暦、プロッティング・シート、クロノメータ、六分儀及び計算機 .2　海図、航海用書誌及び航海計器（方位鏡、測程器、測深機、コンパス）及びメーカーのマニュアル .3　レーダ、地上波船位測定システム、衛星航法システム及び適切な海図及び書誌	船位決定のために選択された主要な方法は遭遇環境と状況に最も適したものとすること 天測によって得られた船位は、受け入れられる精度の水準内であること 地上物標によって得られた船位は、受け入れられる精度の水準内であること 決定船位の精度を適切に評価すること 電子航法装置によって得られた船位は、システム利用の精度の水準内であること。決定船位の精度に影響を与える誤差を明確にし、決定船位のシステム誤差の影響を最小限にする方法を適切に適用すること

第 1 欄	第 2 欄	第 3 欄	第 4 欄
能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
コンパス誤差の決定と考慮	磁気コンパス及びジャイロコンパス誤差の決定とその誤差を考慮する能力 磁気コンパス及びジャイロコンパスの原理に関する知識 主ジャイロの制御下におけるシステムの理解及びジャイロコンパスの主な種類の取扱い運用に関する知識	試験及び次の一以上から得られた証拠による評価 .1　承認された海上履歴 .2　適切な場合、承認されたシミュレータ訓練 .3　承認された実験設備訓練 次を使用すること 天体観測と地上物標の方位、磁気コンパスとジャイロコンパスの比較	磁気コンパス及びジャイロコンパスの誤差のチェックの方法と頻度により正確な方位情報を確保すること

第 1 欄	第 2 欄	第 3 欄	第 4 欄
能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
捜索と救助作業の調整	国際航空海上捜索救難マニュアル（IAMSAR）に含まれる手順に関する十分な知識とその手順を適用する能力	試験及び次の一以上から得られた証拠による評価 .1　承認された海上履歴 .2　適切な場合、承認されたシミュレータ訓練 .3　承認された実験設備訓練 次を使用すること 関連書誌類、海図、気象データ、関連船舶の要目、無線通信機器及び他の利用可能な機器類及び次の一以上の訓練 .1　承認された SAR 訓練課程 .2　適切な場合、承認されたシミュレータ訓練 .3　承認された実験設備訓練	捜索救助活動の調整計画は、国際的指針と基準に基づくこと 無線通信を確立し、捜索・救助活動のすべての段階において正確な通信手順に従うこと

第 1 欄	第 2 欄	第 3 欄	第 4 欄
能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
当直体制及び手順の確立	国際海上衝突予防規則の内容、適用及び目的に関する十分な知識 「航海当直の維持に当たり遵守すべき基本原則」の内容、適用及び目的に関する十分な知識	試験及び次の一以上から得られた証拠による評価 .1　承認された海上履歴 .2　適切な場合、承認されたシミュレータ訓練	当直体制と手順を安全航海、海洋環境の保護、船舶及び乗船者の安全を確保するために国際規則と指針に基づいて確立し、維持すること
航海計器から得られた情報及び意志決定支援のためのシステムから得られた情報の使用を通じての安全な航海の維持 （注） ARPA を使用する訓練・評価は、ARPA 搭載を求められない船舶に乗組む者には要しない。 この制限は、当該船員に発給される裏書きに反映される。	システムの誤差の評価及びレーダ及び ARPA を含む近代的航海システムの運用面に関する十分な理解 狭視界航行計画 衝突防止のための意志決定及び安全航海を行うため、リーダ、ARPA を含むすべての機器から得られた航海情報の評価 航海するうえで利用可能なすべての航海情報の相互関係及び最適な利用	試験並びに承認された ARPA シミュレータ訓練及び次の一以上から得られた証拠による評価 .1　承認された海上履歴 .2　適切な場合、承認されたシミュレータ訓練 .3　承認された実験設備訓練	機器の限界及び遭遇環境及び状況を考慮したうえで、航海計器及びシステムからの情報を正確に解釈し、解析すること 他船と著しく接近すること又は衝突を避けるための動作は国際海上衝突予防規則に基づくこと

第 1 欄	第 2 欄	第 3 欄	第 4 欄
能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
ECDIS 及び意志決定支援のための関連航海システムの使用を通じての安全な航海の維持 注:ECDIS を使用する訓練・評価は、ECDIS 搭載を求められない船舶に乗組む者には要しない。この制限は、当該船員に発給される裏書に反映される。	以下の事項を含む、操作手順、システム・ファイル及びデータの管理: .1　確立された手続きを確認するための、海図データ及びシステム・ソフトウエアの入手、ライセンシング及び最新化 .2　納入業者の製品開発に基づく ECDIS システムのバージョンアップを含む、システム及び情報の最新化 .3　システム構成及びバックアップ・ファイルを作成・維持すること .4　確立された手続きに基づいて業務ファイルを作成・維持すること .5　確立された手続きに基づいて航路計画ファイルを作成・維持すること .6　システム機能、警報設定及びユーザー対応を点検するための、ECDIS の業務日誌・航跡記録機能を使用すること 航路の見直し、航路計画及びシステム機能の見直しのため、ECDIS の再生機能を使用すること	次のうちの一つから得られた証拠に関する評価 .1　承認された海上履歴 .2　承認された練習船履歴 .3　承認された ECDIS シミュレータ訓練	ECDIS 使用に関する操作手順が確立され、適用・監視されていること 航海の安全に対する危険を最小限にするために講じられる措置

第 1 欄	第 2 欄	第 3 欄	第 4 欄
能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
気象・海象の予測	天気図を理解し及び解読する能力並びに局地的な気象状態及び気象ファックス図からの情報を考慮して、地域の天気を予測する能力 種々の気象状態の特徴に関する知識（熱帯暴風雨及び暴風雨の中心及び危険半円の回復に関するものを含む。） 海流システムに関する知識 潮汐の状態を算出する能力 潮汐に関するすべての適切な航海用書誌の使用	試験及び次の一以上から得られた証拠による評価 .1　承認された海上履歴 .2　承認された実験機器訓練	ある期間の予測される天候状態は利用可能なすべての情報に基づくこと 安全航海を維持するために取られる行動は、船舶の安全に対するいかなる危険をも最小にすること 意図する行動の根拠は統計的データ及び実際の天候状況の観測によること
航海に関する緊急時の対応	船舶を任意乗揚げさせる際の注意事項 座礁の前後においてとるべき措置 乗揚げた船舶を、支援を得て又は自力で浮上させること 衝突が切迫した際及び衝突又は何らかの原因で船体の水密性が阻害された場合にとるべき措置 損傷制御の評価 非常の操舵法 緊急曳航の準備及び曳航手順	試験並びに実地教習、海上履歴及び非常時の手順に関する操練から得られた証拠による評価	事態の種類と範囲を即座に認識し、決断と行動により船舶システムのすべての故障の影響を最小限にとどめること 連絡は効果的であり、確立された手順に従うこと 決断と行動は船内にある者の安全を最大限確保すること

第 1 欄	第 2 欄	第 3 欄	第 4 欄
能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
あらゆる状態における操船	あらゆる状況における操船、これには次の事項を含む .1　水先人乗下船場所に接近する場合及び水先人の乗下船時における天気、潮汐、進出距離及び停止距離を十分に考慮に入れた操船 .2　潮流、風及び蛇行に制約のある水域の影響を考慮に入れた河川、河口及び制約水域における操船 .3　一定の回頭角速度技術の適応 .4　船体沈下、横揺れ及び縦揺れの結果生ずる余裕水深の減少等を考慮に入れた浅い水域における操船 .5　航過する船舶の間の相互作用及び自船と至近の側壁との間の相互作用（側壁影響） .6　風及び潮流の種々の状態において、曳き船を使用する場合、曳き船を使用しない場合の離着岸 .7　本船と曳き船の相互作用	試験及び次の一以上から得られた証拠による評価 .1　承認された海上履歴 .2　適切な場合、承認されたシミュレータ訓練 .3　適切な場合、要員が乗組める承認された船舶モデル	着桟と錨泊に関するすべての決定は、船の操船特性及び機関特性の適切な評価と岸壁付け又は錨泊中に予想される外力に基づくこと 航行中、船がどのような載貨及び気象状態の下でも安全に操船できるよう浅水及び制限水域、氷、浅瀬、潮流、航過船及び自船の船首又は船尾波からの影響を十分評価すること

第 1 欄	第 2 欄	第 3 欄	第 4 欄
能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
あらゆる状態における操船（続き）	.8　推進機関及び操船システムの使用 .9　錨地の選定では限られた広さの錨地における単錨泊又は双錨泊及び使用する錨鎖の　長さを決定する要因 .10　走錨、絡み錨の解き方 .11　損傷時及び非損傷時における乾ドックへの入渠 .12　荒天時における管理と操船（遭難船舶又は遭難航空機に対する支援、曳航作業、運転不自由船舶が横波を受けないようにする手段及び可能な限り圧流されないようにする手段並びにストーム・オイルの使用を含む。） .13　荒天時において救助艇又は救命艇及び救命いかだを着水させる場合の操船上の注意事項 .14　救助艇又は救命艇及び救命いかだから生存者を船内に収容する方法		

第 1 欄	第 2 欄	第 3 欄	第 4 欄
能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
あらゆる状態における操船（続き）	.15　主な種類の船舶の操縦性能及び推進機関の特徴（特に、種々の喫水状態及び速力における停止距離及び旋回圏に関するもの）を判断する能力 .16　自船の船首波及び船尾波によって生ずる損傷を避けるための減速航行の重要性 .17　氷のある水域において又は着氷の状態で航行する場合にとるべき実際的な措置 .18　分離通航方式のとられている水域及びその付近並びに海上交通サービス（VTS）水域における操船		
推進機関及び機関システムと運用の遠隔制御の操作	船舶の出力装置の作動原理 舶用の補機 船舶の機関に関する用語の一般的な知識	試験及び次の一以上から得られた証拠による評価 .1　承認された海上履歴 .2　適切な場合、承認されたシミュレータ訓練	設備、補機及び機器を、あらゆる場合において技術的な仕様に基づき安全な運用制限内で運用すること

職務細目　管理水準における荷役と積付け

第 1 欄	第 2 欄	第 3 欄	第 4 欄
能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
貨物の安全な積込み、積付け、固定、航行中の保全及び荷揚げの計画と確保	貨物の安全な取扱い、積付け、固定及び輸送に関する国際規則、コード及び基準の知識と適用に関わる能力 貨物と荷役作業のトリムと復原性への影響に関する知識 自動データベース（ADB）を含む復原力及びトリム曲線並びに応力計算機の使用及び許容限度内の船体応力を維持するための貨物の積込み及びバラストに関する知識 荷役装置及び固定、固縛装置を含む船内における貨物の積付け及び固定 貨物の積付けと固定に関する安全実務コードに明確にされた貨物の輸送に関しての積込みと荷揚げ タンカー及びタンカー荷役の一般的知識 ばら積み貨物船の運航及び設計上の限界の知識 ばら積み貨物の積込み、保全、取卸しに関連するすべての使用可能な船上データを使用する能力	試験及び次の一以上から得られた証拠による評価 .1　承認された海上履歴 .2　適切な場合、承認されたシミュレータ訓練 次を使用すること 復原性、トリム及び応力表、曲線図及び応力計算機	貨物の状態の監視の頻度と程度は、貨物の性状とその時の状態に応じて行うこと 貨物の状態と特性における異常で予期しない変化は、直ちに認識し、改善措置を直ちにとり、また船体と乗船者の安全を確保するよう計画すること 荷役は、確立された手順及び法的要件に基づいて計画し、実行すること 貨物の積付け及び固定は復原性及び応力の状態が航海中のすべての状態において安全限界内であることを確保すること

第 1 欄	第 2 欄	第 3 欄	第 4 欄
能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
貨物の安全な積込み、積付け、固定、航行中の保全及び荷揚げの計画と確保（続き）	IMDG コード、IMSBC コード、MARPOL 73/78 附属書 III 及び V のような関連した規定に従った貨物の安全な取扱い手順を確立する能力 船舶とターミナル要員の間の効果的な連絡を確立し、作業関係を改善するために基本原則を説明する能力		
貨物艙、ハッチカバー、バラストタンクの検査及びあらゆる欠陥、損傷の報告及び適切な処置	標準のばら積み貨物船の核心の構造上の部品の強度の限界を陳述し、かつ、切断力及び曲げモーメントの図表を解釈する知識 ばら積み船の腐食、疲労、貨物の不十分な取り扱いの損害を回避する方法を説明する能力	試験及び次の一以上から得られた証拠による評価 .1　承認された海上履歴 .2　適切な場合、承認されたシミュレータ訓練 次を使用すること 復原性、トリム及び応力表、曲線図及び応力計算機	評価は、容認された原則、根拠の十分な議論に基づき、正しく実行されること。なされた決定は容認可能で、船舶の安全性及び一般的な条件を考慮に入れること。
危険物の輸送	国際海上危険物（IMDG）コードと国際海上個体ばら積み貨物（IMSBC）コードを含む危険貨物の輸送に関する国際規制と基準、コード及び勧告 危険で有害な貨物輸送における、積込み、荷揚げ中の注意事項及び航海中の保全	試験及び次の一以上から得られた証拠による評価 .1　承認された海上履歴 .2　適切な場合、承認されたシミュレータ訓練 .3　承認された専門家訓練	貨物の配置計画は信頼できる情報に基づき、かつ確立された手順及び法的要件に従うこと 危険物、有害物及び特別要件に関する情報は事故の際に、照会が容易なように適切な様式で記録すること

職務細目　管理水準における船舶の運航管理及び船内にある者の保護

第 1 欄	第 2 欄	第 3 欄	第 4 欄
能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
トリム、復原性及び応力の管理	船体構造に関する基本原理、トリム及び復原性に影響する理論及び要因並びにトリム及び復原性を保つために必要な措置の理解 区画室に損傷が生じ浸水があった場合に浸水が船舶のトリム及び復原性に及ぼす影響並びに当該影響の生じた場合にとるべき措置に関する知識 船舶の復原性に関する IMO 勧告についての知識	試験及び次の一以上から得られた証拠による評価 .1　承認された海上履歴 .2　承認された練習船履歴 .3　適切な場合、承認されたシミュレータ訓練	復原性と応力状態は常に安全限界内で保つこと
海上における人命の安全確保と海洋環境の保護のための法的要件と手段に応じた監視と管理	国際協定及び条約で定められている国際海事法に関する知識 特に、次の事項に注意を払わなければならない .1　国際条約により船舶に備え置くことが義務付けられている証明書その他の文書並びにその取得方法及び法定有効期間	試験及び次の一以上から得られた証拠による評価 .1　承認された海上履歴 .2　承認された練習船履歴 .3　適切な場合、承認されたシミュレータ訓練	監視作業と保守の手順は法的要件を遵守すること 違法の可能性を即座にかつ完全に認識すること 証明書の更新と延長の要件は調査項目と装置の継続的な有効性を確保すること

第 1 欄	第 2 欄	第 3 欄	第 4 欄
能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
海上における人命の安全確保と海洋環境の保護のための法的要件と手段に応じた監視と管理（続き）	.2　満載喫水線に関する国際条約の関連要件に基づく責任 .3　海上における人命の安全に関する国際条約の関連要件に基づく責任 .4　船舶からの汚染の防止に関する国際条約に基づく責任 .5　検疫明告書、国際保健規則の要件 .6　船舶、旅客、乗組員及び貨物の安全に関係する国際的な証書に基づく責任 .7　船舶による環境汚染防止の措置及び設備 .8　国際協定及び条約の履行にあたっての国内法に関する知識		

第 1 欄	第 2 欄	第 3 欄	第 4 欄
能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
船舶、乗組員及び旅客の安全と保安の維持及び救命、消火及び他の安全システムの作動状態の維持	救命設備に関する規則（海上における人命の安全のための国際条約）の十分な知識 防火操練及び退船操練の実施 救命、消火及びその他の安全システムの作動状態の維持 非常時にすべての者の保護及び安全のためにとるべき措置 火災・爆発・衝突又は乗揚げた船舶の損傷をできる限り少なくし、救助するためとるべき行動	試験並びに実地教習、承認された実務訓練及び経験から得られた証拠による評価	火災探知と安全システムの監視手順では、すべての警報が瞬時に探知し、確立された非常時の手順に基づいて作動することを確保すること
非常時及び損傷制御計画の作成及び非常事態への対応	非常事態に即応するための緊急計画の準備 損傷制御を含む船舶の構造 火災防止、探知及び消火の方法と機器 救命設備に関する機能と使用	試験並びに実地教習、承認された実務訓練及び経験から得られた証拠による評価	非常時の手順は、非常対応として確立された計画に基づくこと
リーダーシップと管理技能の適用	船内要員の人事と訓練に関する知識 国際海事条約と勧告及び国内規則に関する知識	次の一以上から得られた証拠による評価： .1　承認された訓練 .2　承認された海上履歴 .3　承認されたシミュレータ訓練	

第 1 欄	第 2 欄	第 3 欄	第 4 欄
能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
リーダーシップと管理技能の適用(続き)	以下を含む職務及び業務量管理を適用する能力： .1　企画立案及び調整 .2　要員配置 .3　時間及びリソースの制約 .4　優先順位の決定 効果的なリソースマネージメントを適用する能力と知識： .1　リソースの配置、任務及び優先順位決定 .2　船内及び陸上での効果的なコミュニケーション .3　チーム構成員の経験を考慮した決定 .4　動機づけを含む、明確な意思表示とリーダーシップ .5　状況認識力の習得と維持 意志決定技能を適用するための知識と能力： .1　状況判断及びリスクアセスメント .2　選択肢の策定と認識		乗組員は個人に応じて、業務を与えられ、期待される作業の基準及び行動につき通知されること 訓練目的及び行動は、現行の能力及び運転要件に基づくこと 業務の運用が適用される規則に従っていることが実証されること 業務の運用が立案され、必要な職務の遂行に相応しい優先順位に基づいて乗組員に職務が割当てられること コミュニケーションが明瞭かつ明確に行われること 効果的なリーダーシップ行動が実証されること 必要なチーム構成員が、現在及びこれから予測される船舶及び運航状況並びに外部環境について正確な理解を共有すること 決定が、状況に対して最も効果的であること 運用が効果的であり、かつ適用される規則に基づいていることが実証されていること

第 1 欄	第 2 欄	第 3 欄	第 4 欄
能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
リーダーシップと管理技能の適用(続き)	.3　行動方針の選択 .4　成果の有効性評価 標準作業手続きの策定、実行及び監督		
船内医療に関する規定の組織と管理	次の出版物の利用及び内容に関する十分な知識 (注 1) .1　国際船舶医療便覧(IMGS)又は同等の国内出版物 .2　国際信号書の医療関係部門 .3　危険物による事故の際に使用する応急医療便覧(MFAG)	試験並びに承認された訓練から得られた証拠による評価	取られる行動及び従うべき手順を正確に適用し、かつ助言を十分に利用すること

(注 1)　IMO/ILO 訓練指針―応急手当及び医療―は、課程の準備に際し助けとなる。

A-Ⅱ/3 節
沿岸航海に従事する総トン数 500 トン未満の船舶の船長及び甲板部の当直を担当する職員の資格証明のための最小限の要件

（省略）

表 A-Ⅱ/3
沿岸航海に従事する総トン数 500 トン未満の船舶の船長及び一等航海士の最小限の能力規準の詳細

職務細目　運用水準における航海

第 1 欄	第 2 欄	第 3 欄	第 4 欄
能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
沿岸航海の計画及び実施及び船位の決定 注：ECDIS を使用する訓練・評価は、ECDIS 搭載を求められない船舶に乗組む者には要しない。この制限は、当該船員に発給される裏書に反映される。	**航海** 次を利用することにより船位を測定する能力 .1　陸標 .2　灯台、標識、浮標等の航行援助施設 .3　風、潮汐、海流及び推定速力を考慮した推測航法 海図及び水路誌、潮汐表、水路通報、無線航行警報、船舶の航路情報等の航海用の書誌に関する十分な知識並びにこれらの書誌及び情報を利用する能力 船位通報制度の一般原則及び VTS 手続きに基づく報告 **（注）**　この項目は船長としての資格証明にのみ求められる	試験及び次の一以上から得られた証拠による評価 .1　承認された海上履歴 .2　承認された練習船履歴 .3　適切な場合、承認されたシミュレータ訓練 .4　承認された実験設備訓練 次を使用すること 水路図誌目録、海図、航海用書誌、無線航行警報、六分儀、方位鏡、電子航法装置、測深器、コンパス	航海用の海図及び書誌から得られた情報を、関連付け、正確に解釈し、適切に適用すること 船位決定のために選択された主要な方法は航行環境と状況に最も適したものとすること 航海計器やシステムの許容誤差内で船位を決定すること 主要な船位決定法によって得られた情報の信頼性を、適切な間隔でチェックすること 航海情報の計算と測定は正確であること 選択された海図と書誌は航行区域に応じた最も大尺度であること及び船内で利用可能な最新の情報に基づいて改補されていること

第 1 欄	第 2 欄	第 3 欄	第 4 欄
能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
沿岸航海の計画及び実施及び船位の決定（続き）	以下を含め、適切な沿岸航路のプロッティング方法による、あらゆる条件に対応した航海計画及び航海： .1　制限水域 .2　気象条件 .3　氷 .4　狭視界 .5　分離通航方式 .6　海上交通サービス（VTS）海域 .7　潮流の影響が大きい海域 注：本項目は船長の証明書についてのみ要する		
	ECDIS に関する十分な知識及び ECDIS を使用する能力	試験及び次の一以上から得られた証拠による評価 .1　承認された練習船履歴 .2　承認された ECDIS シミュレータ訓練	
	航行援助装置及び機器 すべての航行援助設備及び関連する船舶に通常備えられている機器を使用して安全に運航し、船位を決定する能力	承認されたレーダ航海及び ARPA シミュレータ訓練から得られた証拠による評価	航海システムの作動確認は、製造者の指針と航海の実際及び航海計器の性能基準を規定する IMO 決議を遵守していること レーダから得られた情報の解釈と解析は、航海の実際に基づき、かつレーダの限界及び精度を考慮すること

第 1 欄	第 2 欄	第 3 欄	第 4 欄
能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
	コンパス 磁気コンパスの誤差及び修正に関する知識 地上物標を利用してコンパスの誤差を決定する能力及びその誤差を考慮する能力 **自動操舵** 自動操舵装置及びその取扱いに関する知識 手動から自動へ及びその逆の切り換えの手順 最適な制御のための調整 **気象** 船舶に備え付けられる気象測器から得られる情報の利用及び解釈の能力 種々の気象システムの特徴、通報手順及び記録方式に関する知識 入手可能な気象情報を利用する能力		磁気コンパスの誤差を決定し、針路及び方位に正確に適用すること 操舵モードの選択は、気象、海象及び交通状況及び意図する操船に最も適するようにすること 気象状態の計測と観測は、正確かつ航行に応じたものであること 気象情報を正確に解釈し、船の安全航行に適用すること

第 1 欄	第 2 欄	第 3 欄	第 4 欄
能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
安全な航海当直の維持	**当直** 国際海上衝突予防規則の内容、適用及び趣旨に関する十分な知識 航海当直の維持に当たり遵守すべき基本原則に関する十分な知識 航路選定の一般的な規定に基づく航路の利用 船位通報制度の一般原則及び VTS 手続きに基づく報告の使用	試験及び次の一以上から得られた証拠による評価 .1　承認された海上履歴 .2　承認された練習船履歴 .3　適切な場合、承認されたシミュレータ訓練 .4　承認された実験設備訓練	当直の実施、引継及び交代は認定された原則、手順に従うこと いかなる場合においても、認定された原則、手順に従った方法で適切な見張りを維持すること 灯火、形象物及び音響信号は海上衝突予防規則の要件に従っていること及び正確に認知されること 他の船舶との著しい接近及び衝突を避けるための動作は国際海上衝突予防規則に基づくこと 針路及び／又は速力の調整の決定は、適時にかつ認定された原則、手順に基づいて行うこと 船の航海に関する動静、行動に関して適切な記録を残すこと 航海安全の責任が常に明確に定められること（船長が船橋内にいる場合又は水先人乗船中の場合を含む。）

第 1 欄	第 2 欄	第 3 欄	第 4 欄
能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
非常時の対応	**非常措置** .1　非常事態における旅客の保護及び安全に関する注意事項 .2　損傷の初期評価及び損傷制御 .3　衝突時にとるべき措置 .4　乗揚げ時にとるべき措置	試験及び次の一以上から得られた証拠による評価 .1　承認された海上履歴 .2　承認された練習船履歴 .3　適切な場合、承認されたシミュレータ訓練 .4　実地教育	非常事態の種類と範囲を敏速に認識すること 初期動作及び操船は非常配置計画に基づき、状況の緊急性と非常事態の種類に応じて行うこと

職務細目　運用水準における荷役と積付け

（省略）

職務細目　運用水準における船舶の運航管理及び船内にある者の保護（抜粋）

第 1 欄	第 2 欄	第 3 欄	第 4 欄
能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
人員と船舶の安全に貢献すること	個々の生存技術に関する知識 防火及び消火能力に関する知識 初歩的な救急処置に関する知識 個々の安全と社会的責任に関する知識	A-VI/1 節 2 に記載の承認された訓練及び経験から得られた証拠の評価	適切な安全装置・保護具が正しく使われること 人員と船舶を保護するための手続き及び計画的な安全作業の実施が常に遵守されていること 環境保護のための計画的な手続きが常に遵守されていること 非常事態時の初期及び引き続く行動が、確立された非常事態対応手続きに適合していること

A-Ⅱ/4 節

甲板部の当直を担当する部員のための最小限の要件

（省略）

表 A-Ⅱ/4

甲板部の当直を担当する部員のための最小限の能力規準の詳細

（省略）

A-Ⅱ/5 節
有能海員（甲板部）の資格証明のための最小限の要件

能力基準

1　総トン数 500 トン以上の海上航行船舶の業務に従事する有能海員（甲板部）は、表 A-Ⅱ/5 に掲げる支援レベルの職務を遂行する能力を証明しなければならない。

2　総トン数 500 トン以上の海上航行船舶の業務に従事する有能海員（甲板部）に要求される最小限の知識、理解及び技能は、表 A-Ⅱ/5 第 2 欄に掲げる。

3　資格証明を得ようとする者は、表 A-Ⅱ/5 第 3 欄及び第 4 欄に掲げる能力の証明方法及び能力評価の基準に基づき、要求される能力基準を達成したことを証明しなければならない。

表 A-Ⅱ/5
有能海員（甲板部）のための最小限の能力基準の詳細

職務細目：支援水準における航海

第 1 欄	第 2 欄	第 3 欄	第 4 欄
能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
安全な航海当直に貢献すること	命令を理解し当直職員と意思疎通できる能力 当直の交代、維持及び引継ぎのための手続き 安全な当直の維持のために必要な情報	実務経験又は実地試験から得られた証拠による評価	コミュニケーションが明瞭かつ簡潔であること 当直の維持、引継ぎ及び交代が許容可能な慣行及び手順に基づいていること
係留、錨泊その他の係留作業に貢献すること	下記の事柄を含む、係留システム及び関連手続に関する実用知識 .1　係留索及び曳航索の機能、ワイヤ及びそれぞれがシステム全体の中でどのように機能するか .2　係留鋼索、合成繊維索、ウインチ、揚錨機、キャプスタン、係柱、チョック及びボラードを含む、係留機具の能力、安全使用荷重及び破壊強さ .3　係留索及び曳航索類を固縛及び外すための作業手続き及び順序 .4　さまざまな操船において錨を用いるための作業手続き及び順序 浮標への係留に関連する作業の手続き及び順序についての実用知識	次の一以上から得られた証拠による評価 .1　承認された海上履歴 .2　実務訓練 .3　試験 .4　承認された練習船履歴 .5　適切な場合、承認されたシミュレータ訓練	作業が確立された安全慣行及び機器操作指示に基づいて行われること

職務細目：支援水準における貨物の取扱い及び積付け

第 1 欄	第 2 欄	第 3 欄	第 4 欄
能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
貨物及び物品の取扱いに貢献すること	危険、有害物質及び液体を含む貨物及び備品の安全な取扱い、積付け、固縛のための手続きに関する知識 特定の種類の貨物についての基礎知識及びそれらに関連して守るべき注意事項並びに IMDG ラベルによる貨物の識別	次の一以上から得られた証拠による評価： .1　承認された海上履歴 .2　実務訓練 .3　試験 .4　承認された練習船履歴 .5　適切な場合、承認されたシミュレータ訓練	貨物と物品の取扱い作業が確立された安全手順及び機器操作指示に基づいて行われていること 危険、有害な物品の取扱いが確立された安全慣行に適合していること

職務細目：支援水準における船舶の運航管理及び船内にある者の保護

第 1 欄	第 2 欄	第 3 欄	第 4 欄
能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
甲板設備及び機械の安全な操作に貢献すること	次の事柄を含む甲板設備に関する知識： .1　バルブ、ポンプ、巻揚げ装置、クレーン、ブーム及び関連設備の機能と使用 .2　ウインチ、揚錨機、キャプスタン及び関連設備の機能と使用 .3　ハッチ、水密扉、荷役口及び関連設備	次の一以上から得られた証拠による評価： .1　承認された海上履歴 .2　実務訓練 .3　試験 .4　承認された練習船履歴	作業が確立された安全手順及び機器操作指示に基づいて行われていること

第1欄	第2欄	第3欄	第4欄
能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
甲板設備及び機械の安全な操作に貢献すること（続き）	.4　構造、使用、マーキング、保守及び正しい積付けを含む、繊維又はワイヤ・ロープ、錨鎖		
	.5　ウインチ、揚錨機、クレーン及び巻揚げ装置を含む設備の使用と操作のための基本的な信号の理解	実務から得られた証拠による評価	運用者の責任区域内において良好なコミュニケーションが維持されていること
	.6　投錨、揚錨、航海時の固縛及び非常事態等、さまざまな条件下で投揚錨装置を操作する能力	実務から得られた証拠による評価	装置の操作が確立された手続きに基づいて安全に行われていること
	次の手続き及び能力に関する知識：		
	.1　ボースンチェア及び足場の設置及び取外し	実務から得られた証拠による評価	業界の安全慣行に基づいた正しい設置及び取外し方法を証明すること
	.2　水先人用はしご、巻揚げ装置、ラット・ガード及びギャングウエイの設置及び取外し		
	.3　適切なノット、スプライス及びストッパの使用を含む、マーリン・スパイの使用及び海技の使用		ノット、スプライス、ストッパ、ホイッピング、細索の正しい作り方と使用法、及びカンバスの正しい取扱いを証明すること
	甲板・荷役装置の使用と取扱い：		
	.1　出入り装置、ハッチ及びハッチ・カバー、傾斜路、側部・船首・船尾の扉又はエレベータ		

第 1 欄	第 2 欄	第 3 欄	第 4 欄
能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
甲板設備及び機械の安全な操作に貢献すること（続き）	.2　ビルジ、バラスト吸引及びウエルのパイプ系統 .3　クレーン、デリック、ウインチ 旗の揚げ降ろし及び主な旗流 1 字信号(A, B, G, H, O, P, Q）に関する知識		ブロック及びテークルの正しい使い方を証明すること 綱、ワイヤ、錨鎖の正しい取扱い方法を証明すること
職務上の健康と安全手順の適用	次の事項を含む、安全な作業慣行及び船内での個々の安全に関する実用知識： .1　高所作業 .2　舷外作業 .3　閉鎖区画での作業 .4　作業許可制度 .5　綱の取扱い .6　持ち上げ技術と背部損傷の防止法 .7　電気関連の安全性 .8　機械関連の安全性 .9　化学物質及び生物学的有害物質関連の安全性 .10　個人用安全具	次の一以上から得られた証拠による評価： .1　承認された海上経験 .2　実務訓練 .3　試験 .4　承認された練習船履歴	乗組員及び船舶を保護するための手順が常に遵守されていること 安全作業慣行が遵守され、かつ適切な安全・保護具が常に正しく使用されていること

第 1 欄	第 2 欄	第 3 欄	第 4 欄
能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
予防措置の適用及び海洋環境の汚染防止に貢献すること	海洋環境の汚染防止のためにとられる予防措置に関する知識 洋 汚染防止機器の使用と操作に関する知識 承認された海洋汚染物質処理方法に関する知識	次の一以上から得られた証拠による評価： .1　承認された海上履歴 .2　実務訓練 .3　試験 .4　承認された練習船履歴	海洋環境保護のための手順が常に遵守されていること
救命艇及び救命いかだ並びに救助艇の操作	救命艇及び救命いかだ並びに救助艇の操作、その着水装置、配置及び関連機器に関する知識 海上での生存技術に関する知識	A-VI/2 節 1 から 4 に記載の、承認された訓練及び経験から得られた証拠による評価	退船及び生存に関わる状況への対応措置が一般的な状況・条件に照らして適切で、一般に容認された安全慣行及び基準に適合していること

職務細目：支援水準における保守・修理

第 1 欄	第 2 欄	第 3 欄	第 4 欄
能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
船内保守及び修理に貢献すること	表面処理技術に関する知識 塗装、注油及び洗浄剤及び機器を使用する能力 定常の保守及び修理手順を理解し実施する能力 製造者の安全指針及び船内指示書の理解 廃棄物の安全な処理に関する知識 手工具及び動力工具の適用、保守及び使用に関する知識	実務から得られた証拠による評価 次の一以上から得られた証拠による評価： .1　承認された海上履歴 .2　実務訓練 .3　試験 .4　承認された練習船履歴	保守作業が技術的、安全及び仕様の手順に基づいて行われていること

第Ⅲ章
機関部に関する基準

A-Ⅲ/1 節
人員が配置される機関区域の機関部の当直を担当する職員又は定期的に無人の状態に置かれる機関区域の当番に指名される職員の資格証明のための最小限の要件

訓練

（省略）

船内訓練

（省略）

能力基準

１～7　　（省略）

8　主管庁は、発給される証明書の適用対象である機関装置以外の推進機関に対する知識要件を省略できる。そのような条件で発給される証明書は、当該の機関部職員がこれらの知識要件について適格能力を有することを証明するまでは、それまで対象外とされてきたいかなる種類の機関装置に対しても有効性をもたない。このような限定は当該証明書及び裏書に記載される。

9　　（省略）

10　沿岸航海に従事する推進出力 3,000 キロワット未満の推進出力の主推進機関を備えた船舶の機関部職員について、表 A-Ⅲ/1 の第 2 欄に掲げられた各節の下で要求される知識、理解及び技術水準に関連する第Ⅲ/1 規則 2.2 及び 2.3 の要件は、同一の水域を航行するすべての船舶の安全に留意した上で、必要と見なされる場合は、異なるものとすることができる。この規定による証明書の効力についての限定は、当該証明書及び裏書に記載されていなければならない。

表 A-Ⅲ/1

人員が配置される機関区域の機関部当直を担当する職員又は定期的に無人の状態に置かれる機関区域の当番に指名される職員の資格証明のための最小限の要件

職務細目　運用水準における舶用機関技術

第 1 欄	第 2 欄	第 3 欄	第 4 欄
能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
安全な機関室当直の維持	次の事項を含む「機関当直の維持に当たり遵守すべき原則」に関する十分な知識 .1　当直の引継ぎを受ける際の遵守事項 .2　当直の間に行うべき定常業務 .3　機関日誌の保守記録及び計測値の意味 .4　当直の引継ぎをする際の遵守事項 安全手順及び非常時の手順。すべてのシステムの遠隔／自動から機側制御への切り換え 当直の間の遵守すべき安全のための予防措置及び火災又は事故の際に緊急にとるべき措置（特に油関係の装置に配慮したもの）	次の一以上から得られた証拠による評価 .1　承認された海上履歴 .2　承認された練習船履歴 .3　適切な場合、承認されたシミュレータ訓練 .4　承認された実験設備訓練	当直の実施、引継及び交代は認められた原則と手順に従うこと 機関の機器とシステム監視の頻度と程度は製造者の取扱書と原則及び手順に従うこと これには「機関当直の維持に当たり遵守すべき基本原則」を含む船舶の機関システムに関する変動と作業について適切な記録がされていること
	機関室リソースマネジメント 次を含む、機関室リソースマネジメントの原則に関する知識： .1　リソースの配置、任務及び優先順位決定	次の一以上から得られた証拠による評価： .1　承認された訓練 .2　承認された海上履歴	必要な業務を遂行するため、的確な優先順位でリソースが配置され、任務が割当てられること コミュニケーションが、明瞭かつ明確であること

能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
安全な機関室当直の維持（続き）	.2　効果的なコミュニケーション .3　明確な意志表示とリーダーシップ .4　状況認識力の習得と維持 .5　チーム構成員の経験に基づく配慮	.3　承認されたシミュレータ訓練	曖昧な決定及び／又は行動に対しては、適切な確認行動と回答が行われること 効果的なリーダーシップ行動が認められること チーム構成員が、現在及び予測される機関室及び関連システムの状況並びに周辺の環境について正確な理解を共有すること
筆記及び口述による英語の使用	職員が機関図書類を使用し、かつ機関業務の遂行可能な適切な英語に関する知識	試験並びに実地教習から得られた証拠による評価	機関業務に関連する英文図書を正確に解釈すること 連絡は明確であり、理解できること
船内コミュニケーションシステムの使用	あらゆる船内コミュニケーションシステムの運用	次の一以上から得られた証拠による評価： .1　承認された海上履歴 .2　承認された練習船履歴 .3　適切な場合、承認されたシミュレータ訓練 .4　承認された実験設備訓練	通信の送受信が常に順調に行われること 通信記録が完全かつ正確で、法的要件に適合していること

能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
主機関、補機及び関連の制御システムの運転操作	以下を含む機関システムの基本的な構造及び作動原理： .1　舶用ディーゼルエンジン .2　舶用蒸気タービン .3　舶用ガスタービン .4　舶用ボイラ .5　プロペラを含む軸系装置 .6　各種ポンプ、空気圧縮機、清浄機、造水装置、熱交換機、冷凍機、空調機及び通風システムを含む他の補機器 .7　操舵装置 .8　自動制御システム .9　潤滑油、燃料油及び冷却システムにおける流体の流れと特性 .10　甲板機械 制御システムを含む推進プラント機器の運用に関する安全手順及び緊急時の手順	試験及び次の一以上から得られた証拠による評価 .1　承認された海上履歴 .2　承認された練習船履歴 .3　承認された実験設備訓練	構造と作動メカニズムを理解し、図面又は取扱説明書を使って説明できること

能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
主機関、補機及び関連の制御システムの運転操作（続き）	以下の機器及び制御システムの準備、運用、故障検知及び損傷を防ぐために必要な措置： .1　主機及び関連補機器 .2　蒸気ボイラと関連補機器及び蒸気システム .3　補機原動機及び関連システム .4　冷凍機、空調機及び通風システムを含む他の補機器	試験及び次の一以上から得られた証拠による評価 .1　承認された海上履歴 .2　承認された練習船履歴 .3　適切な場合、承認されたシミュレータ訓練 .4　承認された実験設備訓練	機関の操作は安全運転と海洋環境の汚染防止を確保するため、確立されたルールと手順に従って計画し、行うこと 通常の状態からの変化を敏速に察知すること 機関及び装置の出力は、船橋からの速力と針路の変更に関する指示を含む要件を首尾一貫して満足すること 機器故障の原因を敏速に察知し、その時の環境と状況に関して船と装置のすべての安全を確保するよう措置をとること
燃料、潤滑、バラストその他のポンプシステム及び関連の制御システムの運転操作	制御システムを含む配管システム及びポンプの運用特性 制御システムを含むポンプ及び配管系統の運転操作特性 ポンプ装置の運用： .1　ポンプ装置の通常の運転操作 .2　ビルジ・ポンプ装置、バラスト・ポンプ装置及び貨物用のポンプ装置の運転操作 油水分離器（又は類似の設備）に関する要件と運用	試験及び次の一以上から得られた証拠による評価 .1　承認された海上履歴 .2　承認された練習船履歴 .3　適切な場合、承認されたシミュレータ訓練 .4　承認された実験設備訓練	機関の操作は安全運転と海洋環境の汚染防止を確保するため、確立されたルールと手順に従って計画し、行うこと 正常な状態からの変化が直ちに確認され、適切な措置が講じられること

職務細目　運用水準における電気、電子又は制御工学

第 1 欄	第 2 欄	第 3 欄	第 4 欄
能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
電気、電子及び制御システムの運用	以下の電気、電子及び制御機器の基本的な構成及び作動原理： .1　電気機器 .a　発電機及び配電システム .b　発電機の運転準備､始動、並行運転及び切換 .c　始動方法を含む電動機 .d　高電圧装置 .e　シーケンス制御回路及び関連システム機器 .2　電子機器 .a　基本的な電子回路要素の特性 .b　自動化及び制御システムのフローチャート .c　主推進機関設備運転制御装置及び蒸気ボイラ自動制御装置を含む、各種機械の制御システムの機能、特性及び特徴 .3　制御システム： .a　様々な自動制御方式及びその特性 .b　比例・積分・微分（PID）制御装置の特性及びプロセス制御の関連システム機器	試験及び次の一以上から得られた証拠による評価 .1　承認された海上履歴 .2　承認された練習船履歴 .3　適切な場合、承認されたシミュレータ訓練 .4　承認された実験設備訓練	機関の運転は運用の安全を確保するため、操作マニュアル、確立されたルールと手順に従って計画し、実行すること 電気、電子及び制御システムを理解し、図面又は説明書を使って説明できること

能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
電気及び電子機器の保守及び修理	作業担当者が電気機器の作業に取り掛かる前に要求される電気機器の安全な分離を含む船内電気システムに関する作業の安全要件 電気システム機器、配電盤、電動機、発電機及び DC システムの保守及び修理 電気的不具合及び故障個所の検知並びに損傷の防止対策 電気的試験及び計測機器の構造と操作 次の機器に関する機能及び性能試験並びにそれらの構成 .1　監視システム .2　自動制御機器 .3　保護装置機器 電気及び簡単な電子回路図の解釈	次の事項のうちの一つ又は複数から得られた証拠に関する検討・評価： .1　承認された工作技能訓練 .2　承認された実務経験及び試験 .3　承認された海上履歴 .4　承認された練習船履歴	作業の安全対策が適切であること 手工具、計測機器及び試験機器の選択と使用が適切で、結果の解釈が正確であること 機器の分解、検査、修理、復旧がマニュアル及び適切な慣行に適合していること 復旧及び性能テストがマニュアル及び適切な慣行に適合していること

能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
船内製作及び修理のための手工具、工作機械及び計測機器の適切な使用	船舶及び機器の構造と修理に用いる材料の特性と限界 製作と修理に関する工程の特性と限界 製作及びシステムと構成部品の修理において考慮される特質及びパラメータ 緊急又は仮修理の実施方法 安全な作業環境の確保のために取るべき安全対策と手工具、工作機械及び計測機器の使用のための安全対策 手工具、工作機械及び計測機器の使用 各種のシール剤及びパッキンの使用	次の事項のうちの一つ又は複数から得られた証拠に関する評価： .1　承認された工作技能訓練 .2　承認された実務経験及び試験 .3　承認された海上履歴 .4　承認された練習船履歴	典型的な舶用構成部品の製作のための重要なパラメータの識別が適切であること 材料の選択が適切であること 製作が指定された許容誤差内であること 機器及び手工具、工作機械、計測機器の使用が適切で安全であること
舶内の機関装置及び機器の保守及び修理	作業担当者が機関装置又は機器の作業に取り掛かる前に要求されるこれらの機器の安全な分離を含む保守及び修理のための安全対策 適切な機械的設備に関する基礎的知識及び技能	試験及び次の一以上から得られた証拠による評価： .1　承認された工作技能訓練 .2　承認された実務履歴及び試験 .3　承認された海上履歴	とられる安全手順が適切であること 工具と予備用具類の選択が適切であること

能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
舶内の機関装置及び機器の保守及び修理（続き）	機関装置及び機器の分解、調整及び復旧のような保守及び修理 適切な特殊工具及び計測機器の使用 機器の構造における設計特性及び材料の選択 機器の図面及びハンドブックの解釈 配管系統図、油圧及び空気圧回路図の解釈	.4　承認された練習船履歴	機器の分解、検査、修理及び復旧がマニュアル及び適切な慣行に適合していること 試運転及び性能試験がマニュアル及び適切な慣行に適合していること 材料及び部品の選択が適切であること

職務細目　運用水準における船舶の運航管理及び船内にある者の保護

第 1 欄	第 2 欄	第 3 欄	第 4 欄
能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
汚染防止要件の遵守の確保	**海洋環境の汚染防止** 海洋環境の汚染防止のためにとるべき措置に関する知識 汚染防止措置及びすべての関連機器 海洋環境を保護するための積極的な対策の重要性	試験及び次の一以上から得られた証拠による評価 .1　承認された海上履歴 .2　承認された練習船履歴 .3　承認された訓練	船内モニタリング操作とMARPOL の要件の遵守の確保手順と完全に遵守すること 積極的な環境保護活動に対する評価が維持されることを確実にするための活動

能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
船舶の耐航性の維持	**船舶の復原性** 復原性、トリム及び応力に関する表及び曲線図並びに応力計算機についての実用的な知識 水密性の原理に関する理解 浮力が一部失われた場合にとるべき基本的な措置に関する知識 **船舶の構造** 船舶の主要な構造部材に関する一般的知識及び船舶の各部の正式な名称	試験及び次の一以上から得られた証拠による評価 .1　承認された海上履歴 .2　承認された練習船履歴 .3　適切な場合、承認されたシミュレータ訓練 .4　承認された実験設備訓練	復原性は、すべての載貨状態において、IMO 復原性基準を完全に満たすこと 船舶の水密性の確保・維持は、認定された慣行に従って操作されること
船内における防火、火災制御及び消火	**防火及び消火設備** 防火に関する知識 防火操練を計画する能力 火災の分類・化学に関する知識 消火システムに関する知識 火災の際に取るべき措置（油システム関連の火災を含む。）	A-VI/3 節 1 から 3 に規定する承認された消火訓練及び経験から得られた証拠による評価	非常事態の種類と規模を敏速に認識し、初期動作は、船舶の非常時の手順及び非常時の計画に従うこと 退船、非常閉鎖及び遮断手順は非常時の状況に応じて行い、敏速に履行すること 報告作成の優先順位、レベル及び時間尺度及び乗船者への周知は、非常事態の状況に関連し、事態の緊急性に反映させること

能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
救命設備の運用	**救命** 退船操練を計画する能力及び救命艇及び救命いかだ、救助艇、それらの進水装置と配慮並びに救命用無線機、衛星系 EPIRBs、SARTs、イマーションスーツ及び防寒装具を含むそれらの艤装品の操作に関する知識	A 部第VI/2 節 1 から 4 に規定する承認された訓練及び経験から得られた証拠による評価	退船及び生存に関わる状況における行動は、状況に適応したものであり、かつ習熟した安全慣行及び基準を遵守するものであること。
船内における応急手当	**医療** 医療便覧及び無線による助言を実際に利用する能力、特に、船内で発生するおそれのある事故及び疾病が生じた場合に医療便覧及び無線による助言に基づき有効な措置をとる能力	A 部第VI/4 節 1 から 3 に規定する承認された訓練から得られた証拠による評価	疾病の可能性のある原因、種類及び程度又は状態の認識は敏速であり、取扱いは、生命への危険を最小限にするものであること
法的要件を遵守するための監視	海上における人命の安全及び海洋環境の保護に関する IMO 関連条約の基本的で実際的な知識	承認された訓練又は試験から得られた証拠による評価	海上における人命の安全及び海洋環境の保護に関する法的要件を正確に認識すること
リーダーシップ及びチームワーク技能の適用	船上要員の管理と訓練に関する実用的知識 関連する海事国際条約、勧告及び国内法令に関する知識 次を含む職務及び業務分担の管理ができる能力： .1　企画立案及び調整	次の一以上から得られた証拠による評価： .1　承認された訓練 .2　承認された海上履歴 .3　実践的な証明	乗組員に職務が割当てられ、期待される作業基準及び行動について関係する各人に対して適切な方法で知らされること 訓練目標及び活動が、現在の能力及び資質並びに運用要件の評価に基づいていること

能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
リーダーシップ及びチームワーク技能の適用（続き）	.2　要員の配置 .3　時間及びリソースの制約 .4　優先順位決定 効果的なリソースマネジメントを適用する知識と能力： .1　リソースの配置、任務及び優先順位決定 .2　船内及び陸上における効果的なコミュニケーション .3　チーム構成員の経験を考慮した決定 .4　動機付けを含む、明確な意思表示と態度及びリーダーシップ .5　状況認識力の習得と維持 意志決定技能を適用するための知識と能力： .1　状況及びリスクアセスメント .2　策定した選択肢の認識と検討 .3　行動方針の選択 .4　成果の有効性評価		業務運用が適用される規則に従っていることが実証されること 必要な業務を遂行するため、的確な優先順位でリソースが配置され、業務が計画されること コミュニケーションが、明瞭かつ明確であること 効果的なリーダーシップ行動が認められること チーム構成員が、現在及び予測される船舶及び運航状況並びに周辺の環境について正確な理解を共有すること 決定が状況にもっとも効果的であること

能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
人員及び船舶の安全に貢献すること	個々の生存技術に関する知識 防火に関する知識と消火活動及び消火に関する能力 初歩的な救急処置に関する知識 個々の安全と社会的責任に関する知識	A-VI/1 節 2 に記載の承認された訓練及び経験から得られた証拠の評価	適切な安全・保護具が正しく使われること 人員と船舶を保護するために策定された手順及び安全作業行動が常に遵守されていること 環境保護のために策定された手順が常に遵守されていること 緊急事態を認識してからの初期行動及びその後の行動が、確立された緊急事態対応手順に適合していること

A-Ⅲ/2 節
3,000 キロワット以上の推進出力の主推進機関を備えた船舶の機関長及び一等機関士の資格証明のための最小限の要件

能力基準

1～7　　（省略）

8　　沿岸航海に従事する制限付き推進出力の主推進機関を備えた船舶の機関部職員に証明書を発行する場合、表 A-Ⅲ/2 第 2 欄に掲げる事項について要求される理論的知識、理解及び技能水準を、同一の水域を航行するすべての船舶の安全に留意した上で、異なるものとすることができる。この規定による証明書の効力についての限定は、当該証明書及び裏書に記載されていなければならない。

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* 課程の作成に際しては、関連する IMO モデルコースが参考となる。

表 A-Ⅲ/2
3,000 キロワット以上の推進出力の主推進機関を備えた船舶の機関長及び一等機関士の最小限の能力基準の詳細

職務細目　管理水準における舶用機関技術

第 1 欄	第 2 欄	第 3 欄	第 4 欄
能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
推進機関プラントの運用管理	以下の機器及び関連補機器の設計上の特徴及び作動メカニズム： .1　舶用ディーゼルエンジン .2　舶用蒸気タービン .3　舶用ガスタービン .4　舶用蒸気ボイラ	試験及び次の一以上から得られた証拠による評価： .1　承認された海上履歴 .2　承認された練習船履歴 .3　承認された実験設備訓練 .4　適切な場合、承認されたシミュレータ訓練	設計上の特徴と作動メカニズムに関する説明と理解が適切であること
運転計画	**理論的知識** 熱力学及び伝熱 機械力学及び流体力学 速度、出力及び燃料消費を含むディーゼルエンジン、蒸気エンジン及びガスタービンの推進特性 以下の熱サイクル、熱効率及び熱勘定： .1　舶用ディーゼルエンジン .2　舶用蒸気タービン	試験及び次の一以上から得られた証拠による評価 .1　承認された海上履歴 .2　承認された練習船履歴 .3　適切な場合、承認されたシミュレータ訓練 .4　承認された実験設備訓練	運転計画及び準備が推進設備の設計パラメータ及び航海の要件に適合していること

能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
運転計画(続き)	.3　舶用ガスタービン .4　舶用蒸気ボイラ 冷凍機及び冷凍サイクル 燃料及び潤滑油の物理的及び化学的性質 材料技術 損傷制御を含む造船工学及び船体構造		
推進機関プラント及び補機器の運転、監視、性能評価及び安全性維持	**実際的知識** 関連システムを含む主機及び補機器の始動及び停止 推進機関プラントの運転限界 推進機関プラント及び補機器の効率的な運転、監視、性能評価及び安全性維持 主機の自動制御に関する機能とメカニズム 以下を含むがこれに限定されず補機器の自動制御に関する機能とメカニズム： .1　発電機配電システム .2　蒸気ボイラ .3　油清浄機 .4　冷凍機却システム	試験及び次の一以上から得られた証拠による評価 .1　承認された海上履歴 .2　承認された練習船履歴 .3　適切な場合、承認されたシミュレータ訓練 .4　承認された実験設備訓練	始動準備の方法及びそのための燃料油、潤滑油、冷却水及び空気の供給方法が極めて適切であること 始動及び暖機段階における圧力、温度、回転数の点検結果が、技術仕様及び合意された作業計画に適合していること 主推進機関プラント及び補助システムの監視が安全な運転状態の維持に十分であること 機関の停止準備及び主機冷機の監督方法が極めて適切であること 機関の負荷計測方法が技術仕様に従ったものであること 行動が船橋指示に対して照合されること

能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
推進機関プラント及び補機器の運転、監視、性能評価及び安全性維持（続き）	.5　ポンプ及び配管システム .6　操舵システム .7　荷役装置及び甲板機器		性能水準が技術仕様に適合していること
燃料、潤滑油及びバラスト操作の管理	機器（ポンプ及び配管系を含む。）の運転と保守	試験及び次の一以上から得られた証拠による評価 .1　承認された海上履歴 .2　承認された練習船履歴 .3　適切な場合、承認されたシミュレータ訓練	燃料及びバラスト操作は操作要件に合致しかつ海洋環境汚染防止を考慮し実行すること

職務細目　管理水準における電気、電子又は制御工学

第 1 欄	第 2 欄	第 3 欄	第 4 欄
能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
電気及び電子制御機器の運用管理	**理論的知識** 舶用電気工学、電子工学、電力工学、自動制御工学及び安全装置 以下の自動制御装置及び安全装置の設計特性及びシステム構成： .1　主機 .2　発電機及び配電システム .3　蒸気ボイラ 電動機運転制御装置の設計特性及びシステム構成 高電圧設備の設計特性 油圧及び空圧制御機器の設計特性	試験及び次の一以上から得られた証拠による評価： .1　承認された海上履歴 .2　承認された練習船履歴 .3　適切な場合、承認されたシミュレータ訓練 .4　承認された実験設備訓練	機器及びシステムの運転が操作マニュアルに基づいていること 性能水準が技術仕様に適合していること
電気及び電子制御機器の作動状態へのトラブルシューティング修復管理	**実際的知識** 電気及び電子制御機器のトラブルシューティング 電気、電子制御機器及び安全装置の機能テスト 監視システムのトラブルシューティング ソフトウエアの更新管理	試験及び次の一以上から得られた証拠による評価 .1　承認された海上履歴 .2　承認された練習船履歴 .3　適切な場合、承認されたシミュレータ訓練 .4　承認された実験設備訓練	保守業務が、技術的、法規的、安全性及び手順の仕様に基づき正しく立案されていること 機器の検査、試験及びトラブルシューティングが適切であること

職務細目　管理水準における保守と修理

第１欄	第２欄	第３欄	第４欄
能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
安全で効果的な保守及び修理手順の管理	**理論的知識** 舶用機関実務 **実際的知識** 安全な保守及び修繕手順の計画と実施 法的及び船級検査を含む計画保守 修理計画立案	試験及び次の一以上から得られた証拠による評価 .1　承認された海上履歴 .2　承認された練習船履歴 .3　適切な場合、承認されたシミュレータ訓練	保守作業を、技術的、法的な安全性及び仕様の手順に基づいて正しく計画し実行すること 保守と修理のために、適切な計画、仕様、材料及び機器が利用可能であること 最適な方法により機器類復旧のための措置ができること
機関故障及び故障箇所の検知と修理	**実際的知識** 機関の不調、故障箇所の検知及び損傷の防止 機器の点検調整 非破壊検査	試験及び次の一以上から得られた証拠による評価 .1　承認された海上履歴 .2　承認された練習船履歴 .3　適切な場合、承認されたシミュレータ訓練 .4　承認された実験設備訓練	実際の運転状況との比較の方法は推奨された慣行と手順に基づくこと 作業と決定は推奨された操作仕様と制限に基づくこと

能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
安全作業の実施の確保	**実際的知識** 安全作業の実施	試験及び次の一以上から得られた証拠による評価 .1　承認された海上履歴 .2　承認された練習船履歴 .3　承認された実験設備訓練	作業の実施は法的要件、実施のコード、作業の許可及び環境的配慮に基づくこと

職務細目　管理水準における船舶の運航管理及び船内にある者の保護

第 1 欄	第 2 欄	第 3 欄	第 4 欄
能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
トリム、復原性及び応力の管理	船体構造に関する基本原理、トリム及び復原性に関する理論及び要因並びにトリム及び復原性を保つために必要な措置に関する理解 区画室に損傷が生じ浸水があった場合に浸水が船舶のトリム及び復原性に及ぼす影響並びに当該影響の生じた場合にとるべき措置に関する知識 船舶の復原性に関する IMO 勧告についての知識	試験及び次の一以上から得られた証拠による評価 .1　承認された海上履歴 .2　承認された練習船履歴 .3　適切な場合、承認されたシミュレータ訓練	復原性と応力状態を常に安全限界内で保つこと
海上における人命の安全確保と海洋環境の保護のための法的要件と手段に関する監視と制御	国際協定及び条約に定められている国際海事法に関する知識 特に、次の事項に注意を払わなければならない .1　国際条約により船舶に備え置くことが義務付けられている証明書その他の文書並びにその取得方法及び法定有効期間 .2　満載喫水線に関する国際条約の関連要件に基づく責任 .3　海上における人命の安全に関する国際条約の関連要件に基づく責任	試験及び次の一以上から得られた証拠による評価 .1　承認された海上履歴 .2　承認された練習船履歴 .3　適切な場合、承認されたシミュレータ訓練	監視と保守の手順は法的要件の遵守を確保すること 違法の可能性を即座にかつ完全に認識すること 証明書の更新と延長の要件は検査項目と装置の継続的な有効性を確保すること

能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
海上における人命の安全確保と海洋環境の保護のための法的要件と手段に関する監視と制御（続き）	.4　船舶からの汚染の防止に関する国際条約に基づく責任 .5　検疫明告書、国際保健規則の要件 .6　船舶、旅客、乗組員及び貨物の安全に関係する国際的な文書に基づく責任 .7　船舶による環境汚染防止の措置及び設備 .8　国際協定及び条約の履行にあたっての国内法に関する知識		
船舶、乗組員及び旅客の安全と保安の維持及び救命、消火及び他の安全システムの作動状態の維持	救命設備に関する規則（海上における人命の安全のための国際条約）の十分な知識 防火操練及び退船操練の実施 救命、消火及びその他の安全システムの作動状態の維持 非常時にすべての者の保護及び安全のためにとるべき措置 火災・爆発・衝突又は乗揚げた船舶の損傷をできる限り少なくし、救助するためとるべき行動	試験並びに実地教習、承認された実務訓練及び経験から得られた証拠による評価	火災探知と安全システムの監視手順では、すべての警報が瞬時に探知し、確立された非常時の手順に基づいて作動することを確保すること

能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
非常時及び損傷制御計画の立案及び非常事態への対応	損傷制御を含む船舶の構造 火災防止、探知及び消火の方法と機器 救命設備に関する機能と使用	試験並びに承認された実務訓練及び経験から得られた証拠による評価	非常時の手順は、非常対応として確立された計画に基づくこと
リーダーシップと管理技能の適用	船内要員の人事と訓練に関する知識 国際海事条約と勧告及び国内規則に関する知識 以下を含む職務及び業務量管理を適用する能力： .1　企画立案及び調整 .2　要員配置 .3　時間及びリソースの制約 .4　優先順位決定 効果的なリソースマネージメントを適用する能力と知識： .1　リソースの配置、任務及び優先順位決定 .2　船内及び陸上での効果的なコミュニケーション .3　チーム構成員の経験を考慮した決定	次の一以上から得られた証拠による評価： .1　承認された訓練 .2　承認された海上履歴 .3　承認されたシミュレータ訓練	乗組員は個人に応じて、業務を与えられ、期待される作業及び行動につき通知されること 訓練目的及び行動は、現行の能力及び運転要件に基づくこと 業務の運用が適用される規則に従っていることが実証されること 乗組員に職務が割当てられ、期待される作業基準及び行動について関係する各人に対して適切な方法で知らされること コミュニケーション明瞭かつ明確に行われること

第1欄	第2欄	第3欄	第4欄
能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
リーダーシップと管理技能の適用（続き）	.4　動機付けを含む明確な意思表示とリーダーシップ .5　状況認識力の習得と維持 意志決定技能を適用するための知識と能力： .1　状況判断及びリスクアセスメント .2　選択肢の策定と認識 .3　行動方針の選択 .4　成果の有効性評価 標準作業手順の策定、実行及び監督		効果的なリーダーシップ行動が実証されること 必要なチーム構成員が、現在及びこれから予測される船舶及び運航状況並びに外部環境について正確な理解を共有すること 決定が、状況に対して最も効果的であること 運用が効果的であり、かつ適用される規則に基づいていることが実証されていること

A-Ⅲ/3 節
750 キロワット以上 3,000 キロワット未満の推進出力の主推進機関を備えた船舶の機関長及び一等機関士の資格証明のための最小限の要件

能力基準

1～5　　（省略）

6　　主管庁は、いずれかの推進機関についてのみ有効な証明書を与える場合には、他の推進機関に関する知識の要件を省略することができる。この証明書は、受有する機関部職員が知識の要件を省略された推進機関に関する知識要件を十分に有するようにならない限り、当該推進機関については有効なものではない。この規定による証明書の効力についての限定は、当該証明書及び裏書に記載されていなければならない。

7　　（省略）

沿岸航海

8　　沿岸航海に従事する推進出力 3,000 キロワット未満の主推進機関を備えた船舶の機関部職員に証明書を発給する場合に、表 A-Ⅲ/2 第 2 欄に掲げる事項について要求される理論的知識、理解及び技能の水準、並びに第Ⅲ/3 規則 2.1.1 及び 2.1.2 により要求される事項を、同一の水域を航行するすべての船舶の安全に留意した上で、異なるものとすることができる。この規定による証明書の効力についての限定は、当該証明書及び裏書に記載されていなければならない。

A-Ⅲ/4 節
人員が配置される機関区域の当直を担当する部員又は定期的に無人の状態に置かれる機関区域の当番に指名される部員のための最小限の要件

能力基準　　（省略）

表 A-Ⅲ/4
機関部の当直を担当する部員のための最小限の能力基準の詳細

職務細目　支援水準における舶用機関技術

第 1 欄	第 2 欄	第 3 欄	第 4 欄
能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
機関室当直を担う部員の任務に応じた通常の当直の遂行 命令の理解と当直維持の任務に関する事項の理解	機関区域において使用される用語及び機関と設備の名称 機関室当直の手順 機関室における運転操作に関する安全作業の実施 基本的な環境保護措置 適切な船内通信装置の使用法 機関室警報装置と各種の警報、特に消火ガスの警報を聞き分ける能力	次の一以上から得られた証拠による評価 .1　承認された海上履歴 .2　承認された練習船履歴 .3　実施試験	連絡が明確かつ簡明であること。及び当直情報や指示が明確に理解できない場合、助言／説明を求めること 当直の維持、引継及び交代は、認定された慣習及び手順を確認すること
ボイラ当直の維持 正しい水位及び蒸気圧の維持	ボイラの安全な操作	次の一以上から得られた証拠による評価 .1　承認された海上履歴 .2　承認された練習船履歴 .3　実施試験 .4　適切な場合、承認されたシミュレータ訓練	ボイラ状態の評価は、正確であること、機側、遠隔表示器及び物理的な点検から得られる関連情報に基づくこと 調整の順序と時機と安全と最適効率を維持すること

能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
非常設備の操作と非常処置の運用	非常時の任務に関する認識 機関区域からの脱出経路 機関区域における消火装置の位置及び使用法についての習熟	次の一以上から得られた証拠による評価 .1　承認された海上履歴 .2　承認された練習船履歴	非常又は異常な状態に気づいた時の最初の措置は、確立された手順に従うこと 連絡が常に明確で簡明であり、命令は海員としての慣習に則って認知すること

A-Ⅲ/5 節

人員が配置される機関区域又は定期的に無人の状態に置かれる機関区域の当番に指名される有能海員（機関部）の資格証明のための最小限の要件

能力基準

1　推進出力 750 キロワット以上の主推進機関を備えた海上航行船舶に乗組む有能海員（機関部）は、表 A-Ⅲ/5 第 1 欄に規定される支援水準の職務を遂行する能力を証明しなければならない。

2　推進出力 750 キロワット以上の主推進機関を備えた海上航行船舶に乗組む有能海員（機関部）に要求される最小限の知識、理解及び技能は、表 A-Ⅲ/5 第 2 欄に掲げる。

3　資格を得ようとする者は、表 A-Ⅲ/5 第 3 欄及び第 4 欄に掲げる能力の証明方法及び能力評価の基準に基づき、要求される能力基準を達成したことを証明しなければならない。

表 A-Ⅲ/5
人員が配置される機関区域又は定期的に無人の状態に置かれる機関区域の当番に指名される有能海員（機関部）の資格証明のための最小限の能力基準の詳細

職務細目：支援レベルにおける舶用機関技術

第 1 欄	第 2 欄	第 3 欄	第 4 欄
能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
安全な機関当直に貢献すること	当直業務に関する事柄について、命令を理解し当直職員と意思疎通できる能力 当直の交代、維持及び引継ぎのための手順 安全な当直維持のために必要な情報	実務経験又は実地試験から得られた証拠による評価	コミュニケーションが明瞭で簡潔なこと 当直の維持、引継ぎ及び交代が許容可能な慣行及び手順に基づいていること
機関室当直の監視と管理に貢献すること	主機及び補機器の機能と操作に関する基礎知識 主機及び補機器の圧力、温度及び液位の制御に関する基礎知識	次の一以上から得られた証拠による評価 .1　承認された海上履歴 .2　承認された練習船履歴、又は .3　実地試験	主機及び補機器に対する監視の頻度と範囲が、認められた原則と手順に基づいていること 基準からの変位が認識されること 危険な状態又は潜在的な危険が直ちに認識、報告され、作業を継続する前に是正されること
燃料の補給及び移送に貢献すること	次を含む燃料系統の機能及び運用並びに油移送操作に関する知識 .1　燃料の補給及び移送操作作業の準備 .2　燃料補給及び移送ホースの着脱手順	次の一以上から得られた証拠による評価 .1　承認された海上履歴 .2　実務訓練 .3　試験 .4　承認された練習船履歴	移送作業が確立された安全慣行と機器操作指示書に基づいて行われること 危険、有害な流体の取扱いが確立された安全慣行に適合していること 運用者の責任区域内において良好なコミュニケーションが維持されていること

第 1 欄	第 2 欄	第 3 欄	第 4 欄
能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
燃料の補給及び移送に貢献すること（続き）	.3　燃料の補給又は移送作業中に起きるかもしれない事故に係る手順 .4　燃料補給及び移送作業の安全 .5　タンク・レベルを正確に計測し報告する能力	実際的な証明から得られた証拠による評価	
ビルジ及びバラスト作業に貢献すること	以下を含むビルジ及びバラストシステムの安全機能、操作及び保守に関する知識 .1　移送作業に関連した事故の報告 .2　タンクレベルを正確に計測し報告する能力	次の一以上から得られた証拠による評価 .1　承認された海上履歴 .2　実務訓練 .3　試験 .4　承認された練習船履歴 実際的な証明から得られた証拠による評価	操作及び保守が確立された安全慣行と機器操作指示書に基づいて行われ、海洋環境の汚染が回避されること 運用者の責任区域内において良好なコミュニケーションが維持されていること
機関装置及び機器の運用に貢献すること	以下を含む機器の安全な操作： .1　バルブ及びポンプ .2　ホイスト及び昇降装置 .3　ハッチ、水密扉、荷役口及び関連設備 クレーン、ウインチ及びホイストの基本的信号を使用し理解する能力	次の一以上から得られた証拠による評価： .1　承認された海上履歴 .2　実務訓練 .3　試験 .4　承認された練習船履歴	作業が確立された安全慣行と機器操作指示書に基づいて行われること 運用者の責任区域内において良好なコミュニケーションが維持されていること

能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
機関装置及び機器の運用に貢献すること（続き）		実際的な証明から得られた証拠による評価	

職務細目：支援レベルにおける電気、電子及び制御技術

第 1 欄	第 2 欄	第 3 欄	第 4 欄
能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
電気機器の安全な使用	以下を含む電気機器の安全な使用と操作 .1　作業又は修理前の安全措置 .2　機器分離手順 .3　緊急時の手順 .4　船内の特別な電圧 感電の原因及び感電防止のために守るべき予防措置に関する知識	次の一以上から得られた証拠による評価 .1　承認された海上履歴 .2　実務訓練 .3　試験 .4　承認された練習船履歴	電気的危険性及び不安全な機器を認知し、報告すること 携帯型機器の安全な使用電圧について理解すること 高電圧機器及びその船内作業に関連した危険性を理解すること

職務細目：支援レベルにおける保守及び修理

第 1 欄	第 2 欄	第 3 欄	第 4 欄
能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
船内保守及び修理に貢献すること	表面処理技術に関する知識 塗装、注油及び洗浄剤及び機器を使用する能力 廃棄物の安全な処理に関する知識 定常の保守及び修理手順を理解し、実施する能力 製造者の安全指針及び船内指示書の理解 手工具、動力工具、計測機器及び工作機械の適用、保守及び使用に関する知識 金属加工に関する知識	実際的な証明から得られた証拠による評価 次の一以上から得られた証拠による評価 .1　承認された海上履歴 .2　実務訓練 .3　試験 .4　承認された練習船履歴	保守作業が技術的、安全及び仕様の手順に基づいて行われていること 機器及び工具の選択と使用が適切であること

職務細目：支援レベルにおける船舶の運航管理及び船内にある者の保護

第 1 欄	第 2 欄	第 3 欄	第 4 欄
能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
物品の取扱いに貢献すること	物品の安全な取扱い、積付け及び固縛の手順に関する知識	次の一以上から得られた証拠による評価 .1　承認された海上履歴 .2　実務訓練 .3　試験 .4　承認された練習船履歴	物品取扱い作業が確立された安全慣行と機器操作指示書に基づいて行われること 危険、有害な物品の取扱いが確立された安全慣行に適合していること 運用者の責任区域内において良好なコミュニケーションが維持されていること

能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
予防措置の適用及び海洋環境の汚染防止に貢献すること	海洋環境の汚染防止のためにとられる予防措置に関する知識 汚染防止機器の使用と操作に関する知識 承認された海洋汚染物質の処理方法に関する知識	次の事項のうちの一つ又は複数から得られた証拠に関する評価： .1　承認された海上履歴 .2　実務訓練 .3　試験 .4　承認された練習船履歴	海洋環境保護のための手順が常に遵守されていること
職務上の健康と安全手順の適用	次の事項を含む、安全な作業慣行及び船内での個々の安全に関する実用知識： .1　電気的安全性 .2　閉鎖／誤操作防止手段 .3　機械的安全性 .4　作業許可制度 .5　高所作業 .6　閉鎖区画での作業 .7　重量物の移動技術及び背部損傷の防止法 .8　化学物質及び生物学的有害物質の安全性 .9　個人用安全具	次の一以上から得られた証拠による評価 .1　承認された海上履歴 .2　実務訓練 .3　試験 .4　承認された練習船履歴	要員及び船舶を保護するための手順が常に遵守されていること 安全作業慣行が遵守され、かつ適切な安全器具及び保護具が常に正しく使用されていること

A-Ⅲ/6 節
電気技士（職員）の資格証明のための最小限の要件

訓練

1　第Ⅲ/6 規則 2.3 により要求される教育及び訓練は、電気技士（職員）の職務に関連する電子及び電気ワークショップ技能訓練を含まなければならない。

船内訓練

2　電気技士（職員）の資格証明を得ようとする者は、次の承認された船内訓練プログラムを履行しなければならない。

.1　要求される海上航行業務期間中に、証明取得希望者が電気技士（職員）としての業務、職務及び責任について系統的な実務訓練と経験を受けることを確保する。
.2　承認された海上航行業務が行われる船上において、資格を有する職員によって綿密に監督及び監視される。
.3　訓練記録簿に適切に記録される。

能力基準

3　電気技士（職員）の資格証明を得ようとする者は、表 A-Ⅲ/6 第 1 欄に記載の業務、職務及び責任を果たすための能力を証明することが求められなければならない。

4　資格証明のための最小限の知識、理解および技能は、表 A-Ⅲ/6 第 2 欄に記載されており、本コード B 部に記載の指針を考慮したものでなければならない。

5　電気技士（職員）の資格証明を得ようとする者は、表 A-Ⅲ/6 第 3 欄及び第 4 欄に記載の要求される能力基準を達成した証拠を提示することが求められなければならない。

表 A-Ⅲ/6
電気技士（職員）のための最小限の能力基準の詳細

職務細目：運用水準における電気、電子及び制御技術

第 1 欄	第 2 欄	第 3 欄	第 4 欄
能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
電気、電子及び制御システムの作動監視に貢献すること	次を含む機械工学システムの運用に関する基礎知識： .1　主推進機関プラントを含む原動機 .2　機関室の補機器 .3　操舵システム .4　荷役システム .5　甲板機械 .6　居住区設備システム 伝熱、機械力学、水力学に関する基礎知識 **以下についての知識：** 電気工学及び電機理論 電子工学及び電力工学の基礎 配電盤及び電気機器 自動化機器、自動制御システム及び技術の基礎 計装、警報及び監視システム 電気動力機器 電気材料技術	試験及び次の一以上から得られた証拠による評価 .1　承認された海上履歴 .2　承認された練習船履歴 .3　適切な場合、承認されたシミュレータ訓練 .4　承認された実験設備訓練	機器及びシステムの運用が操作マニュアルに基づいていること 性能水準が技術仕様に適合していること

能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
電気、電子及び制御システムの作動監視に貢献すること(続き)	電気油圧式及び電気空気圧式制御システム 1,000 ボルト以上の電力システムの運用に求められる正しい認識と予防措置		
推進機関及び補機器の自動制御システムの作動監視	推進機関及び補機器の制御システムの作動準備	試験及び次の一以上から得られた証拠による評価 .1　承認された海上履歴 .2　承認された練習船履歴 .3　適切な場合、承認されたシミュレータ訓練 .4　承認された実験設備訓練	主推進機関及び補助システムの監視が安全な運用状態の維持のために十分であること
発電機の運転	発電機の連結、負荷分担及び切換	試験及び次の一つ以上から得られた証拠による評価： .1　承認された海上履歴 .2　承認された練習船履歴 .3　適切な場合、承認されたシミュレータ訓練 .4　承認された実験設備訓練	運転の安全を確保するため確立されたルールと手順に基づいて運転が、計画され実施されていること

能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
1,000 ボルト以上の電力系統の運用及び保守	**理論的知識** 高電圧技術 安全対策及び手順 船用電動機による電気推進及びその制御システム **実際的知識** 高電圧システムに係る特殊技術及び1,000ボルト以上の作動電圧による危険性に関する知識を含み高電圧システムの安全な運用及び保守	試験及び次の一つ以上から得られた証拠による評価： .1　承認された海上履歴 .2　承認された練習船履歴 .3　適切な場合、承認されたシミュレータ訓練 .4　承認された実験設備訓練	運用の安全を確保するための手順、確立された取決め及び操作マニュアルに基づき設備の運用が計画され実行されること
船内のコンピューター及びコンピューターネットワークの運用	以下に関する理解： .1　データ処理の主な特徴 .2　船内のコンピューターネットワークの構成と使用 .3　船橋設置、機関室設置、及び市販のコンピューターの使用	試験及び次の一つ以上から得られた証拠による評価： .1　承認された海上履歴 .2　承認された練習船履歴 .3　適切な場合、承認されたシミュレータ訓練 .4　承認された実験設備訓練	コンピューターネットワーク及びコンピューターが適正に点検され取り扱われること

能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
故障の発見、保守及び修理のための手工具、電気及び電子計測機器	船内の電気システムに関する作業の安全要件 感電の原因及び感電防止のために守るべき予防措置に関する知識 船内のAC及びDCシステム及び機器の構造及び作動特性 電気的試験及び計測機器の構造と操作 安全作業慣行の適用	次の一以上から得られた証拠による評価 .1　承認された工作技能訓練 .2　承認された実務履歴及び試験	安全手順の実施が十分であること 電気的危険性及び不安全な機器を認知し、報告すること 試験機器の選択と使用が適切であり、結果の解釈が正確であること 修理の実施及び保守手順の選択が、マニュアル及び適切な慣行に基づいていること 修理後、復旧された機器及びシステムの試運転及び性能試験が、マニュアルと適切な慣行に基づいていること
筆記及び口述による英語の使用	職員が技術書誌を使用し、職務を遂行できるための英語に関する適切な知識	試験及び実務的教育から得られた証拠による評価	職員の職務に関連した英語書誌が正しく解釈されること コミュニケーションが明瞭かつ理解し易いこと

職務細目：運用水準における保守と修理

第 1 欄	第 2 欄	第 3 欄	第 4 欄
能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
主推進機関及び補機器の自動化設備及び制御システムの保守・修理	適切な電気及び機械的機器に関する知識と技能 **安全及び非常時の手順** 作業要員が、設備又は機器の作業に取り掛かる前に要求される機器及び関連システムの安全な分離 試験、保守、故障検知及び修理に関する実務知識 電気及び電子制御機器の検査、故障検知、保守及び作動状態への復帰	試験及び次の一つ以上からの証拠による評価 .1　承認された海上履歴 .2　承認された練習船履歴 .3　適切な場合、承認されたシミュレータ訓練 .4　承認された実験設備訓練	不具合が、関連する設備やシステムに及ぼす影響が正確に特定され、船内の技術図面が正確に理解され、計測及び較正機器が正しく使用され、とられた措置が妥当とされること 設備及び機器の分離、分解及び復旧が、製造者の安全指針、船内備付指示書、法的及び安全仕様に従っていること。取られた措置が、現在の状況及び条件に最も適合かつ適切な方法であり、自動化及び制御システムの修復につながること
船橋航海機器及び船舶通信システムの保守･修理	航海機器、船内及び船外通信システムの原理及び保守手順に関する知識 **理論的知識** 引火性雰囲気で作動している電気及び電子システム **実務知識** 安全な保守及び修理手順の実践 機器の不具合、故障箇所の検知及び損傷防止措置		不具合が、関連する設備やシステムに及ぼす影響が正確に特定され、船内の技術図面が正確に理解され、計測及び較正機器が正しく使用され、とられた措置が妥当とされること 設備及び機器の分離、分解及び復旧が、製造者の安全指針、船内備付指示書、法的及び安全仕様に従っていること。取られた措置が、現在の状況及び条件に最も適合かつ適切な方法であり、船橋航海機器及び船舶通信システムの修復につながること

能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
甲板機械及び荷役装置の電気､電子機器及び制御システムの保守及び修理	電気及び機械的機器に関する適切な知識と技能 **安全及び非常時の手順** 作業要員が､設備又は機器の作業に取り掛かる前に要求される機器及び関連システムの安全な分離 試験、保守、故障検知及び修理に関する実務知識 電気及び電子制御機器の試験、故障検知、保守及び作動状態への復旧	試験及び次の一つ以上から証拠による評価 .1　承認された海上履歴 .2　承認された練習船履歴 .3　適切な場合、承認されたシミュレータ訓練 .4　承認された実験設備訓練	不具合が、関連する設備やシステムに及ぼす影響が正確に特定され、船内の技術図面が正確に理解され、計測及び較正機器が正しく使用され、とられた措置が妥当とされること 設備及び機器の分離、分解及び復旧が、製造者の安全指針、船内備付指示書、法的及び安全仕様に従っていること。取られた措置が、現在の状況及び条件に最も適合かつ適切な方法であり、甲板機械及び荷役装置の修復につながること
居住区設備の制御及び安全システムの保守及び修理	**理論的知識** 引火性雰囲気で作動している電気及び電子システム **実務知識** 安全な保守及び修理手順の実践 機器の不具合、故障箇所の検知及び損傷防止措置		不具合が、関連する設備やシステムに及ぼす影響が正確に特定され、船内の技術図面が正確に理解され、計測及び較正機器が正しく使用され、とられた措置が妥当とされること 設備及び機器の分離、分解及び復旧が、製造者の安全指針、船内備付指示書、法的及び安全仕様に従っていること。取られた措置が、現在の状況及び条件に最も適合かつ適切な方法であり、居住区設備の制御及び安全システムの修復につながること

職務細目：運用水準における船舶の運航管理及び船内にある者の保護

第 1 欄	第 2 欄	第 3 欄	第 4 欄
能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
下位乗組員の組織と管理	船内における人事管理、組織及び訓練に関する知識 国際的な海事条約、勧告及び関連する国内法令に関する知識	試験及び承認された実務訓練及び経験から得られた証拠による評価	乗組員に職務が割当てられ、期待される作業基準及び行動について関係する各人に対して適切な方法で知らされること 訓練目標及び活動が、現在の能力及び資質並びに運用要件の評価に基づいていること
汚染防止要件遵守の確保	**海洋環境の汚染防止** 海洋環境の汚染防止のためにとられるべき予防措置に関する知識 汚染防止手順及び全ての関連設備	試験及び次の一つ以上からの証拠による評価 .1　承認された海上履歴 .2　承認された練習船履歴	船内作業の監視手続き及び MARPOL（船舶による汚染の防止のための国際条約）の要件が完全に遵守されること
船内における防火、火災制御及び消火	**防火及び消火設備** 防火に関する知識 防火訓練を計画する能力 消火システムに関する知識 火災の際に取るべき措置（油システム関連の火災を含む）	A-VI/3 節 1 から 3 に記載の承認された消火訓練及び経験から得られた証拠による評価	非常事態の種類と範囲を敏速に認識し、初期動作は、船舶の非常時の措置及び非常配置計画に従うこと 退船、非常閉鎖及び遮断手順は非常時の状況に応じて行い、敏速に履行すること 報告の優先順位、レベル及び時間間隔及び乗船者への周知は、非常事態の状況に関連し、事態の緊急性に反映させること

能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
救命設備の運用	退船操練を計画する能力及び救命艇及び救命いかだ、救助艇、それらの進水装置と配置並びに救命用無線機、衛星系EPIRBs、SARTs、イマーションスーツ及び防寒装具を含むそれぞれの艤装品の操作に関する知識 海上における生存技術に関する知識	A-VI/2 節 1 から 4 に記載の承認された訓練及び経験から得られた証拠による評価	退船及び生存に関わる状況における行動は、状況に適応したものであり、かつ安全に関すると認められた慣行及び基準を遵守するものであること
船内における応急手当	医療便覧及び無線による助言を実際に利用する能力､特に、船内で発生するおそれのある事故及び疾病が生じた場合に医療便覧及び無線による助言に基づき有効な措置をとる能力	A-VI/4 節 1 から 3 に記載の承認された訓練から得られた証拠による評価	疾病の可能性のある原因、種類及び程度又は状態の認識は敏速であり、取扱いは、生命への危険を最小限にするものであること

A-Ⅲ/7 節
電気技士（部員）の資格証明のための最小限の要件

1　推進出力 750 キロワット以上の主推進機関を備えた海上航行船舶に乗組む電気技士（部員）は、表 A-Ⅲ/7 に規定する支援レベルの職務細目を遂行する能力を証明することが求められなければならない。

2　推進出力 750 キロワット以上の主推進機関を備えた海上航行船舶に乗組む電気技士（部員）として最小限要求される知識、理解及び技能は、表 A-Ⅲ/7 第 2 欄に掲げる。

3　電気技士（部員）の証明を得ようとする者は、表 A-Ⅲ/7 第 3 欄及び第 4 欄に掲げる能力の証明方法及び能力評価の基準に基づき、要求される能力基準を達成したことを証明しなければならない。

表 A-Ⅲ/7
電気技士（部員）のための最小限の能力基準の詳細

職務細目：支援レベルにおける電気、電子及び制御技術

第 1 欄	第 2 欄	第 3 欄	第 4 欄
能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
電気機器の安全な使用	以下を含む電気機器の安全な使用及び運用： .1　作業又は修理を始める前の安全のための予防措置 .2　分離手順 .3　非常事態対応手順 .4　船内の特別な電圧 感電の原因及び感電防止のために守るべき予防措置に関する知識	次の一以上から得られた証拠による評価 .1　承認された海上履歴 .2　実地訓練 .3　試験 .4　承認された練習船履歴	電気機器及び機械設備に関する安全指示を理解し遵守すること 電気的危険性及び不安全な機器を認知し、報告すること 携帯型機器の安全な使用電圧について理解すること 高電圧機器及びその船内作業に関連した危険性を理解すること
電気システム及び機械設備運用の監視に貢献すること	以下を含む機械工学システムの運用に関する基礎知識： .1　主推進設備を含む原動機 .2　機関室の補機器 .3　操舵システム .4　荷役システム .5　甲板機械 .6　居住区設備システム	次の一以上から得られた証拠による評価 .1　承認された海上履歴 .2　実地訓練 .3　試験 .4　承認された練習船履歴	次の事項を確保する知識： .1　操作マニュアルに基づいた機器及びシステムの運用 .2　性能水準が技術仕様に基づいていること

能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
電気システム及び機械設備運用の監視に貢献すること(続き)	**以下についての基礎知識：** .1　電子技術及び電気的機械理論 .2　配電盤及び電気機器 .3　自動化機器、自動制御システム及び技術の基礎 .4　計装、警報及び監視システム .5　電気駆動装置 .6　電気油圧式及び電気空気圧式制御システム .7　電気機器構成における並列接続、負荷分担及び切換		
故障の発見、保守及び修理作業のための手工具、電気及び電子計測機器の使用	舶用電気システムに関する作業の安全要件 安全作業慣行の適用 **以下についての基礎知識：** .1　舶用 AC 及び DC システム並びに機器の構造及び作動特性 .2　計測機器、工作機械、手工具及び動力工具の使用	次の一以上から得られた証拠による評価 .1　承認された工作技能訓練 .2　承認された実務経験及び試験	安全手順の実施が十分であること 試験機器の選択と使用が適切であり、結果の解釈が正確であること 修理及び保守実施手順の選択がマニュアル及び適切な慣行に基づいていること

職務細目：支援水準における保守及び修理

第 1 欄	第 2 欄	第 3 欄	第 4 欄
能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
船内保守及び修理に貢献すること	潤滑、清浄剤及び機器を使用する能力 廃棄物の安全な処理に関する知識 定常の保守及び修理手順を理解し実行する能力 製造者の安全指針及び船内指示書の理解	次の一以上から得られた証拠による評価 .1　承認された海上履歴 .2　実地訓練 .3　試験 .4　承認された練習船履歴	保守作業が技術的、安全及び仕様の手順に基づいて行われること 機器及び工具の選択と使用が適切であること
船内の電気システム及び機械設備の保守･修理に貢献すること	**安全及び非常時の手順** 作業要員が、設備又は機器の作業に取り掛かる前に要求される機器及び関連システムの電子技術図面及び安全な分離に関する基礎知識 電気制御機器及び機械設備の試験、故障検知、保守及び作動状態への復帰 引火性雰囲気で運転している電気及び電子機器 船舶火災検知システムの基礎 安全な保守及び修理手順の実施	試験及び次の一以上から得られた証拠による評価 .1　承認された海上履歴 .2　承認された練習船履歴 .3　適切な場合、承認されたシミュレータ訓練 .4　承認された実験設備訓練	不具合が関連する設備やシステムに及ぼす影響が正確に特定され、船内の技術図面が正確に理解され、計測及び較正機器が正しく使用され、とられた措置が妥当とされること 設備及び機器の分離、分解及び復旧が、製造者の安全指針、船内備付指示書に従っていること

能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
船内の電気システム及び機械設備の保守･修理に貢献すること（続き）	機器の不具合、故障箇所の検知及び損傷防止措置 照明器具及び給電システムの保守及び修理		

職務細目：支援水準における船舶の運航管理及び船内にある者の保護

第 1 欄	第 2 欄	第 3 欄	第 4 欄
能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
物品の取扱いに貢献すること	物品の安全な取扱い、積付け及び固縛手順に関する知識	次の一以上から得られた証拠による評価 .1　承認された海上履歴 .2　実地訓練 .3　試験 .4　承認された練習船履歴	物品の積付け作業が確立された安全慣行及び機器操作説明書に基づいて行われること 危険、有害な物品の取扱いが確立された安全慣行に適合していること 運用者の責任区域内において常に十分なコミュニケーションが維持されていること
予防措置の適用及び海洋環境の汚染防止に貢献すること	海洋環境の汚染防止のためにとられる予防措置に関する知識 汚染防止機器・処理剤の使用と操作に関する知識 承認された海洋汚染物質の処理方法に関する知識	次の一以上から得られた証拠による評価 .1　承認された海上履歴 .2　実地訓練 .3　試験 .4　承認された練習船履歴	海洋環境保護のための手順が常に遵守されていること

能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
職務上の健康と安全手順の適用	次の事項を含む、安全な作業及び船内での個々の安全に関する実用知識： .1　電気的安全性 .2　閉鎖／誤操作防止手段 .3　機械的安全性 .4　作業許可制度 .5　高所作業 .6　閉鎖区画での作業 .7　重量物の移動技術及び背部損傷の防止法 .8　化学物質及び生物学的有害物質関連の安全性 .9　個人用安全具	次の一以上から得られた証拠による評価 .1　承認された海上履歴 .2　実地訓練 .3　試験 .4　承認された練習船履歴	人員及び船舶を保護するための手順が常に遵守されていること 安全作業が遵守され、かつ適切な安全器具及び保護具が常に正しく使用されていること

第Ⅳ章
無線通信士に関する基準

A-Ⅳ/1 節

適　　用

（規定なし）

A-Ⅳ/2 節
全世界的な海上遭難安全制度（GMDSS）の下での無線通信士の資格証明のための最小限の要件

1　　全世界的な海上遭難安全制度（GMDSS）の下での無線通信士の資格証明のために最小限要求される知識、理解及び技能は、無線通信士が自己の無線通信の任務を行うのに十分なものでなければならない。無線通信規則に定める各証明書を得るために要求される知識は、当該規則に基づくものでなければならない。さらに、資格証明を得ようとする者は、表 A-IV/2 第 1 欄に掲げる業務、任務及び責任を遂行する能力を証明しなければならない。

2～4　　（省略）

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* 課程の作成に際しては、関連する IMO モデル課程が助けとなる。

表 A-Ⅳ/2
全世界的な海上遭難安全制度（GMDSS）の下での無線通信士に対する最小限の能力基準の詳細

職務細目　運用水準における無線通信

第 1 欄	第 2 欄	第 3 欄	第 4 欄
能　　力	知識・理解及び技能	能力の証明方法	能力評価の基準
GMDSSサブシステム及び設備を利用した情報の送受並びにGMDSSにおいて必要な職務の遂行	**無線通信規則の要件のほかに次の知識** .1 国際航空海上捜索救難マニュアル（IAMSAR）にある手順を含む捜索救難無線通信 .2　誤遭難警報の発射防止及びこれによる被害 .3　船位通報制度 .4　無線医療制度 .5　国際信号書及び IMO 標準海事連絡用語集の使用 .6　海上における人命の安全に関する通信のための筆記及び会話による英語 **（注）**　本要件は、制限無線通信士証明書（ROC）の場合には緩和することができる	試験及び次を使用しての操作手順の実際的証明から得られた証拠による評価 .1　承認された設備 .2　適切ならば、GMDSS シミュレータ（注 1） .3　無線実験室にある設備	送信及び受信は国際規則及び手順を遵守し、効果的に実施されること 船舶及び船内にある者の安全及び海洋環境の保護に関する英語による情報が、確実に取り扱われること
非常事態における無線通信業務	**非常事態における無線通信業務は、次のとおり** .1　退船 .2　船内火災 .3　無線設備の一部又は全部の故障 電気的又は電波輻射を含む無線設備に係る危険に関連する船舶及び乗船者の安全に対する予防的措置	試験及び次を使用しての操作手順の実際的証明から得られた証拠による評価 .1　承認された設備 .2　適切ならば、GMDSS シミュレータ（注 1） .3　無線実験室にある設備	確実かつ効果的に実施されること

Ⅱ部

REPORT TO THE MARITIME SAFETY COMMITTEE

ANNEX 2

CHAPTER I

CHAPTER II

CHAPTER III

CHAPTER IV

ANNEX 2

DRAFT AMENDMENTS TO PART A OF THE SEAFARERS' TRAINING, CERTIFICATION AND WATCHKEEPING (STCW) CODE

PART A

Mandatory standards regarding provisions of the annex to the STCW Convention

Introduction

1 This part of the STCW Code contains mandatory provisions to which specific reference is made in the annex to the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978, as amended, hereinafter referred to as the STCW Convention. These provisions give in detail the minimum standards required to be maintained by Parties in order to give full and complete effect to the Convention.

2 Also contained in this part are standards of competence required to be demonstrated by candidates for the issue and revalidation of certificates of competency under the provisions of the STCW Convention. To clarify the linkage between the alternative certification provisions of chapter VII and the certification provisions of chapters II, III and IV, the abilities specified in the standards of competence are grouped as appropriate under the following seven functions:

.1 Navigation
.2 Cargo handling and stowage
.3 Controlling the operation of the ship and care for persons on board
.4 Marine engineering
.5 Electrical, electronic and control engineering
.6 Maintenance and repair
.7 Radiocommunications

at the following levels of responsibility:

.1 Management level
.2 Operational level
.3 Support level

Functions and levels of responsibility are identified by subtitle in the tables of standards of competence given in chapters II, III, and IV of this part. The scope of the function at the level of responsibility stated in a subtitle is defined by the abilities listed under it in column 1 of the table. The meaning of "function" and "level of responsibility" is defined in general terms in section A-I/1 below.

3 The numbering of the sections of this part corresponds with the numbering of the regulations contained in the annex to the STCW Convention. The text of the sections may be divided into numbered parts and paragraphs, but such numbering is unique to that text alone.

CHAPTER I

Standards regarding general provisions

Section A-I/1
Definitions and clarifications

1 The definitions and clarifications contained in article II and regulation I/1 apply equally to the terms used in parts A and B of this Code. In addition, the following supplementary definitions apply only to this Code:

.1 *Standard of competence* means the level of proficiency to be achieved for the proper performance of functions on board ship in accordance with the internationally agreed criteria as set forth herein and incorporating prescribed standards or levels of knowledge, understanding and demonstrated skill;

.2 *Management level* means the level of responsibility associated with:

.2.1 serving as master, chief mate, chief engineer officer or second engineer officer on board a seagoing ship, and

.2.2 ensuring that all functions within the designated area of responsibility are properly performed;

.3 *Operational level* means the level of responsibility associated with:

.3.1 serving as officer in charge of a navigational or engineering watch or as designated duty engineer for periodically unmanned machinery spaces or as radio operator on board a seagoing ship, and

.3.2 maintaining direct control over the performance of all functions within the designated area of responsibility in accordance with proper procedures and under the direction of an individual serving in the management level for that area of responsibility;

.4 *Support level* means the level of responsibility associated with performing assigned tasks, duties or responsibilities on board a seagoing ship under the direction of an individual serving in the operational or management level;

.5 *Evaluation criteria* are the entries appearing in column 4 [Criteria] of the "Specification of Minimum Standard of Competence" tables in part A and provide the means for an assessor to judge whether or not a candidate can perform the related tasks, duties and responsibilities; and

.6 *Independent evaluation* means an evaluation by suitably qualified persons, independent of, or external to, the unit or activity being evaluated, to verify that the administrative and operational procedures at all levels are managed, organized, undertaken and monitored internally in order to ensure their fitness for purpose and achievement of stated objectives.

Section A-I/2
Certificates and endorsements

1 Where, as provided in regulation I/2, paragraph 6, the endorsement required by article VI of the Convention is incorporated in the wording of the certificate itself, the certificate shall be issued in the format shown hereunder, provided that the words “or until the date of expiry of any extension of the validity of this certificate as may be shown overleaf” appearing on the front of the form and the provisions for recording extension of the validity appearing on the back of the form shall be omitted where the certificate is required to be replaced upon its expiry. Guidance on completion of the form is contained in section B-I/2 of this Code.

(Official Seal)

(COUNTRY)

CERTIFICATE ISSUED UNDER THE PROVISIONS OF THE INTERNATIONAL CONVENTION ON STANDARDS OF TRAINING, CERTIFICATION AND WATCHKEEPING FOR SEAFARERS, 1978, AS AMENDED

The Government of …….. certifies that ..... has been found duly qualified in accordance with the provisions of regulation …… of the above Convention, as amended, and has been found competent to perform the following functions, at the levels specified, subject to any limitations indicated until …… or until the date of expiry of any extension of the validity of this certificate as may be shown overleaf:

FUNCTION	LEVEL	LIMITATIONS APPLYING (IF ANY)

The lawful holder of this certificate may serve in the following capacity or capacities specified in the applicable safe manning requirements of the Administration:

CAPACITY	LIMITATIONS APPLYING (IF ANY)

Certificate No. ..... issued on .....

(Official Seal)

.....
Signature of duly authorized official

.....
Name of duly authorized official

The original of this certificate must be kept available in accordance with regulation I/2, paragraph 11 of the Convention while serving on a ship.

Date of birth of the holder of the certificate .....

Signature of the holder of the certificate .....

Photograph of the holder of the certificate

The validity of this certificate is hereby extended until	
(Official Seal)	..... …. *Signature of duly authorized official*
Date of revalidation	..... *Name of duly authorized official*
The validity of this certificate is hereby extended until	
(Official Seal)	..... *Signature of the authorized official*
Date of revalidation	..... *Name of duly authorized official*

2 Except as provided in paragraph 1, the form used to attest the issue of a certificate shall be as shown hereunder, provided that the words “or until the date of expiry of any extension of the validity of this endorsement as may be shown overleaf” appearing on the front of the form and the provisions for recording extension of the validity appearing on the back of the form shall be omitted where the endorsement is required to be replaced upon its expiry. Guidance on completion of the form is contained in section B-I/2 of this Code.

(Official Seal)

(COUNTRY)

ENDORSEMENT ATTESTING THE ISSUE OF A CERTIFICATE UNDER THE PROVISIONS OF THE INTERNATIONAL CONVENTION ON STANDARDS OF TRAINING, CERTIFICATION AND WATCHKEEPING FOR SEAFARERS, 1978, AS AMENDED

The Government of ……..…… certifies that certificate No. ……..… has been issued to …….. who has been found duly qualified in accordance with the provisions of regulation ……. of the above Convention, as amended, and has been found competent to perform the following functions, at the levels specified, subject to any limitations indicated until ……. or until the date of expiry of any extension of the validity of this endorsement as may be shown overleaf:

FUNCTION	LEVEL	LIMITATIONS APPLYING (IF ANY)

The lawful holder of this endorsement may serve in the following capacity or capacities specified in the applicable safe manning requirements of the Administration:

CAPACITY	LIMITATIONS APPLYING (IF ANY

Endorsement No. ..... issued on .....

(Official Seal)

.....
Signature of duly authorized official

.....
Name of duly authorized official

The original of this endorsement must be kept available in accordance with regulation I/2, paragraph 11 of the Convention while serving on a ship.

Date of birth of the holder of the certificate .....

Signature of the holder of the certificate .....

Photograph of the holder of the certificate

The validity of this endorsement is hereby extended until	
(Official Seal)	..... …. *Signature of duly authorized official*
Date of revalidation	..... *Name of duly authorized official*
The validity of this endorsement is hereby extended until	
(Official Seal)	..... *Signature of the authorized official*
Date of revalidation	..... *Name of duly authorized official*

3 The form used to attest the recognition of a certificate shall be as shown hereunder, except that the words “or until the date of expiry of any extension of the validity of this endorsement as may be shown overleaf” appearing on the front of the form and the provisions for recording extension of the validity appearing on the back of the form shall be omitted where the endorsement is required to be replaced upon its expiry. Guidance on completion of the form is contained in section B-I/2 of this Code.

(Official Seal)

(COUNTRY)

ENDORSEMENT ATTESTING THE RECOGNITION OF A CERTIFICATE UNDER THE PROVISIONS OF THE INTERNATIONAL CONVENTION ON STANDARDS OF TRAINING, CERTIFICATION AND WATCHKEEPING FOR SEAFARERS, 1978, AS AMENDED

The Government of ……..……..…… certifies that certificate No. ..…… issued to …….. by or on behalf of the Government of ..…….……. is duly recognized in accordance with the provisions of regulation I/10 of the above Convention, as amended, and the lawful holder is authorized to perform the following functions, at the levels specified, subject to any limitations indicated until ……. or until the date of expiry of any extension of the validity of this endorsement as may be shown overleaf:

FUNCTION	LEVEL	LIMITATIONS APPLYING (IF ANY)

The lawful holder of this endorsement may serve in the following capacity or capacities specified in the applicable safe manning requirements of the Administration:

CAPACITY	LIMITATIONS APPLYING (IF ANY)

Endorsement No. ..... issued on .....

(Official Seal)

.....
Signature of duly authorized official

.....
Name of duly authorized official

The original of this endorsement must be kept available in accordance with regulation I/2, paragraph 11 of the Convention while serving on a ship.

Date of birth of the holder of the certificate .....

Signature of the holder of the certificate .....

Photograph of the holder of the certificate

The validity of this endorsement is hereby extended until	
(Official Seal)	..... …. *Signature of duly authorized official*
Date of revalidation	..... *Name of duly authorized official*
The validity of this endorsement is hereby extended until	
(Official Seal)	..... *Signature of the authorized official*
Date of revalidation	..... *Name of duly authorized official*

4 In using formats which may be different from those set forth in this section, pursuant to regulation I/2, paragraph 10, Parties shall ensure that in all cases:

.1 all information relating to the identity and personal description of the holder, including name, date of birth, photograph and signature, along with the date on which the document was issued, shall be displayed on the same side of the documents; and

.2 all information relating to the capacity or capacities in which the holder is entitled to serve in accordance with the applicable safe manning requirements of the Administration, as well as any limitations, shall be prominently displayed and easily identified.

ISSUE AND REGISTRATION OF CERTIFICATES

Approval of seagoing service

5 In approving seagoing service required by the Convention, Parties should ensure that the service concerned is relevant to the qualification being applied for, bearing in mind that, apart from the initial familiarization with service in seagoing ships, the purpose of such service is to allow the seafarer to be instructed in and to practise, under appropriate supervision, those safe and proper seagoing practices, procedures and routines which are relevant to the qualification applied for.

Approval of training courses

6 In approving training courses and programmes, Parties should take into account that the various IMO Model Courses identified by footnotes in part A of this Code can assist in the preparation of such courses and programmes and ensure that the detailed learning objectives recommended therein are suitably covered.

Electronic access to registers

7 In the maintenance of the electronic register in accordance with paragraph 15 of regulation I/2, provisions shall be made to allow controlled electronic access to such register or registers to allow Parties and companies to confirm:

.1 the name of the seafarer to whom such certificate, endorsement or other qualification was issued, its relevant number, date of issue, and date of expiry;

.2 the capacity in which the holder may serve and any limitations attaching thereto; and

.3 the functions the holder may perform, the levels authorized and any limitations attaching thereto.

Development of a database for certificate registration

8 In implementing the requirement in paragraph 14 of regulation I/2 of the revised STCW Convention for the maintenance of a register of certificates and endorsements, a standard database is not necessary provided that all the relevant information is recorded and available in accordance with regulation I/2.

9 The following items of information should be recorded and available, either on paper or electronically, in accordance with regulation I/2:

.1 **Status of certificate**

Valid
Suspended
Cancelled
Reported lost
Destroyed

with a record of changes to status to be kept, including dates of changes.

.2 **Certificate details**

Seafarer's name
Date of birth
Nationality
Gender
Preferably a photograph
Relevant document number

Date of issue
Date of expiry
Last revalidation date
Details of dispensation(s)

.3 **Competency details**

STCW competency standard (e.g., regulation II/1)
Capacity
Function
Level of responsibility
Endorsements
Limitations

.4 **Medical details**

Date of issue of latest medical certificate relating to the issue or revalidation of the certificate of competency.

Section A-I/3
Principles governing near-coastal voyages

1 When a Party defines near-coastal voyages, *inter alia*, for the purpose of applying variations to the subjects listed in column 2 of the standard of competence tables contained in chapters II and III of part A of the Code, for the issue of certificates valid for service in ships entitled to fly the flag of that Party and engaged on such voyages, account shall be taken of the following factors, bearing in mind the effect on the safety and security of all ships and on the marine environment:

.1 type of ship and the trade in which it is engaged;

.2 gross tonnage of the ship and the power in kilowatts of the main propulsion machinery;

.3 nature and length of the voyages;

.4 maximum distance from a port of refuge;

.5 adequacy of the coverage and accuracy of navigational position-fixing devices;

.6 weather conditions normally prevailing in the near-coastal voyages area;

.7 provision of shipboard and coastal communication facilities for search and rescue; and

.8 the availability of shore-based support, regarding especially technical maintenance on board.

2 It is not intended that ships engaged on near-coastal voyages extend their voyages worldwide, under the excuse that they are navigating constantly within the limits of designated near-coastal voyages of neighbouring Parties.

Section A-I/4
Control procedures

1 The assessment procedure provided for in regulation I/4, paragraph 1.3, resulting from any of the occurrences mentioned therein shall take the form of a verification that members of the crew who are required to be competent do in fact possess the necessary skills related to the occurrence.

2 It shall be borne in mind when making this assessment that onboard procedures are relevant to the International Safety Management (ISM) Code and that the provisions of this Convention are confined to the competence to safely execute those procedures.

3 Control procedures under this Convention shall be confined to the standards of competence of the individual seafarers on board and their skills related to watchkeeping as defined in part A of this Code. Onboard assessment of competency shall commence with verification of the certificates of the seafarers.

4 Notwithstanding verification of the certificate, the assessment under regulation I/4, paragraph 1.3 can require the seafarer to demonstrate the related competency at the place of duty. Such demonstration may include verification that operational requirements in respect of watchkeeping standards have been met and that there is a proper response to emergency situations within the seafarer's level of competence.

5 In the assessment, only the methods for demonstrating competence together with the criteria for its evaluation and the scope of the standards given in part A of this Code shall be used.

6 Assessment of competency related to security shall be conducted for those seafarers with specific security duties only in case of clear grounds, as provided for in chapter XI/2 of the International Convention for the Safety of Life at Sea (SOLAS). In all other cases, it shall be confined to the verification of the certificates and/or endorsements of the seafarers.

Section A-I/5
National provisions

The provisions of regulation I/5 shall not be interpreted as preventing the allocation of tasks for training under supervision or in cases of *force majeure*.

Section A-I/6
Training and assessment

1 Each Party shall ensure that all training and assessment of seafarers for certification under the Convention is:

.1 structured in accordance with written programmes, including such methods and media of delivery, procedures, and course material as are necessary to achieve the prescribed standard of competence; and

.2 conducted, monitored, evaluated and supported by persons qualified in accordance with paragraphs 4, 5 and 6.

2 Persons conducting in-service training or assessment on board ship shall only do so when such training or assessment will not adversely affect the normal operation of the ship and they can dedicate their time and attention to training or assessment.

Qualifications of instructors, supervisors and assessors[*]

3 Each Party shall ensure that instructors, supervisors and assessors are appropriately qualified for the particular types and levels of training or assessment of competence of seafarers either on board or ashore, as required under the Convention, in accordance with the provisions of this section.

In-service training

4 Any person conducting in-service training of a seafarer, either on board or ashore, which is intended to be used in qualifying for certification under the Convention, shall:

.1 have an appreciation of the training programme and an understanding of the specific training objectives for the particular type of training being conducted;

.2 be qualified in the task for which training is being conducted; and

.3 if conducting training using a simulator:

.3.1 have received appropriate guidance in instructional techniques involving the use of simulators, and

.3.2 have gained practical operational experience on the particular type of simulator being used.

5 Any person responsible for the supervision of in-service training of a seafarer intended to be used in qualifying for certification under the Convention shall have a full understanding of the training programme and the specific objectives for each type of training being conducted.

Assessment of competence

6 Any person conducting in-service assessment of competence of a seafarer, either on board or ashore, which is intended to be used in qualifying for certification under the Convention, shall:

.1 have an appropriate level of knowledge and understanding of the competence to be assessed;

[*] The relevant IMO Model Course(s) may be of assistance in the preparation of courses.

.2 be qualified in the task for which the assessment is being made;

.3 have received appropriate guidance in assessment methods and practice;

.4 have gained practical assessment experience; and

.5 if conducting assessment involving the use of simulators, have gained practical assessment experience on the particular type of simulator under the supervision and to the satisfaction of an experienced assessor.

Training and assessment within an institution

7 Each Party which recognizes a course of training, a training institution, or a qualification granted by a training institution, as part of its requirements for the issue of a certificate required under the Convention, shall ensure that the qualifications and experience of instructors and assessors are covered in the application of the quality standard provisions of section A-I/8. Such qualification, experience and application of quality standards shall incorporate appropriate training in instructional techniques, and training and assessment methods and practice, and shall comply with all applicable requirements of paragraphs 4 to 6.

Section A-I/7
Communication of information

1 The information required by regulation I/7, paragraph 1 shall be communicated to the Secretary-General in the formats prescribed in the paragraphs hereunder.

PART 1 – INITIAL COMMUNICATION OF INFORMATION

2 Within one calendar year of entry into force of regulation I/7, each Party shall report on the steps it has taken to give the Convention full and complete effect, which report shall include the following:

.1 contact details and organization chart of the ministry, department or governmental agency responsible for administering the Convention;

.2 a concise explanation of the legal and administrative measures provided and taken to ensure compliance, particularly with regulations I/6 and I/9;

.3 a clear statement of the education, training, examination, competency assessment and certification policies adopted;

.4 a concise summary of the courses, training programmes, examinations and assessments provided for each certificate issued pursuant to the Convention;

.5 a concise outline of the procedures followed to authorize, accredit or approve training and examinations, medical fitness and competency assessments required by the Convention, the conditions attaching thereto, and a list of the authorizations, accreditations and approvals granted;

.6 a concise summary of the procedures followed in granting any dispensation under article VIII of the Convention; and

.7 the results of the comparison carried out pursuant to regulation I/11 and a concise outline of the refresher and upgrading training mandated.

PART 2 – SUBSEQUENT REPORTS

3 Each Party shall, within six months of:

.1 retaining or adopting any equivalent education or training arrangements pursuant to article IX, provide a full description of such arrangements;

.2 recognizing certificates issued by another Party, provide a report summarizing the measures taken to ensure compliance with regulation I/10; and

.3 authorizing the employment of seafarers holding alternative certificates issued under regulation VII/1 on ships entitled to fly its flag, provide the Secretary-General with a specimen copy of the type of safe manning documents issued to such ships.

4 Each Party shall report the results of each evaluation carried out pursuant to regulation I/8, paragraph 2 within six months of its completion. The report of the evaluation shall include the following information:

.1 the qualifications and experience of those who conducted the evaluation; (e.g., certificates of competency held, experience as a seafarer and independent evaluator, experience in the field of maritime training and assessment, experience in the administration of certification systems, or any other relevant qualifications/experience);

.2 the terms of reference for the independent evaluation and those of the evaluators;

.3 a list of training institutions/centres covered by the independent evaluation; and

.4 the results of the independent evaluation, including:

.1 verification that:

.1.1 all applicable provisions of the Convention and STCW Code, including their amendments, are covered by the Party's quality standards system in accordance with section A-I/8, paragraph 3.1; and

.1.2 all internal management control and monitoring measures and follow-up actions comply with planned arrangements and documented procedures and are effective in ensuring achievement of defined objectives in accordance with section A-I/8, paragraph 3.2;

.2 a brief description of:

.2.1 the non-conformities found, if any, during the independent evaluation,

.2.2 the corrective measures recommended to address the identified non-conformities, and

.2.3 the corrective measures carried out to address the identified non-conformities.

[The report is made available by the Organization to the Parties upon request.]

5 Parties shall report the steps taken to implement any subsequent mandatory amendments to the Convention and STCW Code, not previously included in the report on the initial communication of information pursuant to regulation I/7 or any previous report pursuant to regulation I/8. The information shall be included in the next report pursuant to regulation I/8, paragraph 3, following the entry into force of the amendment.

6 The information on the steps taken to implement mandatory amendments to the Convention and STCW Code shall include the following, where applicable:

.1 a concise explanation of the legal and administrative measures provided and taken to ensure compliance with the amendment;

.2 a concise summary of any courses, training programmes, examinations and assessments provided to comply with the amendment;

.3 a concise outline of the procedures followed to authorize, accredit or approve training and examinations, medical fitness and competency assessments required under the amendment;

.4 a concise outline of any refresher training and upgrading training required to meet the amendments; and

.5 a comparison between the measures to implement the amendment and existing measures contained in previous reports pursuant to regulation I/7, paragraph 1 and/or regulation I/8, paragraph 2 where applicable.

PART 3 – PANEL OF COMPETENT PERSONS

7 The Secretary-General shall maintain a list of competent persons approved by the Maritime Safety Committee, including competent persons made available or recommended by the Parties, who may be called upon to evaluate the reports submitted pursuant to regulation I/7 and regulation I/8 and may be called to assist in the preparation of the report required by regulation I/7, paragraph 2. These persons shall ordinarily be available during relevant sessions of the Maritime Safety Committee or its subsidiary bodies, but need not conduct their work solely during such sessions.

8 In relation to regulation I/7, paragraph 2, the competent persons shall be knowledgeable of the requirements of the Convention and at least one of them shall have knowledge of the system of training and certification of the Party concerned.

9 When a report is received from any Party under regulation I/8, paragraph 3, the Secretary-General will designate competent persons from the list maintained in accordance with paragraph 7, to consider the report and provide their views on whether:

.1 the report is complete and demonstrates that the Party has carried out an independent evaluation of the knowledge, understanding, skills and competence

acquisition and assessment activities, and of the administration of the certification system (including endorsement and revalidation), in accordance with section A-I/8, paragraph 3;

.2 the report is sufficient to demonstrate that:

.2.1 the evaluators were qualified,

.2.2 the terms of reference were clear enough to ensure that:

.2.2.1 all applicable provisions of the Convention and STCW Code, including their amendments, are covered by the Party's quality standards system; and

.2.2.2 the implementation of clearly defined objectives in accordance with regulation I/8, paragraph 1 could be verified over the full range of relevant activities,

.2.3 the procedures followed during the independent evaluation were appropriate to identify any significant non-conformities in the Party's system of training, assessment of competence, and certification of seafarers, as may be applicable to the Party concerned, and

.2.4 the actions being taken to correct any noted non-conformities are timely and appropriate.*

10 Any meeting of the competent persons shall:

.1 be held at the discretion of the Secretary-General;

.2 be comprised of an odd number of members, ordinarily not to exceed five persons;

.3 appoint its own chairman; and

.4 provide the Secretary-General with the agreed opinion of its members, or if no agreement is reached, with both the majority and minority views.

11 The competent persons shall, on a confidential basis, express their views in writing on:

.1 a comparison of the facts reported in the information communicated to the Secretary-General by the Party with all relevant requirements of the Convention;

.2 the report of any relevant evaluation submitted under regulation I/8, paragraph 3;

.3 the report of any steps taken to implement the amendments to the STCW Convention and Code submitted under paragraph 5; and

.4 any additional information provided by the Party.

* *Corrective actions must be timely and appropriate* means those actions must be focused on the underpinning/root causes of deficiencies and must be arranged to take place in a prescribed time schedule.

PART 4 – REPORT TO THE MARITIME SAFETY COMMITTEE

12 In preparing the report to the Maritime Safety Committee required by regulation I/7, paragraph 2, the Secretary-General shall:

.1 solicit and take into account the views expressed by competent persons selected from the list established pursuant to paragraph 7;

.2 seek clarification, when necessary, from the Party of any matter related to the information provided under regulation I/7, paragraph 1; and

.3 identify any area in which the Party may have requested assistance to implement the Convention.

13 The Party concerned shall be informed of the arrangements for the meetings of competent persons, and its representatives shall be entitled to be present to clarify any matter related to the information provided pursuant to regulation I/7, paragraph 1.

14 If the Secretary-General is not in a position to submit the report called for by paragraph 2 of regulation I/7, the Party concerned may request the Maritime Safety Committee to take the action contemplated by paragraph 3 of regulation I/7, taking into account the information submitted pursuant to this section and the views expressed in accordance with paragraphs 10 and 11.

Section A-I/8
Quality standards

National objectives and quality standards

1 Each Party shall ensure that the education and training objectives and related standards of competence to be achieved are clearly defined and identify the levels of knowledge, understanding and skills appropriate to the examinations and assessments required under the Convention. The objectives and related quality standards may be specified separately for different courses and training programmes and shall cover the administration of the certification system.

2 The field of application of the quality standards shall cover the administration of the certification system, all training courses and programmes, examinations and assessments carried out by or under the authority of a Party and the qualifications and experience required of instructors and assessors, having regard to the policies, systems, controls and internal quality assurance reviews established to ensure achievement of the defined objectives.

3 Each Party shall ensure that an independent evaluation of the knowledge, understanding, skills and competence acquisition and assessment activities, and of the administration of the certification system, is conducted at intervals of not more than five years in order to verify that:

.1 all applicable provisions of the Convention and STCW Code, including their amendments, are covered by the quality standards system;

.2 all internal management control and monitoring measures and follow-up actions comply with planned arrangements and documented procedures and are effective in ensuring achievement of the defined objectives;

.3 the results of each independent evaluation are documented and brought to the attention of those responsible for the area evaluated; and

.4 timely action is taken to correct deficiencies.

Section A-I/9
Medical standards

1 Parties, when establishing standards of medical fitness for seafarers as required by regulation I/9, shall take into account the minimum in-service eyesight standards set out in table A-I/9-1, the minimum physical abilities set out in table [A-I/9-2] and the guidance given in section B-I/9 of this Code, bearing in mind the different duties of seafarers. These standards may differentiate between those persons seeking to start a career at sea and those seafarers already serving at sea. In the former case, for example, it might be appropriate to designate higher standards in certain areas, while for seafarers already serving at sea some reduction may be made. These standards shall also take into account the need to screen for any impairment or disease that will limit the ability of the seafarer to effectively perform his/her duties during the validity period of the medical certificate.

2 Medical fitness examinations of seafarers shall be conducted by appropriately qualified and experienced medical practitioners recognized by the Party.

3 Each Party shall establish provisions for recognizing medical practitioners. A register of recognized medical practitioners shall be maintained by the Party and made available to other Parties, companies and seafarers on request.

4 Each Party shall provide guidance for the conduct of medical fitness examinations and issuing of medical certificates, taking into account provisions set out in section B-I/9 of this Code. Each Party shall determine the amount of discretion given to recognized medical practitioners on the application of the medical standards, bearing in mind the different duties of seafarers, except that there shall not be discretion with respect to the minimum eyesight standards for distance vision aided, near/immediate vision and colour vision in table A-I/9-1.

5 Each Party shall establish processes and procedures to enable seafarers who, after examination, do not meet the medical fitness standards or have had a limitation imposed on their ability to work, in particular with respect to time, field of work or trading area, to have their case reviewed in line with that Party's provisions for appeal.

6 The medical certificate provided for in regulation I/9, paragraph 3 shall include the following information as a minimum:

.1 **Authorizing authority** and the requirements under which the document is issued

.2 **Seafarer information**

.2.1 Name: *(Last, first, middle)*

.2.2 Date of birth: *(day/month/year)*

.2.3 Gender: *(Male/Female)*

.2.4 Nationality

.3 Declaration of the recognized medical practitioner

.3.1 Confirmation that identification documents were checked at the point of examination: *Y/N*

.3.2 Hearing meets the standards in STCW A-I/9: *Y/N*

.3.3 Unaided hearing satisfactory? *Y/N*

.3.4 Visual acuity meets standards in STCW A-I/9? *Y/N*

.3.5 Colour vision* meets standards in STCW A-I/9? *Y/N*

.3.5.1 Date of last colour vision test.

.3.6 Fit for look-out duties? *Y/N*

.3.7 No limitations or restrictions on fitness? *Y/N*
If "N", specify limitations or restrictions.

.3.8 Is the seafarer free from any medical condition likely to be aggravated by service at sea or to render the seafarer unfit for such service or to endanger the health of other persons on board?: *Y/N*

.3.9 Date of examination: (*day/month/year*)

.3.10 Expiry date of certificate: (*day/month/year*)

.4 Details of the issuing authority

.4.1 Official stamp (including name) of the issuing authority

.4.2 Signature of the authorized person

.5 Seafarer's signature – *confirming that the seafarer has been informed of the content of the certificate and of the right to a review in accordance with paragraph 5 of section A-I/9*

7 Medical certificates shall be in the official language of the issuing country. If the language used is not English, the text shall include a translation into that language.

* Note: Colour vision assessment only needs to be conducted every six years.

Table A-I/9-1

Minimum in-service eyesight standards for seafarers

STCW Convention regulation	Category of seafarer	Distance vision Aided[1]		Near/immediate vision	Colour vision[3]	Visual fields[4]	Night blindness[4]	Diplopia (double vision)[4]
		One eye	Other eye	Both eyes together, aided or unaided				
I/11 II/1 II/2 II/3 II/4 II/5 VII/2	Masters, deck officers and ratings required to undertake look-out duties	0.5[2]	0.5	Vision required for ship's navigation (e.g., chart and nautical publication reference, use of bridge instrumentation and equipment, and identification of aids to navigation)	See Note 5	Normal Visual fields	Vision required to perform all necessary functions in darkness without compromise	No significant condition evident
I/11 III/1 III/2 III/3 III/4 III/5 III/6 III/7 VII/2	All engineer officers, electro-technical officers, electro-technical ratings and ratings forming part of an engine-room watch	0.4	0.4	Vision required to read instruments in close proximity, to operate equipment, and to identify systems/components as necessary	See Note 6	Sufficient visual fields	Vision required to perform all necessary functions in darkness without compromise	No significant condition evident
I/11 IV/2	GMDSS Radio operators	0.4	0.4	Vision required to read instruments in close proximity, to operate equipment, and to identify systems/components as necessary	See Note 6	Sufficient visual fields	Vision required to perform all necessary functions in darkness without compromise	No significant condition evident

Notes:

1 Values given in Snellen decimal notation.

2 A value of at least 0.7 in one eye is recommended to reduce the risk of undetected underlying eye disease.

3 As defined in the *International Recommendations for Colour Vision Requirements for Transport* by the Commission Internationale de l'Eclairage (CIE-143-2001).

4 Subject to assessment by a clinical vision specialist where indicated by initial examination findings.

5 CIE colour vision standard 1 or 2.

6 CIE colour vision standard 1, 2 or 3.

[*Table A-I/9-2*

Assessment of minimum entry level and in-service physical abilities for seafarers[3]

Shipboard task, function event or condition[3]	**Related physical ability**	**A medical examiner should be satisfied that the candidate**[4]
Routine movement around vessel: - on moving deck - between levels - between compartments *Note 1 applies to this row*	Maintain balance and move with agility Climb up and down vertical ladders and stairways Step over coamings (e.g., 600 mm high) Open and close watertight doors	Has no disturbance in sense of balance. Does not have any impairment or disease that prevents relevant movements and physical activities. Is, without assistance[5], able to: - climb vertical ladders and stairways - step over high sills - manipulate door closing systems
Routine tasks on board: – Use of hand tools – Movement of ship's stores – Overhead work – Valve operation – Standing a four hour watch – Working in confined spaces – Responding to alarms, warnings and instructions – Verbal communication *Note 1 applies to this row*	Strength, dexterity and stamina to manipulate mechanical devices Lift, pull and carry a load (e.g., 18 kg) Reach upwards Stand, walk and remain alert for an extended period Work in constricted spaces and move through restricted openings (e.g., 600 mm × 600 mm) Visually distinguish objects, shapes and signals Hear warnings and instructions Give a clear spoken description	Does not have a defined impairment or diagnosed medical condition that reduces ability to perform routine duties essential to the safe operation of the vessel Has ability to – work with arms raised – stand and walk for an extended period – enter confined space – fulfil eyesight standards (A-I/9-1) – fulfil hearing standards set by competent authority or take account of international guidelines – hold normal conversation
Emergency duties[6] on board: – Escape – Fire-fighting – Evacuation *Note 2 applies to this row*	Don a lifejacket or immersion suit Escape from smoke-filled spaces Take part in fire-fighting duties, including use of breathing apparatus Take part in vessel evacuation procedures	Does not have a defined impairment or diagnosed medical condition that reduces ability to perform emergency duties essential to the safe operation of the vessel Has ability to: – don lifejacket or immersion suit – crawl – feel for differences in temperature – handle fire-fighting equipment – wear breathing apparatus (where required as part of duties)

Notes:

1 Rows 1 and 2 of the above table describe (a) ordinary shipboard tasks, functions, events and conditions, (b) the corresponding physical abilities which may be considered necessary for the safety of a seafarer, other crew members and the ship, and (c) high-level criteria for use by medical practitioners assessing medical fitness, bearing in mind the different duties of seafarers and the nature of shipboard work for which they will be employed.

2 Row 3 of the above table describes (a) ordinary shipboard tasks, functions, events and conditions, (b) the corresponding physical abilities which shall be considered necessary for the safety of a seafarer, other crew members and the ship, and (c) high-level criteria for use by medical practitioners assessing medical fitness, bearing in mind the different duties of seafarers in the nature of shipboard work for which they will be employed.

3 This table is not intended to address all possible shipboard conditions or potentially disqualifying medical conditions. Parties shall specify physical abilities applicable to the category of seafarers (such as “Deck officer” and “Engine rating”). The special circumstances of individuals and for those who have specialized or limited duties should receive due consideration.

4 If in doubt, the medical practitioner should quantify the degree or severity of any relevant impairment by means of objective tests, whenever appropriate tests are available, or by referring the candidate for further assessment.

5 The term “assistance” means the use of another person to accomplish the task.

6 The term “emergency duties” is used to cover all standard emergency response situations such as abandon ship or fire fighting as well as the procedures to be followed by each seafarer to secure personal survival.]

Section A-I/10
Recognition of certificates

1 The provisions of regulation I/10, paragraph 4 regarding the non-recognition of certificates issued by a non-Party shall not be construed as preventing a Party, when issuing its own certificate, from accepting seagoing service, education and training acquired under the authority of a non-Party, provided the Party complies with regulation I/2 in issuing each such certificate and ensures that the requirements of the Convention relating to seagoing service, education, training and competence are complied with.

2 Where an Administration which has recognized a certificate withdraws its endorsement of recognition for disciplinary reasons, the Administration shall inform the Party that issued the certificate of the circumstances.

Section A-I/11
Revalidation of certificates

Professional competence

1 Continued professional competence as required under regulation I/11 shall be established by:

.1 approved seagoing service, performing functions appropriate to the certificate held, for a period of at least:

.1.1 12 months in total during the preceding five years, or

.1.2 three months in total during the preceding six months immediately prior to revalidating; or

.2 having performed functions considered to be equivalent to the seagoing service required in paragraph 1.1; or

.3 passing an approved test; or

.4 successfully completing an approved training course or courses; or

.5 having completed approved seagoing service, performing functions appropriate to the certificate held, for a period of not less than three months in a supernumerary capacity, or in a lower officer rank than that for which the certificate held is valid immediately prior to taking up the rank for which it is valid.

2 The refresher and updating courses required by regulation I/11 shall be approved and include changes in relevant national and international regulations concerning the safety of life at sea and the protection of the marine environment and take account of any updating of the standard of competence concerned.

3 Continued professional competence for tankers as required under regulation I/11, paragraph 3 shall be established by:

.1 approved seagoing service, performing duties appropriate to the certificate held, for a period of at least 3 months in total during the preceding 5 years; or

.2 successfully completing an approved relevant training course or courses.

Section A-I/12
Standards governing the use of simulators

PART 1 – PERFORMANCE STANDARDS

General performance standards for simulators used in training

1 Each Party shall ensure that any simulator used for mandatory simulator-based training shall:

.1 be suitable for the selected objectives and training tasks;

.2 be capable of simulating the operating capabilities of shipboard equipment concerned, to a level of physical realism appropriate to training objectives, and include the capabilities, limitations and possible errors of such equipment;

.3 have sufficient behavioural realism to allow a trainee to acquire the skills appropriate to the training objectives;

.4 provide a controlled operating environment, capable of producing a variety of conditions, which may include emergency, hazardous or unusual situations relevant to the training objectives;

.5 provide an interface through which a trainee can interact with the equipment, the simulated environment and, as appropriate, the instructor; and

.6 permit an instructor to control, monitor and record exercises for the effective debriefing of trainees.

General performance standards for simulators used in assessment of competence

2 Each Party shall ensure that any simulator used for the assessment of competence required under the Convention or for any demonstration of continued proficiency so required shall:

.1 be capable of satisfying the specified assessment objectives;

.2 be capable of simulating the operational capabilities of the shipboard equipment concerned to a level of physical realism appropriate to the assessment objectives, and include the capabilities, limitations and possible errors of such equipment;

.3 have sufficient behavioural realism to allow a candidate to exhibit the skills appropriate to the assessment objectives;

.4 provide an interface through which a candidate can interact with the equipment and simulated environment;

.5 provide a controlled operating environment, capable of producing a variety of conditions, which may include emergency, hazardous or unusual situations relevant to assessment objectives; and

.6 permit an assessor to control, monitor and record exercises for the effective assessment of the performance of candidates.

Additional performance standards

3 In addition to meeting the basic requirements set out in paragraphs 1 and 2, simulation equipment to which this section applies shall meet the performance standards given hereunder in accordance with their specific type.

Radar simulation

4 Radar simulation equipment shall be capable of simulating the operational capabilities of navigational radar equipment which meets all applicable performance standards adopted by the Organization* and incorporate facilities to:

.1 operate in the stabilized relative-motion mode and sea- and ground-stabilized true-motion modes;

.2 model weather, tidal streams, current, shadow sectors, spurious echoes and other propagation effects, and generate coastlines, navigational buoys and search and rescue transponders; and

.3 create a real-time operating environment incorporating at least two own-ship stations with ability to change own ship's course and speed, and include parameters for at least 20 target ships and appropriate communication facilities.

Automatic Radar Plotting Aid (ARPA) simulation

5 ARPA simulation equipment shall be capable of simulating the operational capabilities of ARPAs which meet all applicable performance standards adopted by the Organization*, and shall incorporate the facilities for:

.1 manual and automatic target acquisition;

.2 past track information;

.3 use of exclusion areas;

.4 vector/graphic time-scale and data display; and

.5 trial manoeuvres.

* See relevant/appropriate performance standards adopted by the Organization and set out in IMO publication "Performance standards for shipborne radiocommunications and navigational equipment".

PART 2 – OTHER PROVISIONS

Simulator training objectives

6 Each Party shall ensure that the aims and objectives of simulator-based training are defined within an overall training programme and that specific training objectives and tasks are selected so as to relate as closely as possible to shipboard tasks and practices.

Training procedures

7 In conducting mandatory simulator-based training, instructors shall ensure that:

.1 trainees are adequately briefed beforehand on the exercise objectives and tasks and are given sufficient planning time before the exercise starts;

.2 trainees have adequate familiarization time on the simulator and with its equipment before any training or assessment exercise commences;

.3 guidance given and exercise stimuli are appropriate to the selected exercise objectives and tasks and to the level of trainee experience;

.4 exercises are effectively monitored, supported as appropriate by audio and visual observation of trainee activity and pre- and post-exercise evaluation reports;

.5 trainees are effectively debriefed to ensure that training objectives have been met and that operational skills demonstrated are of an acceptable standard;

.6 the use of peer assessment during debriefing is encouraged; and

.7 simulator exercises are designed and tested so as to ensure their suitability for the specified training objectives.

Assessment procedures

8 Where simulators are used to assess the ability of candidates to demonstrate levels of competency, assessors shall ensure that:

.1 performance criteria are identified clearly and explicitly and are valid and available to the candidates;

.2 assessment criteria are established clearly and are explicit to ensure reliability and uniformity of assessment and to optimize objective measurement and evaluation, so that subjective judgements are kept to the minimum;

.3 candidates are briefed clearly on the tasks and/or skills to be assessed and on the tasks and performance criteria by which their competency will be determined;

.4 assessment of performance takes into account normal operating procedures and any behavioural interaction with other candidates on the simulator or with simulator staff;

.5 scoring or grading methods to assess performance are used with caution until they have been validated; and

.6 the prime criterion is that a candidate demonstrates the ability to carry out a task safely and effectively to the satisfaction of the assessor.

Qualifications of instructors and assessors[*]

9 Each Party shall ensure that instructors and assessors are appropriately qualified and experienced for the particular types and levels of training and corresponding assessment of competence as specified in regulation I/6 and section A-I/6.

Section A-I/13
Conduct of trials

(No provisions)

Section A-I/14
Responsibilities of companies

1 Companies, masters and crew members each have responsibility for ensuring that the obligations set out in this section are given full and complete effect and that such other measures as may be necessary are taken to ensure that each crew member can make a knowledgeable and informed contribution to the safe operation of the ship.

2 The company shall provide written instructions to the master of each ship to which the Convention applies, setting forth the policies and the procedures to be followed to ensure that all seafarers who are newly employed on board the ship are given a reasonable opportunity to become familiar with the shipboard equipment, operating procedures and other arrangements needed for the proper performance of their duties, before being assigned to those duties. Such policies and procedures shall include:

.1 allocation of a reasonable period of time during which each newly employed seafarer will have an opportunity to become acquainted with:

.1.1 the specific equipment the seafarer will be using or operating, and

.1.2 ship-specific watchkeeping, safety, environmental protection and emergency procedures and arrangements the seafarer needs to know to perform the assigned duties properly; and

.2 designation of a knowledgeable crew member who will be responsible for ensuring that an opportunity is provided to each newly employed seafarer to receive essential information in a language the seafarer understands.

[*] The relevant IMO Model Course(s) and resolution MSC.64(67) on "*Recommendations on new and amended performance standards*" may be of assistance in the preparation of courses.

3 Companies shall ensure that masters, officers and other personnel assigned specific duties and responsibilities on board their ro-ro passenger ships shall have completed familiarization training to attain the abilities that are appropriate to the capacity to be filled and duties and responsibilities to be taken up, taking into account the guidance given in section B-I/14 of this Code.

Section A-I/15
Transitional provisions

(No provisions)

CHAPTER II

Standards regarding the master and deck department

Section A-II/1
Mandatory minimum requirements for certification of officers in charge of a navigational watch on ships of 500 gross tonnage or more

Standard of competence

1 Every candidate for certification shall:

.1 be required to demonstrate the competence to undertake, at operational level, the tasks, duties and responsibilities listed in column 1 of table A-II/1;

.2 at least hold the appropriate certificate for performing VHF radiocommunications in accordance with the requirements of the Radio Regulations; and

.3 if designated to have primary responsibility for radiocommunications during distress incidents, hold the appropriate certificate issued or recognized under the provisions of the Radio Regulations.

2 The minimum knowledge, understanding and proficiency required for certification is listed in column 2 of table A-II/1.

3 The level of knowledge of the subjects listed in column 2 of table A-II/1 shall be sufficient for officers of the watch to carry out their watchkeeping duties.*

4 Training and experience to achieve the necessary level of theoretical knowledge, understanding and proficiency shall be based on section A-VIII/2, part 4-1 – Principles to be observed in keeping a navigational watch – and shall also take into account the relevant requirements of this part and the guidance given in part B of this Code.

5 Every candidate for certification shall be required to provide evidence of having achieved the required standard of competence in accordance with the methods for demonstrating competence and the criteria for evaluating competence tabulated in columns 3 and 4 of table A-II/1.

Onboard training

6 Every candidate for certification as officer in charge of a navigational watch of ships of 500 gross tonnage or more whose seagoing service, in accordance with paragraph 2.2 of regulation II/1, forms part of a training programme approved as meeting the requirements of this section shall follow an approved programme of onboard training which:

.1 ensures that, during the required period of seagoing service, the candidate receives systematic practical training and experience in the tasks, duties and

* The relevant IMO Model Course(s) may be of assistance in the preparation of courses.

responsibilities of an officer in charge of a navigational watch, taking into account the guidance given in section B-II/1 of this Code;

.2 is closely supervised and monitored by qualified officers aboard the ships in which the approved seagoing service is performed; and

.3 is adequately documented in a training record book or similar document.*

Near-coastal voyages

7 The following subjects may be omitted from those listed in column 2 of table A-II/1 for issue of restricted certificates for service on near-coastal voyages, bearing in mind the safety of all ships which may be operating in the same waters:

.1 celestial navigation; and

.2 those electronic systems of position fixing and navigation that do not cover the waters for which the certificate is to be valid.

* The relevant IMO Model Course(s) and a similar document produced by the International Shipping Federation may be of assistance in the preparation of training record books.

Table A-II/1

Specification of minimum standard of competence for officers in charge of a navigational watch on ships of 500 gross tonnage or more

Function: Navigation at the operational level

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Plan and conduct a passage and determine position	*Celestial navigation* Ability to use celestial bodies to determine the ship's position *Terrestrial and coastal navigation* Ability to determine the ship's position by use of: .1 landmarks .2 aids to navigation, including lighthouses, beacons and buoys .3 dead reckoning, taking into account winds, tides, currents and estimated speed Thorough knowledge of and ability to use nautical charts, and publications, such as sailing directions, tide tables, notices to mariners, radio navigational warnings and ships' routeing information *Electronic systems of position fixing and navigation* Ability to determine the ship's position by use of electronic navigational aids	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved training ship experience .3 approved simulator training, where appropriate .4 approved laboratory equipment training using chart catalogues, charts, nautical publications, radio navigational warnings, sextant, azimuth mirror, electronic navigation equipment, echo-sounding equipment, compass	The information obtained from nautical charts and publications is relevant, interpreted correctly and properly applied. All potential navigational hazards are accurately identified The primary method of fixing the ship's position is the most appropriate to the prevailing circumstances and conditions The position is determined within the limits of acceptable instrument/system errors The reliability of the information obtained from the primary method of position fixing is checked at appropriate intervals Calculations and measurements of navigational information are accurate The charts selected are the largest scale suitable for the area of navigation and charts and publications are corrected in accordance with the latest information available Performance checks and tests to navigation systems comply with manufacturer's recommendations and good navigational practice

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Plan and conduct a passage and determine position (*continued*)	*Echo-sounders* Ability to operate the equipment and apply the information correctly *Compass – magnetic and gyro* Knowledge of the principles of magnetic and gyro-compasses Ability to determine errors of the magnetic and gyro-compasses, using celestial and terrestrial means, and to allow for such errors *Steering control system* Knowledge of steering control systems, operational procedures and change-over from manual to automatic control and vice versa. Adjustment of controls for optimum performance *Meteorology* Ability to use and interpret information obtained from shipborne meteorological instruments Knowledge of the characteristics of the various weather systems, reporting procedures and recording systems Ability to apply the meteorological information available		Errors in magnetic and gyro-compasses are determined and correctly applied to courses and bearings The selection of the mode of steering is the most suitable for the prevailing weather, sea and traffic conditions and intended manoeuvres Measurements and observations of weather conditions are accurate and appropriate to the passage Meteorological information is correctly interpreted and applied

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Maintain a safe navigational watch	*Watchkeeping* Thorough knowledge of the content, application and intent of the International Regulations for Preventing Collisions at Sea, 1972 Thorough knowledge of the Principles to be observed in keeping a navigational watch The use of routeing in accordance with the General Provisions on Ships' Routeing The use of information from navigational equipment for maintaining a safe navigational watch Knowledge of blind pilotage techniques The use of reporting in accordance with the General Principles for Ship Reporting Systems and with VTS procedures	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience; .2 approved training ship experience .3 approved simulator training, where appropriate .4 approved laboratory equipment training	The conduct, handover and relief of the watch conforms with accepted principles and procedures A proper look-out is maintained at all times and in such a way as to conform to accepted principles and procedures Lights, shapes and sound signals conform with the requirements contained in the International Regulations for Preventing Collisions at Sea, 1972 and are correctly recognized The frequency and extent of monitoring of traffic, the ship and the environment conform with accepted principles and procedures A proper record is maintained of the movements and activities relating to the navigation of the ship Responsibility for the safety of navigation is clearly defined at all times, including periods when the master is on the bridge and while under pilotage

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Maintain a safe navigational watch *(continued)*	*Bridge resource management* Knowledge of bridge resource management principles, including: .1 allocation, assignment, and prioritization of resources .2 effective communication .3 assertiveness and leadership .4 obtaining and maintaining situational awareness	Assessment of evidence obtained from one or more of the following: .1 approved training .2 approved in-service experience .3 approved simulator training	Resources are allocated and assigned as needed in correct priority to perform necessary tasks Communication is clearly and unambiguously given and received Questionable decisions and/or actions result in appropriate challenge and response Effective leadership behaviours are identified Team member(s) share accurate understanding of current and predicted vessel state, navigation path, and external environment
Use of radar and ARPA to maintain safety of navigation *Note*: Training and assessment in the use of ARPA is not required for those who serve exclusively on ships not fitted with ARPA. This limitation shall be reflected in the endorsement issued to the seafarer concerned	*Radar navigation* Knowledge of the fundamentals of radar and automatic radar plotting aids (ARPA) Ability to operate and to interpret and analyse information obtained from radar, including the following: Performance, including: .1 factors affecting performance and accuracy .2 setting up and maintaining displays .3 detection of misrepresentation of information, false echoes, sea return, etc., racons and SARTs	Assessment of evidence obtained from approved radar simulator and ARPA simulator training plus in-service experience	Information obtained from radar and ARPA is correctly interpreted and analysed, taking into account the limitations of the equipment and prevailing circumstances and conditions

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Use of radar and ARPA to maintain safety of navigation *(continued)*	Use, including: .1 range and bearing; course and speed of other ships; time and distance of closest approach of crossing, meeting overtaking ships .2 identification of critical echoes; detecting course and speed changes of other ships; effect of changes in own ship's course or speed or both .3 application of the International Regulations for Preventing Collisions at Sea, 1972 .4 plotting techniques and relative- and true-motion concepts .5 parallel indexing		Action taken to avoid a close encounter or collision with other vessels is in accordance with the International Regulations for Preventing Collisions at Sea, 1972 Decisions to amend course and/or speed are both timely and in accordance with accepted navigation practice Adjustments made to the ship's course and speed maintain safety of navigation Communication is clear, concise and acknowledged at all times in a seamanlike manner Manoeuvring signals are made at the appropriate time and are in accordance with the International Regulations for Preventing Collisions at Sea, 1972

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Use of radar and ARPA to maintain safety of navigation (*continued*) *Note*: Training and assessment in the use of ARPA is not required for those who serve exclusively on ships not fitted with ARPA. This limitation shall be reflected in the endorsement issued to the seafarer concerned	Principal types of ARPA, their display characteristics, performance standards and the dangers of over-reliance on ARPA Ability to operate and to interpret and analyse information obtained from ARPA, including: .1 system performance and accuracy, tracking capabilities and limitations, and processing delays .2 use of operational warnings and system tests .3 methods of target acquisition and their limitations .4 true and relative vectors, graphic representation of target information and danger areas .5 deriving and analysing information, critical echoes, exclusion areas and trial manoeuvres		
Use of ECDIS to maintain the safety of navigation Note: Training and assessment in the use of ECDIS is not required for those who serve exclusively on ships not fitted with ECDIS	*Navigation using ECDIS* Knowledge of the capability and limitations of ECDIS operations, including: .1 a thorough understanding of Electronic Navigational Chart (ENC) data, data accuracy, presentation rules, display options and other chart data formats .2 the dangers of over-reliance	Examination and assessment of evidence obtained from one or more of the following: .1 approved training ship experience .2 approved ECDIS simulator training	Monitors information on ECDIS in a manner that contributes to safe navigation Information obtained from ECDIS (including radar overlay and/or radar tracking functions, when fitted) is correctly interpreted and analysed, taking into account the limitations of the equipment, all connected sensors (including radar and AIS where interfaced), and prevailing circumstances and conditions

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
These limitations shall be reflected in the endorsements issued to the seafarer concerned	.3 familiarity with the functions of ECDIS required by performance standards in force Proficiency in operation, interpretation, and analysis of information obtained from ECDIS, including: .1 use of functions that are integrated with other navigation systems in various installations, including proper functioning and adjustment to desired settings .2 safe monitoring and adjustment of information, including own position, sea area display, mode and orientation, chart data displayed, route monitoring, user-created information layers, contacts (when interfaced with AIS and/or radar tracking) and radar overlay functions (when interfaced) .3 confirmation of vessel position by alternative means .4 efficient use of settings to ensure conformance to operational procedures, including alarm parameters for anti-grounding, proximity to contacts and special areas, completeness of chart data and chart update status, and backup arrangements		Safety of navigation is maintained through adjustments made to the ship's course and speed through ECDIS-controlled track-keeping functions (when fitted) Communication is clear, concise and acknowledged at all times in a seamanlike manner

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Use of ECDIS to maintain the safety of navigation *(continued)*	.5 adjustment of settings and values to suit the present conditions .6 situational awareness while using ECDIS including safe water and proximity of hazards, set and drift, chart data and scale selection, suitability of route, contact detection and management, and integrity of sensors		
Respond to emergencies	*Emergency procedures* Precautions for the protection and safety of passengers in emergency situations Initial action to be taken following a collision or a grounding; initial damage assessment and control Appreciation of the procedures to be followed for rescuing persons from the sea, assisting a ship in distress, responding to emergencies which arise in port	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved training ship experience .3 approved simulator training, where appropriate .4 practical training	The type and scale of the emergency is promptly identified Initial actions and, if appropriate, manoeuvring of the ship are in accordance with contingency plans and are appropriate to the urgency of the situation and nature of the emergency
Respond to a distress signal at sea	*Search and rescue* Knowledge of the contents of the International Aeronautical and Maritime Search and Rescue (IAMSAR) Manual	Examination and assessment of evidence obtained from practical instruction or approved simulator training, where appropriate	The distress or emergency signal is immediately recognized Contingency plans and instructions in standing orders are implemented and complied with
Use the IMO Standard Marine Communication Phrases and use English in written and oral form	*English language* Adequate knowledge of the English language to enable the officer to use charts and other nautical publications, to understand meteorological information and messages concerning ship's safety and	Examination and assessment of evidence obtained from practical instruction	English language nautical publications and messages relevant to the safety of the ship are correctly interpreted or drafted Communications are clear and understood

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
	operation, to communicate with other ships, coast stations and VTS centres and to perform the officer's duties also with a multilingual crew, including the ability to use and understand the IMO Standard Marine Communication Phrases (IMO SMCP)		
Transmit and receive information by visual signalling	*Visual signalling* Ability to use the International Code of Signals Ability to transmit and receive, by Morse light, distress signal SOS as specified in Annex IV of COLREG 1972 and appendix 1 of the International Code of Signals, and visual signalling of single-letter signals as also specified in the International Code of Signals	Assessment of evidence obtained from practical instruction and/or simulation	Communications within the operator's area of responsibility are consistently successful
Manoeuvre the ship	*Ship manoeuvring and handling* Knowledge of: .1 the effects of deadweight, draught, trim, speed and under-keel clearance on turning circles and stopping distances .2 the effects of wind and current on ship handling .3 manoeuvres and procedures for the rescue of person overboard .4 squat, shallow-water and similar effects .5 proper procedures for anchoring and mooring	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved training ship experience .3 approved simulator training, where appropriate .4 approved training on a manned scale ship model, where appropriate	Safe operating limits of ship propulsion, steering and power systems are not exceeded in normal manoeuvres Adjustments made to the ship's course and speed maintain safety of navigation

Function: Cargo handling and stowage at the operational level

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Monitor the loading, stowage, securing, care during the voyage and the unloading of cargoes	*Cargo handling, stowage and securing* Knowledge of the effect of cargo, including heavy lifts, on the seaworthiness and stability of the ship Knowledge of safe handling, stowage and securing of cargoes, including dangerous, hazardous and harmful cargoes, and their effect on the safety of life and of the ship Ability to establish and maintain effective communications during loading and unloading	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved training ship experience .3 approved simulator training, where appropriate	Cargo operations are carried out in accordance with the cargo plan or other documents and established safety rules/regulations, equipment operating instructions and shipboard stowage limitations The handling of dangerous, hazardous and harmful cargoes complies with international regulations and recognized standards and codes of safe practice Communications are clear, understood and consistently successful
Inspect and report defects and damage to cargo spaces, hatch covers and ballast tanks	Knowledge* and ability to explain where to look for damage and defects most commonly encountered due to: .1 loading and unloading operations .2 corrosion .3 severe weather conditions Ability to state which parts of the ship shall be inspected each time in order to cover all parts within a given period of time Identify those elements of the ship structure which are critical to the safety of the ship	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved training ship experience .3 approved simulator training, where appropriate	The inspections are carried out in accordance with laid-down procedures, and defects and damage are detected and properly reported Where no defects or damage are detected, the evidence from testing and examination clearly indicates adequate competence in adhering to procedures and ability to distinguish between normal and defective or damaged parts of the ship

* It should be understood that deck officers need not be qualified in the survey of ships.

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Inspect and report defects and damage to cargo spaces, hatch covers and ballast tanks (*continued*)	State the causes of corrosion in cargo spaces and ballast tanks and how corrosion can be identified and prevented Knowledge of procedures on how the inspections shall be carried out Ability to explain how to ensure reliable detection of defects and damages Understanding of the purpose of the "enhanced survey programme"		

Function: Controlling the operation of the ship and care for persons on board at the operational level

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Ensure compliance with pollution-prevention requirements	*Prevention of pollution of the marine environment and anti-pollution procedures* Knowledge of the precautions to be taken to prevent pollution of the marine environment Anti-pollution procedures and all associated equipment Importance of proactive measures to protect the marine environment	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved training ship experience .3 approved training	Procedures for monitoring shipboard operations and ensuring compliance with MARPOL requirements are fully observed Actions to ensure that a positive environmental reputation is maintained
Maintain seaworthiness of the ship	*Ship stability* Working knowledge and application of stability, trim and stress tables, diagrams and stress-calculating equipment Understanding of fundamental actions to be taken in the event of partial loss of intact buoyancy Understanding of the fundamentals of watertight integrity *Ship construction* General knowledge of the principal structural members of a ship and the proper names for the various parts	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved training ship experience .3 approved simulator training, where appropriate .4 approved laboratory equipment training	The stability conditions comply with the IMO intact stability criteria under all conditions of loading Actions to ensure and maintain the watertight integrity of the ship are in accordance with accepted practice

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Prevent, control and fight fires on board	*Fire prevention and fire-fighting appliances* Ability to organize fire drills Knowledge of classes and chemistry of fire Knowledge of fire-fighting systems Knowledge of action to be taken in the event of fire, including fires involving oil systems	Assessment of evidence obtained from approved fire-fighting training and experience as set out in section A-VI/3	The type and scale of the problem is promptly identified and initial actions conform with the emergency procedure and contingency plans for the ship Evacuation, emergency shutdown and isolation procedures are appropriate to the nature of the emergency and are implemented promptly The order of priority and the levels and time-scales of making reports and informing personnel on board are relevant to the nature of the emergency and reflect the urgency of the problem
Operate life-saving appliances	*Life-saving* Ability to organize abandon ship drills and knowledge of the operation of survival craft and rescue boats, their launching appliances and arrangements, and their equipment, including radio life-saving appliances, satellite EPIRBs, SARTs, immersion suits and thermal protective aids	Assessment of evidence obtained from approved training and experience as set out in section A-VI/2, paragraphs 1 to 4	Actions in responding to abandon ship and survival situations are appropriate to the prevailing circumstances and conditions and comply with accepted safety practices and standards
Apply medical first aid on board ship	*Medical aid* Practical application of medical guides and advice by radio, including the ability to take effective action based on such knowledge in the case of accidents or illnesses that are likely to occur on board ship	Assessment of evidence obtained from approved training as set out in section A-VI/4, paragraphs 1 to 3	The identification of probable cause, nature and extent of injuries or conditions is prompt and treatment minimizes immediate threat to life
Monitor compliance with legislative requirements	Basic working knowledge of the relevant IMO conventions concerning safety of life at sea and protection of the marine environment	Assessment of evidence obtained from examination or approved training	Legislative requirements relating to safety of life at sea and protection of the marine environment are correctly identified

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Application of leadership and teamworking skills	Working knowledge of shipboard personnel management and training A knowledge of related international maritime conventions and recommendations, and national legislation Ability to apply task and workload management, including: .1 planning and co-ordination .2 personnel assignment .3 time and resource constraints .4 prioritization Knowledge and ability to apply effective resource management: .1 allocation, assignment, and prioritization of resources .2 effective communication onboard and ashore .3 decisions reflect consideration of team experiences .4 assertiveness and leadership, including motivation .5 obtaining and maintaining situational awareness	Assessment of evidence obtained from one or more of the following: .1 approved training .2 approved in-service experience .3 practical demonstration	The crew are allocated duties and informed of expected standards of work and behaviour in a manner appropriate to the individuals concerned Training objectives and activities are based on assessment of current competence and capabilities and operational requirements. Operations are demonstrated to be in accordance with applicable rules Operations are planned and resources are allocated as needed in correct priority to perform necessary tasks Communication is clearly and unambiguously given and received Effective leadership behaviours are demonstrated Necessary team member(s) share accurate understanding of current and predicted vessel and operational status and external environment Decisions are most effective for the situation

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Application of leadership and teamworking skills *(continued)*	Knowledge and ability to apply decision-making techniques: .1 Situation and risk assessment .2 Identify and consider generated options .3 Selecting course of action .4 Evaluation of outcome effectiveness		
Contribute to the safety of personnel and ship	Knowledge of personal survival techniques Knowledge of fire prevention and ability to fight and extinguish fires Knowledge of elementary first aid Knowledge of personal safety and social responsibilities	Assessment of evidence obtained from approved training and experience as set out in section A-VI/1, paragraph 2	Appropriate safety and protective equipment is correctly used Procedures and safe working practices designed to safeguard personnel and the ship are observed at all times Procedures designed to safeguard the environment are observed at all times Initial and follow-up action on becoming aware of an emergency conforms with established emergency response procedures

Section A-II/2
Mandatory minimum requirements for certification of masters and chief mates on ships of 500 gross tonnage or more

Standard of competence

1 Every candidate for certification as master or chief mate of ships of 500 gross tonnage or more shall be required to demonstrate the competence to undertake, at the management level, the tasks, duties and responsibilities listed in column 1 of table A-II/2.

2 The minimum knowledge, understanding and proficiency required for certification is listed in column 2 of table A-II/2. This incorporates, expands and extends in depth the subjects listed in column 2 of table A-II/1 for officers in charge of a navigational watch.

3 Bearing in mind that the master has ultimate responsibility for the safety of the ship, its passengers, crew and cargo, and for the protection of the marine environment against pollution by the ship, and that a chief mate shall be in a position to assume that responsibility at any time, assessment in these subjects shall be designed to test their ability to assimilate all available information that affects the safety of the ship, its passengers, crew or cargo, or the protection of the marine environment.

4 The level of knowledge of the subjects listed in column 2 of table A-II/2 shall be sufficient to enable the candidate to serve in the capacity of master or chief mate[*].

5 The level of theoretical knowledge, understanding and proficiency required under the different sections in column 2 of table A-II/2 may be varied according to whether the certificate is to be valid for ships of 3,000 gross tonnage or more or for ships of between 500 gross tonnage and 3,000 gross tonnage.

6 Training and experience to achieve the necessary level of theoretical knowledge, understanding and proficiency shall take into account the relevant requirements of this part and the guidance given in part B of this Code.

7 Every candidate for certification shall be required to provide evidence of having achieved the required standard of competence in accordance with the methods for demonstrating competence and criteria for evaluating competence tabulated in columns 3 and 4 of table A-II/2.

Near-coastal voyages

8 An Administration may issue a certificate restricted to service on ships engaged exclusively on near-coastal voyages and, for the issue of such a certificate, may exclude such subjects as are not applicable to the waters or ships concerned, bearing in mind the effect on the safety of all ships which may be operating in the same waters.

[*] The relevant IMO Model Course(s) may be of assistance in the preparation of courses.

Table A-II/2

Specification of minimum standard of competence for masters and chief mates on ships of 500 gross tonnage or more

Function: Navigation at the management level

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Plan a voyage and conduct navigation	Voyage planning and navigation for all conditions by acceptable methods of plotting ocean tracks, taking into account, e.g.,: .1 restricted waters .2 meteorological conditions .3 ice .4 restricted visibility .5 traffic separation schemes .6 vessel traffic service (VTS) areas .7 areas of extensive tidal effects Routeing in accordance with the General Provisions on Ships' Routeing Reporting in accordance with the General principles for Ship Reporting Systems and with VTS procedures	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved simulator training, where appropriate .3 approved laboratory equipment training using chart catalogues, charts, nautical publications and ship particulars	The equipment, charts and nautical publications required for the voyage are enumerated and appropriate to the safe conduct of the voyage The reasons for the planned route are supported by facts and statistical data obtained from relevant sources and publications Positions, courses, distances and time calculations are correct within accepted accuracy standards for navigational equipment All potential navigational hazards are accurately identified
Determine	Position determination in all	Examination and	The primary method chosen for

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
position and the accuracy of resultant position fix by any means	conditions: .1 by celestial observations .2 by terrestrial observations, including the ability to use appropriate charts, notices to mariners and other publications to assess the accuracy of the resulting position fix .3 using modern electronic navigational aids, with specific knowledge of their operating principles, limitations, sources of error, detection of misrepresentation of information and methods of correction to obtain accurate position fixing	assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved simulator training, where appropriate .3 approved laboratory equipment training, using: .1 charts, nautical almanac, plotting sheets, chronometer, sextant and a calculator .2 charts, nautical publications and navigational instruments (azimuth mirror, sextant, log, sounding equipment, compass) and manufacturers' manuals .3 radar, terrestrial electronic position-fixing systems, satellite navigation systems and appropriate nautical charts and publications	fixing the ship's position is the most appropriate to the prevailing circumstances and conditions The fix obtained by celestial observations is within accepted accuracy levels The fix obtained by terrestrial observations is within accepted accuracy levels The accuracy of the resulting fix is properly assessed The fix obtained by the use of electronic navigational aids is within the accuracy standards of the systems in use. The possible errors affecting the accuracy of the resulting position are stated and methods of minimizing the effects of system errors on the resulting position are properly applied

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Determine and allow for compass errors	Ability to determine and allow for errors of the magnetic and gyro-compasses Knowledge of the principles of magnetic and gyro-compasses An understanding of systems under the control of the master gyro and a knowledge of the operation and care of the main types of gyro-compass	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved simulator training, where appropriate .3 approved laboratory equipment training using celestial observations, terrestrial bearings and comparison between magnetic and gyro-compasses	The method and frequency of checks for errors of magnetic and gyro-compasses ensures accuracy of information

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Coordinate search and rescue operations	A thorough knowledge of and ability to apply the procedures contained in the International Aeronautical and Maritime Search and Rescue (IAMSAR) Manual	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved simulator training, where appropriate .3 approved laboratory equipment training using relevant publications, charts, meteorological data, particulars of ships involved, radiocommunication equipment and other available facilities and one or more of the following: .1 approved SAR training course .2 approved simulator training, where appropriate .3 approved laboratory equipment training	The plan for coordinating search and rescue operations is in accordance with international guidelines and standards Radiocommunications are established and correct communication procedures are followed at all stages of the search and rescue operations
Establish watchkeeping arrangements and procedures	Thorough knowledge of content, application and intent of the International Regulations for Preventing Collisions at Sea, 1972 Thorough knowledge of the content, application and intent of the Principles to be observed in keeping a navigational watch	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved simulator training, where appropriate	Watchkeeping arrangements and procedures are established and maintained in compliance with international regulations and guidelines so as to ensure the safety of navigation, protection of the marine environment and safety of the ship and persons on board

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Maintain safe navigation through the use of information from navigation equipment and systems to assist command decision making *Note*: Training and assessment in the use of ARPA is not required for those who serve exclusively on ships not fitted with ARPA. This limitation shall be reflected in the endorsement issued to the seafarer concerned	An appreciation of system errors and thorough understanding of the operational aspects of navigational systems Blind pilotage planning Evaluation of navigational information derived from all sources, including radar and ARPA, in order to make and implement command decisions for collision avoidance and for directing the safe navigation of the ship The interrelationship and optimum use of all navigational data available for conducting navigation	Examination and assessment of evidence obtained from approved ARPA simulator training and one or more of the following: .1 approved in-service experience .2 approved simulator training, where appropriate .3 approved laboratory equipment training	Information obtained from navigation equipment and systems is correctly interpreted and analysed, taking into account the limitations of the equipment and prevailing circumstances and conditions Action taken to avoid a close encounter or collision with another vessel is in accordance with the International Regulations for Preventing Collisions at Sea, 1972
Maintain the safety of navigation through the use of ECDIS and associated navigation systems to assist command decision making Note: Training and assessment in the use of ECDIS is not required for those who serve exclusively on ships not fitted with ECDIS. This limitation shall be reflected in the	Management of operational procedures, system files and data, including: .1 manage procurement, licensing and updating of chart data and system software to conform to established procedures .2 system and information updating, including the ability to update ECDIS system version in accordance with vendor's product development .3 create and maintain system configuration and backup files .4 create and maintain log files in accordance with established procedures	Assessment of evidence obtained from one of the following: .1 approved in-service experience .2 approved training ship experience .3 approved ECDIS simulator training	Operational procedures for using ECDIS are established, applied, and monitored Actions taken to minimize risk to safety of navigation

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
endorsement issued to the seafarer concerned	.5 create and maintain route plan files in accordance with established procedures .6 use ECDIS log-book and track history functions for inspection of system functions, alarm settings and user responses Use ECDIS playback functionality for passage review, route planning and review of system functions		
Forecast weather and oceanographic conditions	Ability to understand and interpret a synoptic chart and to forecast area weather, taking into account local weather conditions and information received by weather fax Knowledge of the characteristics of various weather systems, including tropical revolving storms and avoidance of storm centres and the dangerous quadrants Knowledge of ocean current systems Ability to calculate tidal conditions Use all appropriate nautical publications on tides and currents	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved laboratory equipment training	The likely weather conditions predicted for a determined period are based on all available information Actions taken to maintain safety of navigation minimize any risk to safety of the ship Reasons for intended action are backed by statistical data and observations of the actual weather conditions

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Respond to navigational emergencies	Precautions when beaching a ship Action to be taken if grounding is imminent, and after grounding Refloating a grounded ship with and without assistance Action to be taken if collision is imminent and following a collision or impairment of the watertight integrity of the hull by any cause Assessment of damage control Emergency steering Emergency towing arrangements and towing procedure	Examination and assessment of evidence obtained from practical instruction, in-service experience and practical drills in emergency procedures	The type and scale of any problem is promptly identified and decisions and actions minimize the effects of any malfunction of the ship's systems Communications are effective and comply with established procedures Decisions and actions maximize safety of persons on board

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Manoeuvre and handle a ship in all conditions	Manoeuvring and handling a ship in all conditions, including: .1 manoeuvres when approaching pilot stations and embarking or disembarking pilots, with due regard to weather, tide, headreach and stopping distances .2 handling ship in rivers, estuaries and restricted waters, having regard to the effects of current, wind and restricted water on helm response .3 application of constant-rate-of-turn techniques .4 manoeuvring in shallow water, including the reduction in under-keel clearance caused by squat, rolling and pitching .5 interaction between passing ships and between own ship and nearby banks (canal effect) .6 berthing and unberthing under various conditions of wind, tide and current with and without tugs .7 ship and tug interaction .8 use of propulsion and manoeuvring systems	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved simulator training, where appropriate .3 approved manned scale ship model, where appropriate	All decisions concerning berthing and anchoring are based on a proper assessment of the ship's manoeuvring and engine characteristics and the forces to be expected while berthed alongside or lying at anchor While under way, a full assessment is made of possible effects of shallow and restricted waters, ice, banks, tidal conditions, passing ships and own ship's bow and stern wave so that the ship can be safely manoeuvred under various conditions of loading and weather

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Manoeuvre and handle a ship in all conditions *(continued)*	.9 choice of anchorage; anchoring with one or two anchors in limited anchorages and factors involved in determining the length of anchor cable to be used .10 dragging anchor; clearing fouled anchors .11 dry-docking, both with and without damage .12 management and handling of ships in heavy weather, including assisting a ship or aircraft in distress; towing operations; means of keeping an unmanageable ship out of trough of the sea, lessening drift and use of oil .13 precautions in manoeuvring to launch rescue boats or survival craft in bad weather .14 methods of taking on board survivors from rescue boats and survival craft .15 ability to determine the manoeuvring and propulsion characteristics of common types of ships, with special reference to stopping distances and turning circles at various draughts and speeds .16 importance of navigating at reduced speed to avoid damage caused by own ship's bow wave and stern wave		

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Manoeuvre and handle a ship in all conditions (*continued*)	.17 practical measures to be taken when navigating in or near ice or in conditions of ice accumulation on board .18 use of, and manoeuvring in and near, traffic separation schemes and in vessel traffic service (VTS) areas		
Operate remote controls of propulsion plant and engineering systems and services	Operating principles of marine power plants Ships' auxiliary machinery General knowledge of marine engineering terms	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved simulator training, where appropriate	Plant, auxiliary machinery and equipment is operated in accordance with technical specifications and within safe operating limits at all times

Function: Cargo handling and stowage at the management level

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Plan and ensure safe loading, stowage, securing, care during the voyage and unloading of cargoes	Knowledge of and ability to apply relevant international regulations, codes and standards concerning the safe handling, stowage, securing and transport of cargoes Knowledge of the effect on trim and stability of cargoes and cargo operations Use of stability and trim diagrams and stress-calculating equipment, including automatic data-based (ADB) equipment, and knowledge of loading cargoes and	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved simulator training, where appropriate using stability, trim and stress tables, diagrams and stress-calculating equipment	The frequency and extent of cargo condition monitoring is appropriate to its nature and prevailing conditions Unacceptable or unforeseen variations in the condition or specification of the cargo are promptly recognized and remedial action is immediately taken and designed to safeguard the safety of the ship and those on board Cargo operations are planned and executed in accordance with established procedures and legislative requirements

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Plan and ensure safe loading, stowage, securing, care during the voyage and unloading of cargoes (*continued*)	ballasting in order to keep hull stress within acceptable limits Stowage and securing of cargoes on board ships, including cargo-handling gear and securing and lashing equipment Loading and unloading operations, with special regard to the transport of cargoes identified in the Code of Safe Practice for Cargo Stowage and Securing General knowledge of tankers and tanker operations Knowledge of the operational and design limitations of bulk carriers Ability to use all available shipboard data related to loading, care and unloading of bulk cargoes Ability to establish procedures for safe cargo handling in accordance with the provisions of the relevant instruments such as IMDG Code, IMSBC Code, MARPOL 73/78 Annexes III and V and other relevant information Ability to explain the basic principles for establishing effective communications and improving working relationship between ship and terminal personnel		Stowage and securing of cargoes ensures that stability and stress conditions remain within safe limits at all times during the voyage

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Assess reported defects and damage to cargo spaces, hatch covers and ballast tanks and take appropriate action	Knowledge of the limitations on strength of the vital constructional parts of a standard bulk carrier and ability to interpret given figures for bending moments and shear forces Ability to explain how to avoid the detrimental effects on bulk carriers of corrosion, fatigue and inadequate cargo handling	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved simulator training, where appropriate using stability, trim and stress tables, diagrams and stress-calculating equipment	Evaluations are based on accepted principles, well-founded arguments and correctly carried out. The decisions taken are acceptable, taking into consideration the safety of the ship and the prevailing conditions
Carriage of dangerous goods	International regulations, standards, codes and recommendations on the carriage of dangerous cargoes, including the International Maritime Dangerous Goods (IMDG) Code and the International Maritime Solid Bulk Cargoes (IMSBC) Code Carriage of dangerous, hazardous and harmful cargoes; precautions during loading and unloading and care during the voyage	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved simulator training, where appropriate .3 approved specialist training	Planned distribution of cargo is based on reliable information and is in accordance with established guidelines and legislative requirements Information on dangers, hazards and special requirements is recorded in a format suitable for easy reference in the event of an incident

Function: Controlling the operation of the ship and care for persons on board at the management level

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Control trim, stability and stress	Understanding of fundamental principles of ship construction and the theories and factors affecting trim and stability and measures necessary to preserve trim and stability Knowledge of the effect on trim and stability of a ship in the event of damage to and consequent flooding of a compartment and countermeasures to be taken Knowledge of IMO recommendations concerning ship stability	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved training ship experience .3 approved simulator training, where appropriate	Stability and stress conditions are maintained within safe limits at all times

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Monitor and control compliance with legislative requirements and measures to ensure safety of life at sea and the protection of the marine environment	Knowledge of international maritime law embodied in international agreements and conventions Regard shall be paid especially to the following subjects: .1 certificates and other documents required to be carried on board ships by international conventions, how they may be obtained and their period of validity .2 responsibilities under the relevant requirements of the International Convention on Load Lines .3 responsibilities under the relevant requirements of the International Convention for the Safety of Life at Sea .4 responsibilities under the International Convention for the Prevention of Pollution from Ships .5 maritime declarations of health and the requirements of the International Health Regulations .6 responsibilities under international instruments affecting the safety of the ship, passengers, crew and cargo .7 methods and aids to prevent pollution of the marine environment by ships .8 national legislation for implementing international agreements and conventions	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved training ship experience .3 approved simulator training, where appropriate	Procedures for monitoring operations and maintenance comply with legislative requirements Potential non-compliance is promptly and fully identified Planned renewal and extension of certificates ensures continued validity of surveyed items and equipment

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Maintain safety and security of the ship's crew and passengers and the operational condition of life-saving, fire-fighting and other safety systems	Thorough knowledge of life-saving appliance regulations (International Convention for the Safety of Life at Sea) Organization of fire drills and abandon ship drills Maintenance of operational condition of life-saving, fire-fighting and other safety systems Actions to be taken to protect and safeguard all persons on board in emergencies Actions to limit damage and salve the ship following a fire, explosion, collision or grounding	Examination and assessment of evidence obtained from practical instruction and approved in-service training and experience	Procedures for monitoring fire-detection and safety systems ensure that all alarms are detected promptly and acted upon in accordance with established emergency procedures
Develop emergency and damage control plans and handle emergency situations	Preparation of contingency plans for response to emergencies Ship construction, including damage control Methods and aids for fire prevention, detection and extinction Functions and use of life-saving appliances	Examination and assessment of evidence obtained from approved in-service training and experience	Emergency procedures are in accordance with the established plans for emergency situations
Use of leadership and managerial skill	Knowledge of shipboard personnel management and training A knowledge of related international maritime conventions and recommendations, and national legislation	Assessment of evidence obtained from one or more of the following: .1 approved training .2 approved in-service experience .3 approved simulator training	

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Use of leadership and managerial skill (*continued*)	Ability to apply task and workload management, including: .1 planning and co-ordination .2 personnel assignment .3 time and resource constraints .4 prioritization Knowledge and ability to apply effective resource management: .1 allocation, assignment, and prioritization of resources .2 effective communication on board and ashore .3 decisions reflect consideration of team experiences .4 assertiveness and leadership, including motivation .5 obtaining and maintaining situation awareness Knowledge and ability to apply decision-making techniques: .1 situation and risk assessment .2 identify and generate options .3 selecting course of action .4 evaluation of outcome effectiveness		The crew are allocated duties and informed of expected standards of work and behaviour in a manner appropriate to the individuals concerned Training objectives and activities are based on assessment of current competence and capabilities and operational requirements Operations are demonstrated to be in accordance with applicable rules Operations are planned and resources are allocated as needed in correct priority to perform necessary tasks Communication is clearly and unambiguously given and received Effective leadership behaviours are demonstrated Necessary team member(s) share accurate understanding of current and predicted vessel and operational status and external environment Decisions are most effective for the situation Operations are demonstrated to be effective and in accordance with applicable rules

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Use of leadership and managerial skill (*continued*)	Development, implementation, and oversight of standard operating procedures		
Organize and manage the provision of medical care on board	A thorough knowledge* of the use and contents of the following publications: .1 International Medical Guide for Ships or equivalent national publications .2 medical section of the International Code of Signals .3 Medical First Aid Guide for Use in Accidents Involving Dangerous Goods	Examination and assessment of evidence obtained from approved training	Actions taken and procedures followed correctly apply and make full use of advice available

* The relevant IMO Model Course(s) may be of assistance in the preparation of courses.

Section A-II/3
Mandatory minimum requirements for certification of officers in charge of a navigational watch and of masters on ships of less than 500 gross tonnage, engaged on near-coastal voyages

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH

Standard of competence

1 Every candidate for certification shall:

.1 be required to demonstrate the competence to undertake, at operational level, the tasks, duties and responsibilities listed in column 1 of table A-II/3;

.2 at least hold the appropriate certificate for performing VHF radiocommunications in accordance with the requirements of the Radio Regulations; and

.3 if designated to have primary responsibility for radiocommunications during distress incidents, hold the appropriate certificate issued or recognized under the provisions of the Radio Regulations.

2 The minimum knowledge, understanding and proficiency required for certification is listed in column 2 of table A-II/3.

3 The level of knowledge of the subjects listed in column 2 of table A-II/3 shall be sufficient to enable the candidate to serve in the capacity of officer in charge of a navigational watch.

4 Training and experience to achieve the necessary level of theoretical knowledge, understanding and proficiency shall be based on section A-VIII/2, part 4-1 – Principles to be observed in keeping a navigational watch, and shall also take into account the relevant requirements of this part and the guidance given in part B of this Code.

5 Every candidate for certification shall be required to provide evidence of having achieved the required standard of competence in accordance with the methods for demonstrating competence and the criteria for evaluating competence tabulated in columns 3 and 4 of table A-II/3.

Special training

6 Every candidate for certification as officer in charge of a navigational watch on ships of less than 500 gross tonnage, engaged on near-coastal voyages, who, in accordance with paragraph 4.2.1 of regulation II/3, is required to have completed special training, shall follow an approved programme of onboard training which:

.1 ensures that, during the required period of seagoing service, the candidate receives systematic practical training and experience in the tasks, duties and responsibilities of an officer in charge of a navigational watch, taking into account the guidance given in section B-II/1 of this Code;

.2 is closely supervised and monitored by qualified officers on board the ships in which the approved seagoing service is performed; and

.3 is adequately documented in a training record book or similar document*.

MASTER

7 Every candidate for certification as master on ships of less than 500 gross tonnage, engaged on near-coastal voyages, shall meet the requirements for an officer in charge of a navigational watch set out below and, in addition, shall be required to provide evidence of knowledge and ability to carry out all the duties of such a master.

* The relevant IMO Model Course(s) and a similar document produced by the International Shipping Federation may be of assistance in the preparation of training record books.

Table A-II/3

Specification of minimum standard of competence for officers in charge of a navigational watch and for masters on ships of less than 500 gross tonnage engaged on near-coastal voyages

Function: Navigation at the operational level

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Plan and conduct a coastal passage and determine position Note: Training and assessment in the use of ECDIS is not required for those who serve exclusively on ships not fitted with ECDIS. These limitations shall be reflected in the endorsement issued to the seafarer concerned	*Navigation* Ability to determine the ship's position by the use of: .1 landmarks .2 aids to navigation, including lighthouses, beacons and buoys .3 dead reckoning, taking into account winds, tides, currents and estimated speed Thorough knowledge of and ability to use nautical charts and publications, such as sailing directions, tide tables, notices to mariners, radio navigational warnings and ships' routeing information Reporting in accordance with General Principles for Ship Reporting Systems and with VTS procedures *Note*: This item is only required for certification as master	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved training ship experience .3 approved simulator training, where appropriate .4 approved laboratory equipment training using chart catalogues, charts, nautical publications, radio navigational warnings, sextant, azimuth mirror, electronic navigation equipment, echo-sounding equipment, compass	Information obtained from nautical charts and publications is relevant, interpreted correctly and properly applied The primary method of fixing the ship's position is the most appropriate to the prevailing circumstances and conditions The position is determined within the limits of acceptable instrument/system errors The reliability of the information obtained from the primary method of position fixing is checked at appropriate intervals Calculations and measurements of navigational information are accurate Charts and publications selected are the largest scale on board suitable for the area of navigation and charts are corrected in accordance with the latest information available

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Plan and conduct a coastal passage and determine position (*continued*)	Voyage planning and navigation for all conditions by acceptable methods of plotting coastal tracks, taking into account, e.g.: .1 restricted waters .2 meteorological conditions .3 ice .4 restricted visibility .5 traffic separation schemes .6 vessel traffic service (VTS) areas .7 areas of extensive tidal effects *Note*: This item is only required for certification as master		
	Thorough knowledge of and ability to use ECDIS	Examination and assessment of evidence obtained from one or more of the following: .1 approved training ship experience .2 approved ECDIS simulator training	

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Plan and conduct a coastal passage and determine position (*continued*)	*Navigational aids and equipment* Ability to operate safely and determine the ship's position by use of all navigational aids and equipment commonly fitted on board the ships concerned	Assessment of evidence obtained from approved radar navigation and ARPA simulator training	Performance checks and tests of navigation systems comply with manufacturer's recommendations, good navigational practice and IMO resolutions on performance standards for navigational equipment Interpretation and analysis of information obtained from radar is in accordance with accepted navigational practice and takes account of the limits and accuracy levels of radar
	Compasses Knowledge of the errors and corrections of magnetic compasses Ability to determine errors of the compass, using terrestrial means, and to allow for such errors		Errors in magnetic compasses are determined and applied correctly to courses and bearings
	Automatic pilot Knowledge of automatic pilot systems and procedures; change-over from manual to automatic control and vice versa; adjustment of controls for optimum performance		Selection of the mode of steering is the most suitable for prevailing weather, sea and traffic conditions and intended manoeuvres
	Meteorology Ability to use and interpret information obtained from shipborne meteorological instruments Knowledge of the characteristics of the various weather systems, reporting procedures and recording systems Ability to apply the meteorological information available		Measurements and observations of weather conditions are accurate and appropriate to the passage Meteorological information is evaluated and applied to maintain the safe passage of the vessel

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Maintain a safe navigational watch	*Watchkeeping* Thorough knowledge of content, application and intent of the International Regulations for Preventing Collisions at Sea, 1972 Knowledge of content of the Principles to be observed in keeping a navigational watch Use of routeing in accordance with the General Provisions on Ships' Routeing Use of reporting in accordance with the General Principles for Ship Reporting Systems and with VTS procedures	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved training ship experience .3 approved simulator training, where appropriate .4 approved laboratory equipment training	The conduct, handover and relief of the watch conforms with accepted principles and procedures A proper look-out is maintained at all times and in conformity with accepted principles and procedures Lights, shapes and sound signals conform with the requirements contained in the International Regulations for Preventing Collisions at Sea, 1972 and are correctly recognized The frequency and extent of monitoring of traffic, the ship and the environment conform with accepted principles and procedures Action to avoid close encounters and collision with other vessels is in accordance with the International Regulations for Preventing Collisions at Sea, 1972 Decisions to adjust course and/or speed are both timely and in accordance with accepted navigation procedures A proper record is maintained of movements and activities relating to the navigation of the ship Responsibility for safe navigation is clearly defined at all times, including periods when the master is on the bridge and when under pilotage

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Respond to emergencies	Emergency procedures, including: .1 precautions for the protection and safety of passengers in emergency situations .2 initial assessment of damage and damage control .3 action to be taken following a collision .4 action to be taken following a grounding In addition, the following material should be included for certification as master: .1 emergency steering .2 arrangements for towing and for being taken in tow .3 rescuing persons from the sea .4 assisting a vessel in distress .5 appreciation of the action to be taken when emergencies arise in port	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved training ship experience .3 approved simulator training, where appropriate .4 practical instruction	The type and scale of the emergency is promptly identified Initial actions and, if appropriate, manoeuvring are in accordance with contingency plans and are appropriate to the urgency of the situation and the nature of the emergency
Respond to a distress signal at sea	*Search and rescue* Knowledge of the contents of the International Aeronautical and Maritime Search and Rescue (IAMSAR) Manual	Examination and assessment of evidence obtained from practical instruction or approved simulator training, where appropriate	The distress or emergency signal is immediately recognized Contingency plans and instructions in standing orders are implemented and complied with

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Manoeuvre the ship and operate small ship power plants	*Ship manoeuvring and handling* Knowledge of factors affecting safe manoeuvring and handling The operation of small ship power plants and auxiliaries Proper procedures for anchoring and mooring	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved training ship experience .3 approved simulator training, where appropriate	Safe operating limits of ship propulsion, steering and power systems are not exceeded in normal manoeuvres Adjustments made to the ship's course and speed maintain safety of navigation Plant, auxiliary machinery and equipment is operated in accordance with technical specifications and within safe operating limits at all times

Function: Cargo handling and stowage at the operational level

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Monitor the loading, stowage, securing and unloading of cargoes and their care during the voyage	*Cargo handling, stowage and securing* Knowledge of safe handling, stowage and securing of cargoes, including dangerous, hazardous and harmful cargoes, and their effect on the safety of life and of the ship Use of the International Maritime Dangerous Goods (IMDG) Code	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved training ship experience .3 approved simulator training, where appropriate	Cargo operations are carried out in accordance with the cargo plan or other documents and established safety rules/regulations, equipment operating instructions and shipboard stowage limitations The handling of dangerous, hazardous and harmful cargoes complies with international regulations and recognized standards and codes of safe practice

Function: Controlling the operation of the ship and care for persons on board at the operational level

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Ensure compliance with pollution-prevention requirements	*Prevention of pollution of the marine environment and anti-pollution procedures* Knowledge of the precautions to be taken to prevent pollution of the marine environment Anti-pollution procedures and all associated equipment	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved training ship experience	Procedures for monitoring shipboard operations and ensuring compliance with MARPOL requirements are fully observed

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Maintain seaworthiness of the ship	*Ship stability* Working knowledge and application of stability, trim and stress tables, diagrams and stress-calculating equipment Understanding of fundamental actions to be taken in the event of partial loss of intact buoyancy Understanding of the fundamentals of watertight integrity *Ship construction* General knowledge of the principal structural members of a ship and the proper names for the various parts	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved training ship experience .3 approved simulator training, where appropriate .4 approved laboratory equipment training	The stability conditions comply with the IMO intact stability criteria under all conditions of loading Actions to ensure and maintain the watertight integrity of the ship are in accordance with accepted practice
Prevent, control and fight fires on board	*Fire prevention and fire-fighting appliances* Ability to organize fire drills Knowledge of classes and chemistry of fire Knowledge of fire-fighting systems Understanding of action to be taken in the event of fire, including fires involving oil systems	Assessment of evidence obtained from approved fire-fighting training and experience as set out in section A-VI/3	The type and scale of the problem is promptly identified and initial actions conform with the emergency procedure and contingency plans for the ship Evacuation, emergency shutdown and isolation procedures are appropriate to the nature of the emergency and are implemented promptly The order of priority, and the levels and time-scales of making reports and informing personnel on board, are relevant to the nature of the emergency and reflect the urgency of the problem
Operate life-saving appliances	*Life-saving* Ability to organize abandon ship drills and knowledge of the operation of survival craft and rescue boats, their launching appliances and	Assessment of evidence obtained from approved training and experience as set out in section A-VI/2, paragraphs 1 to 4	Actions in responding to abandon ship and survival situations are appropriate to the prevailing circumstances and conditions and comply with accepted safety practices and standards

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Operate life-saving appliances *(continued)*	arrangements, and their equipment, including radio life-saving appliances, satellite EPIRBs, SARTs, immersion suits and thermal protective aids		
Apply medical first aid on board ship	*Medical aid* Practical application of medical guides and advice by radio, including the ability to take effective action based on such knowledge in the case of accidents or illnesses that are likely to occur on board ship	Assessment of evidence obtained from approved training as set out in section A-VI/4, paragraphs 1 to 3	The identification of probable cause, nature and extent of injuries or conditions is prompt and treatment minimizes immediate threat to life
Monitor compliance with legislative requirements	Basic working knowledge of the relevant IMO conventions concerning safety of life at sea and protection of the marine environment	Assessment of evidence obtained from examination or approved training	Legislative requirements relating to safety of life at sea and protection of the marine environment are correctly identified
Contribute to the safety of personnel and ship	Knowledge of personal survival techniques Knowledge of fire prevention and ability to fight and extinguish fires Knowledge of elementary first aid Knowledge of personal safety and social responsibilities	Assessment of evidence obtained from approved training and experiences as set out in section A-VI/1, paragraph 2	Appropriate safety and protective equipment is correctly used Procedures and safe working practices designed to safeguard personnel and the ship are observed at all times Procedures designed to safeguard the environment are observed at all times Initial and follow-up actions on becoming aware of an emergency conform with established emergency response procedures

Section A-II/4
Mandatory minimum requirements for certification of ratings forming part of a navigational watch

Standard of competence

1 Every rating forming part of a navigational watch on a seagoing ship of 500 gross tonnage or more shall be required to demonstrate the competence to perform the navigation function at the support level, as specified in column 1 of table A-II/4.

2 The minimum knowledge, understanding and proficiency required of ratings forming part of a navigational watch on a seagoing ship of 500 gross tonnage or more is listed in column 2 of table A-II/4.

3 Every candidate for certification shall be required to provide evidence of having achieved the required standard of competence in accordance with the methods for demonstrating competence and the criteria for evaluating competence specified in columns 3 and 4 of table A-II/4. The reference to “practical test” in column 3 may include approved shore-based training in which the students undergo practical testing.

4 Where there are no tables of competence for the support level in respect to certain functions, it remains the responsibility of the Administration to determine the appropriate training, assessment and certification requirements to be applied to personnel designated to perform those functions at the support level.

Table A-II/4

Specification of minimum standard of competence for ratings forming part of a navigational watch

Function: Navigation at the support level

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Steer the ship and also comply with helm orders in the English language	Use of magnetic and gyro-compasses Helm orders Change-over from automatic pilot to hand steering and vice versa	Assessment of evidence obtained from: .1 practical test, or .2 approved in-service experience, or .3 approved training ship experience	A steady course is steered within acceptable limits, having regard to the area of navigation and prevailing sea state. Alterations of course are smooth and controlled Communications are clear and concise at all times and orders are acknowledged in a seamanlike manner
Keep a proper look-out by sight and hearing	Responsibilities of a look-out, including reporting the approximate bearing of a sound signal, light or other object in degrees or points	Assessment of evidence obtained from: .1 practical test, or .2 approved in-service experience, or .3 approved training ship experience	Sound signals, lights and other objects are promptly detected and their appropriate bearing, in degrees or points, is reported to the officer of the watch
Contribute to monitoring and controlling a safe watch	Shipboard terms and definitions Use of appropriate internal communication and alarm systems Ability to understand orders and to communicate with the officer of the watch in matters relevant to watchkeeping duties Procedures for the relief, maintenance and handover of a watch Information required to maintain a safe watch Basic environmental protection procedures	Assessment of evidence obtained from approved in-service experience or approved training ship experience	Communications are clear and concise and advice/clarification is sought from the officer on watch where watch information or instructions are not clearly understood Maintenance, handover and relief of the watch is in conformity with accepted practices and procedures

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Operate emergency equipment and apply emergency procedures	Knowledge of emergency duties and alarm signals Knowledge of pyrotechnic distress signals; satellite EPIRBs and SARTs Avoidance of false distress alerts and action to be taken in event of accidental activation	Assessment of evidence obtained from demonstration and approved in-service experience or approved training ship experience	Initial action on becoming aware of an emergency or abnormal situation is in conformity with established practices and procedures Communications are clear and concise at all times and orders are acknowledged in a seamanlike manner The integrity of emergency and distress alerting systems is maintained at all times

Section A-II/5
Mandatory minimum requirements for certification of ratings as able seafarer deck

Standard of competence

1 Every able seafarer deck serving on a seagoing ship of 500 gross tonnage or more shall be required to demonstrate the competence to perform the functions at the support level, as specified in column 1 of table A-II/5.

2 The minimum knowledge, understanding and proficiency required of an able seafarer deck serving on a seagoing ship of 500 gross tonnage or more is listed in column 2 of table A-II/5.

3 Every candidate for certification shall be required to provide evidence of having achieved the required standard of competence in accordance with the methods for demonstrating competence and the criteria for evaluating competence specified in columns 3 and 4 of table A-II/5.

Table A-II/5

Specification of minimum standards of competence of ratings as able seafarer deck

Function: Navigation at the support level

Column 1 **Competence**	Column 2 **Knowledge, understanding and proficiency**	Column 3 **Methods for demonstrating competence**	Column 4 **Criteria for evaluating competence**
Contribute to a safe navigational watch	Ability to understand orders and to communicate with the officer of the watch in matters relevant to watchkeeping duties Procedures for the relief, maintenance and handover of a watch Information required to maintain a safe watch	Assessment of evidence obtained from in-service experience or practical test	Communications are clear and concise Maintenance, handover and relief of the watch is in conformity with acceptable practices and procedures
Contribute to berthing, anchoring and other mooring operations	Working knowledge of the mooring system and related procedures, including: .1 the function of mooring and tug lines and how each line functions as part of an overall system .2 the capacities, safe working loads, and breaking strengths of mooring equipment, including mooring wires, synthetic and fibre lines, winches, anchor windlasses, capstans, bitts, chocks and bollards .3 the procedures and order of events for making fast and letting go mooring and tug lines and wires, including towing lines .4 the procedures and order of events for the use of anchors in various operations Working knowledge of the procedures and order of events associated with mooring to a buoy or buoys	Assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 practical training .3 examination .4 approved training ship experience .5 approved simulator training, where appropriate	Operations are carried out in accordance with established safety practices and equipment operating instructions

Function: Cargo handling and stowage at the support level

Column 1 **Competence**	Column 2 **Knowledge, understanding and proficiency**	Column 3 **Methods for demonstrating competence**	Column 4 **Criteria for evaluating competence**
Contribute to the handling of cargo and stores	Knowledge of procedures for safe handling, stowage and securing of cargoes and stores, including dangerous, hazardous and harmful substances and liquids Basic knowledge of and precautions to observe in connection with particular types of cargo and identification of IMDG labelling	Assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 practical training .3 examination .4 approved training ship experience .5 approved simulator training, where appropriate	Cargo and stores operations are carried out in accordance with established safety procedures and equipment operating instructions The handling of dangerous, hazardous and harmful cargoes or stores complies with established safety practices

Function: Controlling the operation of the ship and care for persons on board at the support level

Column 1 **Competence**	Column 2 **Knowledge, understanding and proficiency**	Column 3 **Methods for demonstrating competence**	Column 4 **Criteria for evaluating competence**
Contribute to the safe operation of deck equipment and machinery	Knowledge of deck equipment, including: .1 function and uses of valves and pumps, hoists, cranes, booms, and related equipment .2 function and uses of winches, windlasses, capstans and related equipment .3 hatches, watertight doors, ports, and related equipment	Assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 practical training .3 examination .4 approved training ship experience	Operations are carried out in accordance with established safety practices and equipment operating instructions

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Contribute to the safe operation of deck equipment and machinery (*continued*)	.4 fibre and wire ropes, cables and chains, including their construction, use, markings, maintenance and proper stowage		
	.5 ability to use and understand basic signals for the operation of equipment, including winches, windlasses, cranes, and hoists	Assessment of evidence obtained from practical demonstration	Communications within the operator's area of responsibility are consistently successful
	.6 ability to operate anchoring equipment under various conditions, such as anchoring, weighing anchor, securing for sea, and in emergencies	Assessment of evidence obtained from practical demonstration	Equipment operation is safely carried out in accordance with established procedures
	Knowledge of the following procedures and ability to:		
	.1 rig and unrig bosun's chairs and staging	Assessment of evidence obtained from practical demonstration	Demonstrate the proper methods for rigging and unrigging in accordance with safe industry practice
	.2 rig and unrig pilot ladders, hoists, rat-guards and gangways		
	.3 use marlin spike seamanship skills, including the proper use of knots, splices and stoppers		Demonstrate the proper creation and use of knots, splices, stoppers, whippings, servings as well as proper canvas handling
	Use and handling of deck and cargo-handling gear and equipment:		
	.1 access arrangements, hatches and hatch covers, ramps, side/bow/stern doors or elevators		
	.2 pipeline systems – bilge and ballast suctions and wells		

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Contribute to the safe operation of deck equipment and machinery (*continued*)	.3 cranes, derricks, winches Knowledge of hoisting and dipping flags and the main single-flag signals. (A, B, G, H, O, P, Q)		Demonstrate the proper use of blocks and tackle Demonstrate the proper methods for handling lines, wires, cables and chains
Apply occupational health and safety precautions	Working knowledge of safe working practices and personal shipboard safety including: .1 working aloft .2 working over the side .3 working in enclosed spaces .4 permit to work systems .5 line handling .6 lifting techniques and methods of preventing back injury .7 electrical safety .8 mechanical safety .9 chemical and biohazard safety .10 personal safety equipment	Assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 practical training .3 examination .4 approved training ship experience	Procedures designed to safeguard personnel and the ship are observed at all times Safe working practices are observed and appropriate safety and protective equipment is correctly used at all times
Apply precautions and contribute to the prevention of pollution of the marine environment	Knowledge of the precautions to be taken to prevent pollution of the marine environment Knowledge of the use and operation of anti-pollution equipment Knowledge of the approved methods for disposal of marine pollutants	Assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 practical training .3 examination .4 approved training ship experience	Procedures designed to safeguard the marine environment are observed at all times

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Operate survival craft and rescue boats	Knowledge of the operation of survival craft and rescue boats, their launching appliances and arrangements, and their equipment Knowledge of survival at sea techniques	Assessment of evidence obtained from approved training and experience as set out in section A-VI/2, paragraphs 1 to 4	Actions in responding to abandon ship and survival situations are appropriate to the prevailing circumstances and conditions and comply with accepted safety practices and standards

Function: Maintenance and repair at the support level

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Contribute to shipboard maintenance and repair	Knowledge of surface preparation techniques Ability to use painting, lubrication and cleaning materials and equipment Ability to understand and execute routine maintenance and repair procedures Understanding manufacturer's safety guidelines and shipboard instructions Knowledge of safe disposal of waste materials Knowledge of the application, maintenance and use of hand and power tools	Assessment of evidence obtained from practical demonstration Assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 practical training .3 examination .4 approved training ship experience	Maintenance and repair activities are carried out in accordance with technical, safety and procedural specifications

CHAPTER III

Standards regarding engine department

Section A-III/1

Mandatory minimum requirements for certification of officers in charge of an engineering watch in a manned engine-room or as designated duty engineers in a periodically unmanned engine-room

Training

1 The education and training required by paragraph 2.4 of regulation III/1 shall include training in mechanical and electrical workshop skills relevant to the duties of an engineer officer.

Onboard training

2 Every candidate for certification as officer in charge of an engineering watch in a manned engine-room or as designated duty engineer in a periodically unmanned engine-room of ships powered by main propulsion machinery of 750 kW or more shall follow an approved programme of onboard training which:

.1 ensures that, during the required period of seagoing service, the candidate receives systematic practical training and experience in the tasks, duties and responsibilities of an officer in charge of an engine-room watch, taking into account the guidance given in section B-III/1 of this Code;

.2 is closely supervised and monitored by a qualified and certificated engineer officer aboard the ships in which the approved seagoing service is performed; and

.3 is adequately documented in a training record book.

Standard of competence

3 Every candidate for certification as officer in charge of an engineering watch in a manned engine-room or as designated duty engineer in a periodically unmanned engine-room on a seagoing ship powered by main propulsion machinery of 750 kW propulsion power or more shall be required to demonstrate ability to undertake, at the operational level, the tasks, duties and responsibilities listed in column 1 of table A-III/1.

4 The minimum knowledge, understanding and proficiency required for certification is listed in column 2 of table A-III/1.

5 The level of knowledge of the material listed in column 2 of table A-III/1 shall be sufficient for engineer officers to carry out their watchkeeping duties.*

* The relevant IMO Model Course(s) may be of assistance in the preparation of courses.

6 Training and experience to achieve the necessary theoretical knowledge, understanding and proficiency shall be based on section A-VIII/2, part 4-2 – Principles to be observed in keeping an engineering watch, and shall take into account the relevant requirements of this part and the guidance given in part B of this Code.

7 Candidates for certification for service in ships in which steam boilers do not form part of their machinery may omit the relevant requirements of table A-III/1. A certificate awarded on such a basis shall not be valid for service on ships in which steam boilers form part of a ship's machinery until the engineer officer meets the standard of competence in the items omitted from table A-III/1. Any such limitation shall be stated on the certificate and in the endorsement.

8 The Administration may omit knowledge requirements for types of propulsion machinery other than those machinery installations for which the certificate to be awarded shall be valid. A certificate awarded on such a basis shall not be valid for any category of machinery installation which has been omitted until the engineer officer proves to be competent in these knowledge requirements. Any such limitation shall be stated on the certificate and in the endorsement.

9 Every candidate for certification shall be required to provide evidence of having achieved the required standard of competence in accordance with the methods for demonstrating competence and the criteria for evaluating competence tabulated in columns 3 and 4 of table A-III/1.

Near-coastal voyages

10 The requirements of paragraphs 2.2 to 2.5 of regulation III/1 relating to level of knowledge, understanding and proficiency required under the different sections listed in column 2 of table A-III/1 may be varied for engineer officers of ships powered by main propulsion machinery of less than 3,000 kW propulsion power engaged on near-coastal voyages, as considered necessary, bearing in mind the effect on the safety of all ships which may be operating in the same waters. Any such limitation shall be stated on the certificate and in the endorsement.

Table A-III/1

Specification of minimum standard of competence for officers in charge of an engineering watch in a manned engine-room or designated duty engineers in a periodically unmanned engine-room

Function: Marine engineering at the operational level

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Maintain a safe engineering watch	Thorough knowledge of Principles to be observed in keeping an engineering watch, including: .1 duties associated with taking over and accepting a watch .2 routine duties undertaken during a watch .3 maintenance of the machinery space logs and the significance of the readings taken .4 duties associated with handing over a watch Safety and emergency procedures; change-over of remote/automatic to local control of all systems Safety precautions to be observed during a watch and immediate actions to be taken in the event of fire or accident, with particular reference to oil systems	Assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved training ship experience .3 approved simulator training, where appropriate .4 approved laboratory equipment training	The conduct, handover and relief of the watch conforms with accepted principles and procedures The frequency and extent of monitoring of engineering equipment and systems conforms to manufacturers' recommendations and accepted principles and procedures, including Principles to be observed in keeping an engineering watch A proper record is maintained of the movements and activities relating to the ship's engineering systems

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Maintain a safe engineering watch (*continued*)	*Engine-room resource management* Knowledge of engine-room resource management principles, including: .1 allocation, assignment, and prioritization of resources .2 effective communication .3 assertiveness and leadership .4 obtaining and maintaining situational awareness .5 Consideration of team experience	Assessment of evidence obtained from one or more of the following: .1 approved training .2 approved in-service experience .3 approved simulator training	Resources are allocated and assigned as needed in correct priority to perform necessary tasks Communication is clearly and unambiguously given and received Questionable decisions and/or actions result in appropriate challenge and response Effective leadership behaviours are identified Team member(s) share accurate understanding of current and predicted engine-room and associated systems state, and of external environment
Use English in written and oral form	Adequate knowledge of the English language to enable the officer to use engineering publications and to perform engineering duties	Examination and assessment of evidence obtained from practical instruction	English language publications relevant to engineering duties are correctly interpreted Communications are clear and understood
Use internal communication systems	Operation of all internal communication systems on board	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved training ship experience .3 approved simulator training, where appropriate .4 approved laboratory equipment training	Transmission and reception of messages are consistently successful Communication records are complete, accurate and comply with statutory requirements

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Operate main and auxiliary machinery and associated control systems	Basic construction and operation principles of machinery systems, including: .1 marine diesel engine .2 marine steam turbine .3 marine gas turbine .4 marine boiler .5 shafting installations, including propeller .6 other auxiliaries, including various pumps, air compressor, purifier, fresh water generator, heat exchanger, refrigeration, air-conditioning and ventilation systems .7 steering gear .8 automatic control systems .9 fluid flow and characteristics of lubricating oil, fuel oil and cooling systems .10 deck machinery Safety and emergency procedures for operation of propulsion plant machinery, including control systems	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved training ship experience .3 approved laboratory equipment training	Construction and operating mechanisms can be understood and explained with drawings/instructions

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Operate main and auxiliary machinery and associated control systems *(continued)*	Preparation, operation, fault detection and necessary measures to prevent damage for the following machinery items and control systems: .1 main engine and associated auxiliaries .2 steam boiler and associated auxiliaries and steam systems .3 auxiliary prime movers and associated systems .4 other auxiliaries, including refrigeration, air-conditioning and ventilation systems	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved training ship experience .3 approved simulator training, where appropriate .4 approved laboratory equipment training	Operations are planned and carried out in accordance with operating manuals, established rules and procedures to ensure safety of operations and avoid pollution of the marine environment Deviations from the norm are promptly identified The output of plant and engineering systems consistently meets requirements, including bridge orders relating to changes in speed and direction The causes of machinery malfunctions are promptly identified and actions are designed to ensure the overall safety of the ship and the plant, having regard to the prevailing circumstances and conditions
Operate fuel, lubrication, ballast and other pumping systems and associated control systems	Operational characteristics of pumps and piping systems, including control systems Operation of pumping systems: .1 routine pumping operations .2 operation of bilge, ballast and cargo pumping systems Oily-water separators (or similar equipment) requirements and operation	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved training ship experience .3 approved simulator training, where appropriate .4 approved laboratory equipment training	Operations are planned and carried out in accordance with operating manuals, established rules and procedures to ensure safety of operations and avoid pollution of the marine environment Deviations from the norm are promptly identified and appropriate action is taken

Function: Electrical, electronic and control engineering at the operational level

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Operate electrical, electronic and control systems	Basic configuration and operation principles of the following electrical, electronic and control equipment: .1 electrical equipment: .a generator and distribution systems .b preparing, starting, paralleling and changing over generators .c electrical motors including starting methodologies .d high-voltage installations .e sequential control circuits and associated system devices .2 electronic equipment: .a characteristics of basic electronic circuit elements .b flowchart for automatic and control systems .c functions, characteristics and features of control systems for machinery items, including main propulsion plant operation control and steam boiler automatic controls .3 control systems: .a various automatic control methodologies and characteristics .b Proportional–Integral–Derivative (PID) control characteristics and associated system devices for process control	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved training ship experience .3 approved simulator training, where appropriate .4 approved laboratory equipment training	Operations are planned and carried out in accordance with operating manuals, established rules and procedures to ensure safety of operations Electrical, electronic and control systems can be understood and explained with drawings/instructions

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Maintenance and repair of electrical and electronic equipment	Safety requirements for working on shipboard electrical systems, including the safe isolation of electrical equipment required before personnel are permitted to work on such equipment Maintenance and repair of electrical system equipment, switchboards, electric motors, generator and DC electrical systems and equipment Detection of electric malfunction, location of faults and measures to prevent damage Construction and operation of electrical testing and measuring equipment Function and performance tests of the following equipment and their configuration: .1 monitoring systems .2 automatic control devices .3 protective devices The interpretation of electrical and simple electronic diagrams	Examination and assessment of evidence obtained from one or more of the following: .1 approved workshop skills training .2 approved practical experience and tests .3 approved in-service experience .4 approved training ship experience	Safety measures for working are appropriate Selection and use of hand tools, measuring instruments, and testing equipment are appropriate and interpretation of results is accurate Dismantling, inspecting, repairing and reassembling equipment are in accordance with manuals and good practice Reassembling and performance testing is in accordance with manuals and good practice

Function: Maintenance and repair at the operational level

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Appropriate use of hand tools, machine tools and measuring instruments for fabrication and repair on board	Characteristics and limitations of materials used in construction and repair of ships and equipment Characteristics and limitations of processes used for fabrication and repair Properties and parameters considered in the fabrication and repair of systems and components Methods for carrying out safe emergency/temporary repairs Safety measures to be taken to ensure a safe working environment and for using hand tools, machine tools and measuring instruments Use of hand tools, machine tools and measuring instruments Use of various types of sealants and packings	Assessment of evidence obtained from one or more of the following: .1 approved workshop skills training .2 approved practical experience and tests .3 approved in-service experience .4 approved training ship experience	Identification of important parameters for fabrication of typical ship-related components is appropriate Selection of materials is appropriate Fabrication is to designated tolerances Use of equipment and hand tools, machine tools and measuring instruments is appropriate and safe
Maintenance and repair of shipboard machinery and equipment	Safety measures to be taken for repair and maintenance, including the safe isolation of shipboard machinery and equipment required before personnel are permitted to work on such machinery or equipment Appropriate basic mechanical knowledge and skills	Examination and assessment of evidence obtained from one or more of the following: .1 approved workshop skills training .2 approved practical experience and tests .3 approved in-service experience	Safety procedures followed are appropriate Selection of tools and spare gear is appropriate

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Maintenance and repair of shipboard machinery and equipment *(continued)*	Maintenance and repair, such as dismantling, adjustment and reassembling of machinery and equipment The use of appropriate specialized tools and measuring instruments Design characteristics and selection of materials in construction of equipment Interpretation of machinery drawings and handbooks The interpretation of piping, hydraulic and pneumatic diagrams	.4 approved training ship experience	Dismantling, inspecting, repairing and reassembling equipment is in accordance with manuals and good practice Re-commissioning and performance testing is in accordance with manuals and good practice Selection of materials and parts is appropriate

Function: Controlling the operation of the ship and care for persons on board at the operational level

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Ensure compliance with pollution-prevention requirements	*Prevention of pollution of the marine environment* Knowledge of the precautions to be taken to prevent pollution of the marine environment Anti-pollution procedures and all associated equipment Importance of proactive measures to protect the marine environment	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved training ship experience .3 approved training	Procedures for monitoring shipboard operations and ensuring compliance with MARPOL requirements are fully observed Actions to ensure that a positive environmental reputation is maintained

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Maintain seaworthiness of the ship	*Ship stability* Working knowledge and application of stability, trim and stress tables, diagrams and stress-calculating equipment Understanding of the fundamentals of watertight integrity Understanding of fundamental actions to be taken in the event of partial loss of intact buoyancy *Ship construction* General knowledge of the principal structural members of a ship and the proper names for the various parts	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved training ship experience .3 approved simulator training, where appropriate .4 approved laboratory equipment training	The stability conditions comply with the IMO intact stability criteria under all conditions of loading Actions to ensure and maintain the watertight integrity of the ship are in accordance with accepted practice
Prevent, control and fight fires on board	*Fire prevention and fire-fighting appliances* Ability to organize fire drills Knowledge of classes and chemistry of fire Knowledge of fire-fighting systems Action to be taken in the event of fire, including fires involving oil systems	Assessment of evidence obtained from approved fire-fighting training and experience as set out in section A-VI/3, paragraphs 1 to 3	The type and scale of the problem is promptly identified and initial actions conform with the emergency procedure and contingency plans for the ship Evacuation, emergency shutdown and isolation procedures are appropriate to the nature of the emergency and are implemented promptly The order of priority, and the levels and time-scales of making reports and informing personnel on board, are relevant to the nature of the emergency and reflect the urgency of the problem

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Operate life-saving appliances	*Life-saving* Ability to organize abandon ship drills and knowledge of the operation of survival craft and rescue boats, their launching appliances and arrangements, and their equipment, including radio life-saving appliances, satellite EPIRBs, SARTs, immersion suits and thermal protective aids	Assessment of evidence obtained from approved training and experience as set out in section A-VI/2, paragraphs 1 to 4	Actions in responding to abandon ship and survival situations are appropriate to the prevailing circumstances and conditions and comply with accepted safety practices and standards
Apply medical first aid on board ship	*Medical aid* Practical application of medical guides and advice by radio, including the ability to take effective action based on such knowledge in the case of accidents or illnesses that are likely to occur on board ship	Assessment of evidence obtained from approved training as set out in section A-VI/4, paragraphs 1 to 3	Identification of probable cause, nature and extent of injuries or conditions is prompt and treatment minimizes immediate threat to life
Monitor compliance with legislative requirements	Basic working knowledge of the relevant IMO conventions concerning safety of life at sea and protection of the marine environment	Assessment of evidence obtained from examination or approved training	Legislative requirements relating to safety of life at sea and protection of the marine environment are correctly identified
Application of leadership and teamworking skills	Working knowledge of shipboard personnel management and training A knowledge of related international maritime conventions and recommendations, and national legislation Ability to apply task and workload management, including: .1 planning and co-ordination .2 personnel assignment .3 time and resource constraints .4 prioritization	Assessment of evidence obtained from one or more of the following: .1 approved training .2 approved in-service experience .3 practical demonstration	The crew are allocated duties and informed of expected standards of work and behaviour in a manner appropriate to the individuals concerned Training objectives and activities are based on assessment of current competence and capabilities and operational requirements. Operations are demonstrated to be in accordance with applicable rules

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Application of leadership and teamworking skills *(continued)*	Knowledge and ability to apply effective resource management: .1 allocation, assignment, and prioritization of resources .2 effective communication on board and ashore .3 decisions reflect consideration of team experiences .4 assertiveness and leadership, including motivation .5 obtaining and maintaining situational awareness Knowledge and ability to apply decision-making techniques: .1 Situation and risk assessment .2 Identify and consider generated options .3 Selecting course of action .4 Evaluation of outcome effectiveness		Operations are planned and resources are allocated as needed in correct priority to perform necessary tasks Communication is clearly and unambiguously given and received Effective leadership behaviours are demonstrated Necessary team member(s) share accurate understanding of current and predicted vessel and operational status and external environment Decisions are most effective for the situation
Contribute to the safety of personnel and ship	Knowledge of personal survival techniques Knowledge of fire prevention and ability to fight and extinguish fires Knowledge of elementary first aid Knowledge of personal safety and social responsibilities	Assessment of evidence obtained from approved training and experience as set out in section A-VI/1, paragraph 2	Appropriate safety and protective equipment is correctly used Procedures and safe working practices designed to safeguard personnel and the ship are observed at all times Procedures designed to safeguard the environment are observed at all times Initial and follow-up actions on becoming aware of an emergency conform with established emergency response procedures

Section A-III/2
Mandatory minimum requirements for certification of chief engineer officers and second engineer officers on ships powered by main propulsion machinery of 3,000 kW propulsion power or more

Standard of competence

1 Every candidate for certification as chief engineer officer and second engineer officer of seagoing ships powered by main propulsion machinery of 3,000 kW power or more shall be required to demonstrate ability to undertake, at the management level, the tasks, duties and responsibilities listed in column 1 of table A-III/2.

2 The minimum knowledge, understanding and proficiency required for certification is listed in column 2 of table A-III/2. This incorporates, expands and extends in depth the subjects listed in column 2 of table A-III/1 for officers in charge of an engineering watch.

3 Bearing in mind that a second engineer officer shall be in a position to assume the responsibilities of the chief engineer officer at any time, assessment in these subjects shall be designed to test the candidate's ability to assimilate all available information that affects the safe operation of the ship's machinery and the protection of the marine environment.

4 The level of knowledge of the subjects listed in column 2 of table A-III/2 shall be sufficient to enable the candidate to serve in the capacity of chief engineer officer or second engineer officer.*

5 Training and experience to achieve the necessary level of theoretical knowledge, understanding and proficiency shall take into account the relevant requirements of this part and the guidance given in part B of this Code.

6 The Administration may omit knowledge requirements for types of propulsion machinery other than those machinery installations for which the certificate to be awarded shall be valid. A certificate awarded on such a basis shall not be valid for any category of machinery installation which has been omitted until the engineer officer proves to be competent in these knowledge requirements. Any such limitation shall be stated on the certificate and in the endorsement.

7 Every candidate for certification shall be required to provide evidence of having achieved the required standard of competence in accordance with the methods for demonstrating competence and the criteria for evaluating competence tabulated in columns 3 and 4 of table A-III/2.

Near-coastal voyages

8 The level of knowledge, understanding and proficiency required under the different sections listed in column 2 of table A-III/2 may be varied for engineer officers of ships powered by main propulsion machinery with limited propulsion power engaged on near-coastal voyages, as considered necessary, bearing in mind the effect on the safety of all ships which may be operating in the same waters. Any such limitation shall be stated on the certificate and in the endorsement.

* The relevant IMO Model Course(s) may be of assistance in the preparation of courses.

Table A-III/2

Specification of minimum standard of competence for chief engineer officers and second engineer officers on ships powered by main propulsion machinery of 3,000 kW propulsion power or more

Function: Marine engineering at the management level

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Manage the operation of propulsion plant machinery	Design features, and operative mechanism of the following machinery and associated auxiliaries: .1 marine diesel engine .2 marine steam turbine .3 marine gas turbine .4 marine steam boiler	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved training ship experience .3 approved laboratory equipment training .4 approved simulator training, where appropriate	Explanation and understanding of design features and operating mechanisms are appropriate
Plan and schedule operations	*Theoretical knowledge* Thermodynamics and heat transmission Mechanics and hydromechanics Propulsive characteristics of diesel engines, steam and gas turbines, including speed, output and fuel consumption Heat cycle, thermal efficiency and heat balance of the following: .1 marine diesel engine .2 marine steam turbine .3 marine gas turbine .4 marine steam boiler	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved training ship experience .3 approved simulator training, where appropriate .4 approved laboratory equipment training	The planning and preparation of operations is suited to the design parameters of the power installation and to the requirements of the voyage

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Plan and schedule operations *(continued)*	Refrigerators and refrigeration cycle Physical and chemical properties of fuels and lubricants Technology of materials Naval architecture and ship construction, including damage control		
Operation, surveillance, performance assessment and maintaining safety of propulsion plant and auxiliary machinery	*Practical knowledge* Start up and shut down main propulsion and auxiliary machinery, including associated systems Operating limits of propulsion plant The efficient operation, surveillance, performance assessment and maintaining safety of propulsion plant and auxiliary machinery Functions and mechanism of automatic control for main engine Functions and mechanism of automatic control for auxiliary machinery including but not limited to: .1 generator distribution systems .2 steam boilers .3 oil purifier .4 refrigeration system .5 pumping and piping systems .6 steering gear system .7 cargo-handling equipment and deck machinery	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved training ship experience .3 approved simulator training, where appropriate .4 approved laboratory equipment training	The methods of preparing for the start-up and of making available fuels, lubricants, cooling water and air are the most appropriate Checks of pressures, temperatures and revolutions during the start-up and warm-up period are in accordance with technical specifications and agreed work plans Surveillance of main propulsion plant and auxiliary systems is sufficient to maintain safe operating conditions The methods of preparing the shutdown and of supervising the cooling down of the engine are the most appropriate The methods of measuring the load capacity of the engines are in accordance with technical specifications Performance is checked against bridge orders Performance levels are in accordance with technical specifications

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Manage fuel, lubrication and ballast operations	Operation and maintenance of machinery, including pumps and piping systems	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved training ship experience .3 approved simulator training, where appropriate	Fuel and ballast operations meet operational requirements and are carried out so as to prevent pollution of the marine environment

Function: Electrical, electronic and control engineering at the management level

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Manage operation of electrical and electronic control equipment	*Theoretical knowledge* Marine electrotechnology, electronics, power electronics, automatic control engineering and safety devices Design features and system configurations of automatic control equipment and safety devices for the following: .1 main engine .2 generator and distribution system .3 steam boiler Design features and system configurations of operational control equipment for electrical motors Design features of high-voltage installations Features of hydraulic and pneumatic control equipment	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved training ship experience .3 approved simulator training, where appropriate .4 approved laboratory equipment training	Operation of equipment and system is in accordance with operating manuals Performance levels are in accordance with technical specifications
Manage troubleshooting restoration of electrical and electronic control equipment to operating condition	*Practical knowledge* Troubleshooting of electrical and electronic control equipment Function test of electrical, electronic control equipment and safety devices Troubleshooting of monitoring systems Software version control	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved training ship experience .3 approved simulator training, where appropriate .4 approved laboratory equipment training	Maintenance activities are correctly planned in accordance with technical, legislative, safety and procedural specifications Inspection, testing and troubleshooting of equipment are appropriate

Function: Maintenance and repair at the management level

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Manage safe and effective maintenance and repair procedures	*Theoretical knowledge* Marine engineering practice *Practical knowledge* Manage safe and effective maintenance and repair procedures Planning maintenance, including statutory and class verifications Planning repairs	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved training ship experience .3 approved workshop training	Maintenance activities are correctly planned and carried out in accordance with technical, legislative, safety and procedural specifications Appropriate plans, specifications, materials and equipment are available for maintenance and repair Action taken leads to the restoration of plant by the most suitable method
Detect and identify the cause of machinery malfunctions and correct faults	*Practical knowledge* Detection of machinery malfunction, location of faults and action to prevent damage Inspection and adjustment of equipment Non-destructive examination	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved training ship experience .3 approved simulator training, where appropriate .4 approved laboratory equipment training	The methods of comparing actual operating conditions are in accordance with recommended practices and procedures Actions and decisions are in accordance with recommended operating specifications and limitations
Ensure safe working practices	*Practical knowledge* Safe working practices	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved training ship experience .3 approved laboratory equipment training	Working practices are in accordance with legislative requirements, codes of practice, permits to work and environmental concerns

Function: Controlling the operation of the ship and care for persons on board at the management level

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Control trim, stability and stress	Understanding of fundamental principles of ship construction and the theories and factors affecting trim and stability and measures necessary to preserve trim and stability Knowledge of the effect on trim and stability of a ship in the event of damage to and consequent flooding of a compartment and countermeasures to be taken Knowledge of IMO recommendations concerning ship stability	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved training ship experience .3 approved simulator training, where appropriate	Stability and stress conditions are maintained within safety limits at all times
Monitor and control compliance with legislative requirements and measures to ensure safety of life at sea and protection of the marine environment	Knowledge of relevant international maritime law embodied in international agreements and conventions Regard shall be paid especially to the following subjects: .1 certificates and other documents required to be carried on board ships by international conventions, how they may be obtained and the period of their legal validity .2 responsibilities under the relevant requirements of the International Convention on Load Lines .3 responsibilities under the relevant requirements of the International Convention for the Safety of Life at Sea	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved training ship experience .3 approved simulator training, where appropriate	Procedures for monitoring operations and maintenance comply with legislative requirements Potential non-compliance is promptly and fully identified Requirements for renewal and extension of certificates ensure continued validity of survey items and equipment

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Monitor and control compliance with legislative requirements and measures to ensure safety of life at sea and protection of the marine environment (*continued*)	.4 responsibilities under the International Convention for the Prevention of Pollution from Ships .5 maritime declarations of health and the requirements of the International Health Regulations .6 responsibilities under international instruments affecting the safety of the ships, passengers, crew or cargo .7 methods and aids to prevent pollution of the environment by ships .8 knowledge of national legislation for implementing international agreements and conventions		
Maintain safety and security of the vessel, crew and passengers and the operational condition of life-saving, fire-fighting and other safety systems	A thorough knowledge of life-saving appliance regulations (International Convention for the Safety of Life at Sea) Organization of fire and abandon ship drills Maintenance of operational condition of life-saving, fire-fighting and other safety systems Actions to be taken to protect and safeguard all persons on board in emergencies Actions to limit damage and salve the ship following fire, explosion, collision or grounding	Examination and assessment of evidence obtained from practical instruction and approved in-service training and experience	Procedures for monitoring fire-detection and safety systems ensure that all alarms are detected promptly and acted upon in accordance with established emergency procedures

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Develop emergency and damage control plans and handle emergency situations	Ship construction, including damage control Methods and aids for fire prevention, detection and extinction Functions and use of life-saving appliances	Examination and assessment of evidence obtained from approved in-service training and experience	Emergency procedures are in accordance with the established plans for emergency situations
Use leadership and managerial skills	Knowledge of shipboard personnel management and training A knowledge of international maritime conventions and recommendations, and related national legislation Ability to apply task and workload management, including: .1 planning and coordination .2 personnel assignment .3 time and resource constraints .4 prioritization Knowledge and ability to apply effective resource management: .1 allocation, assignment, and prioritization of resources .2 effective communication on board and ashore .3 decisions reflect consideration of team experience	Assessment of evidence obtained from one or more of the following: .1 approved training .2 approved in-service experience .3 approved simulator training	The crew are allocated duties and informed of expected standards of work and behaviour in a manner appropriate to the individuals concerned Training objectives and activities are based on assessment of current competence and capabilities and operational requirements Operations are demonstrated to be in accordance with applicable rules Operations are planned and resources are allocated as needed in correct priority to perform necessary tasks Communication is clearly and unambiguously given and received

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Use leadership and managerial skills (*continued*)	.4 assertiveness and leadership, including motivation .5 obtaining and maintaining situation awareness Knowledge and ability to apply decision-making techniques: .1 situation and risk assessment .2 identify and generate options .3 select course of action .4 evaluation of outcome effectiveness Development, implementation, and oversight of standard operating procedures		Effective leadership behaviours are demonstrated Necessary team member(s) share accurate understanding of current and predicted vessel and operational status and external environment Decisions are most effective for the situation Operations are demonstrated to be effective and in accordance with applicable rules

Section A-III/3
Mandatory minimum requirements for certification of chief engineer officers and second engineer officers on ships powered by main propulsion machinery of between 750 kW and 3,000 kW propulsion power

Standard of competence

1 Every candidate for certification as chief engineer officer and second engineer officer of seagoing ships powered by main propulsion machinery of between 750 kW and 3,000 kW power shall be required to demonstrate ability to undertake, at management level, the tasks, duties and responsibilities listed in column 1 of table A-III/2.

2 The minimum knowledge, understanding and proficiency required for certification is listed in column 2 of table A-III/2. This incorporates, expands and extends in depth the subjects listed in column 2 of table A-III/1 for officers in charge of an engineering watch in a manned engine-room or designated duty engineers in a periodically unmanned engine-room.

3 Bearing in mind that a second engineer officer shall be in a position to assume the responsibilities of the chief engineer officer at any time, assessment in these subjects shall be designed to test the candidate's ability to assimilate all available information that affects the safe operation of the ship's machinery and the protection of the marine environment.

4 The level of knowledge of the subjects listed in column 2 of table A-III/2 may be lowered but shall be sufficient to enable the candidate to serve in the capacity of chief engineer officer or second engineer officer at the range of propulsion power specified in this section.

5 Training and experience to achieve the necessary level of theoretical knowledge, understanding and proficiency shall take into account the relevant requirements of this part and the guidance given in part B of this Code.

6 The Administration may omit knowledge requirements for types of propulsion machinery other than those machinery installations for which the certificate to be awarded shall be valid. A certificate awarded on such a basis shall not be valid for any category of machinery installation which has been omitted until the engineer officer proves to be competent in these knowledge requirements. Any such limitation shall be stated on the certificate and in the endorsement.

7 Every candidate for certification shall be required to provide evidence of having achieved the required standard of competence in accordance with the methods for demonstrating competence and the criteria for evaluating competence tabulated in columns 3 and 4 of table A-III/2.

Near-coastal voyages

8 The level of knowledge, understanding and proficiency required under the different sections listed in column 2 of table A-III/2 and the requirements of paragraphs 2.1.1 and 2.1.2 of regulation III/3 may be varied for engineer officers of ships powered by main propulsion machinery of less than 3,000 kW main propulsion power engaged on near-coastal voyages, as considered necessary, bearing in mind the effect on the safety of all ships which may be operating in the same waters. Any such limitation shall be stated on the certificate and in the endorsement.

Section A-III/4
Mandatory minimum requirements for certification of ratings forming part of a watch in a manned engine-room or designated to perform duties in a periodically unmanned engine-room

Standard of competence

1 Every rating forming part of an engine-room watch on a seagoing ship shall be required to demonstrate the competence to perform the marine engineering function at the support level, as specified in column 1 of table A-III/4.

2 The minimum knowledge, understanding and proficiency required of ratings forming part of an engine-room watch is listed in column 2 of table A-III/4.

3 Every candidate for certification shall be required to provide evidence of having achieved the required standard of competence in accordance with the methods for demonstrating competence and the criteria for evaluating competence specified in columns 3 and 4 of table A-III/4. The reference to “practical test” in column 3 may include approved shore-based training in which the students undergo practical testing.

4 Where there are no tables of competence for the support level with respect to certain functions, it remains the responsibility of the Administration to determine the appropriate training, assessment and certification requirements to be applied to personnel designated to perform those functions at the support level.

Table A-III/4

Specification of minimum standard of competence for ratings forming part of an engineering watch

Function: Marine engineering at the support level

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch Understand orders and be understood in matters relevant to watchkeeping duties	Terms used in machinery spaces and names of machinery and equipment Engine-room watchkeeping procedures Safe working practices as related to engine-room operations Basic environmental protection procedures Use of appropriate internal communication system Engine-room alarm systems and ability to distinguish between the various alarms, with special reference to fire-extinguishing gas alarms	Assessment of evidence obtained from one or more of the following: .1 approved in-service experience; .2 approved training ship experience; or .3 practical test	Communications are clear and concise and advice or clarification is sought from the officer of the watch where watch information or instructions are not clearly understood Maintenance, handover and relief of the watch is in conformity with accepted principles and procedures
For keeping a boiler watch: Maintain the correct water levels and steam pressures	Safe operation of boilers	Assessment of evidence obtained from one or more of the following: .1 approved in-service experience; .2 approved training ship experience; .3 practical test; or .4 approved simulator training, where appropriate	Assessment of boiler condition is accurate and based on relevant information available from local and remote indicators and physical inspections The sequence and timing of adjustments maintains safety and optimum efficiency

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Operate emergency equipment and apply emergency procedures	Knowledge of emergency duties Escape routes from machinery spaces Familiarity with the location and use of fire-fighting equipment in the machinery spaces	Assessment of evidence obtained from demonstration and approved in-service experience or approved training ship experience	Initial action on becoming aware of an emergency or abnormal situation conforms with established procedures Communications are clear and concise at all times and orders are acknowledged in a seamanlike manner

Section A-III/5

Mandatory minimum requirements for certification of ratings as able seafarer engine in a manned engine-room or designated to perform duties in a periodically unmanned engine-room

Standard of competence

1 Every able seafarer engine serving on a seagoing ship powered by main propulsion machinery of 750 kW propulsion power or more shall be required to demonstrate the competence to perform the functions at the support level, as specified in column 1 of table A-III/5.

2 The minimum knowledge, understanding and proficiency required of an able seafarer engine serving on a seagoing ship powered by main propulsion machinery of 750 kW propulsion power or more is listed in column 2 of table A-III/5.

3 Every candidate for certification shall be required to provide evidence of having achieved the required standard of competence in accordance with the methods for demonstrating competence and the criteria for evaluating competence specified in columns 3 and 4 of table A-III/5.

Table A-III/5

Specification of minimum standards of competence for ratings as able seafarer engine in a manned engine-room or designated to perform duties in a periodically unmanned engine-room

Function: Marine engineering at the support level

Column 1 **Competence**	Column 2 **Knowledge, understanding and proficiency**	Column 3 **Methods for demonstrating competence**	Column 4 **Criteria for evaluating competence**
Contribute to a safe engineering watch	Ability to understand orders and to communicate with the officer of the watch in matters relevant to watchkeeping duties Procedures for the relief, maintenance and handover of a watch Information required to maintain a safe watch	Assessment of evidence obtained from in-service experience or practical test	Communications are clear and concise Maintenance, handover and relief of the watch is in conformity with acceptable practices and procedures
Contribute to the monitoring and controlling of an engine-room watch	Basic knowledge of the function and operation of main propulsion and auxiliary machinery Basic understanding of main propulsion and auxiliary machinery control pressures, temperatures and levels	Assessment of evidence obtained from one or more of the following: .1 approved in-service experience; .2 approved training ship experience; or .3 practical test	The frequency and extent of monitoring of main propulsion and auxiliary machinery conforms with accepted principles and procedures Deviations from the norm are identified Unsafe conditions or potential hazards are promptly recognized, reported and rectified before work continues
Contribute to fuelling and oil transfer operations	Knowledge of the function and operation of fuel system and oil transfer operations, including: .1 preparations for fuelling and transfer operations .2 procedures for connecting and disconnecting fuelling and transfer hoses	Assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 practical training .3 examination .4 approved training ship experience	Transfer operations are carried out in accordance with established safety practices and equipment operating instructions The handling of dangerous, hazardous and harmful liquids complies with established safety practices Communications within the operator’s area of responsibility are consistently successful

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Contribute to fuelling and oil transfer operations (*continued*)	.3 procedures relating to incidents that may arise during fuelling or transferring operation .4 securing from fuelling and transfer operations .5 ability to correctly measure and report tank levels	Assessment of evidence obtained from practical demonstration	
Contribute to bilge and ballast operations	Knowledge of the safe function, operation and maintenance of the bilge and ballast systems, including: .1 reporting incidents associated with transfer operations .2 ability to correctly measure and report tank levels	Assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 practical training .3 examination .4 approved training ship experience Assessment of evidence obtained from practical demonstration	Operations and maintenance are carried out in accordance with established safety practices and equipment operating instructions and pollution of the marine environment is avoided Communications within the operator's area of responsibility are consistently successful
Contribute to the operation of equipment and machinery	Safe operation of equipment, including: .1 valves and pumps .2 hoists and lifting equipment .3 hatches, watertight doors, ports and related equipment Ability to use and understand basic crane, winch and hoist signals	Assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 practical training .3 examination .4 approved training ship experience Assessment of evidence obtained from practical demonstration	Operations are carried out in accordance with established safety practices and equipment operating instructions Communications within the operator's area of responsibility are consistently successful

Function: Electrical, electronic and control engineering at the support level

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Safe use of electrical equipment	Safe use and operation of electrical equipment, including: .1 safety precautions before commencing work or repair .2 isolation procedures .3 emergency procedures .4 different voltages on board Knowledge of the causes of electric shock and precautions to be observed to prevent shock	Assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 practical training .3 examination .4 approved training ship experience	Recognizes and reports electrical hazards and unsafe equipment Understands safe voltages for hand-held equipment Understands risks associated with high-voltage equipment and onboard work

Function: Maintenance and repair at the support level

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Contribute to shipboard maintenance and repair	Knowledge of surface preparation techniques Ability to use painting, lubrication and cleaning materials and equipment Knowledge of safe disposal of waste materials Ability to understand and execute routine maintenance and repair procedures Understanding manufacturer's safety guidelines and shipboard instructions	Assessment of evidence obtained from practical demonstration Assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 practical training .3 examination .4 approved training ship experience	Maintenance activities are carried out in accordance with technical, safety and procedural specifications Selection and use of equipment and tools is appropriate

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Contribute to shipboard maintenance and repair (*continued*)	Knowledge of the application, maintenance and use of hand and power tools and measuring instruments and machine tools Knowledge of metalwork		

Function: **Controlling the operation of the ship and care for persons on board at the support level**

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Contribute to the handling of stores	Knowledge of procedures for safe handling, stowage and securing of stores	Assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 practical training .3 examination .4 approved training ship experience	Stores operations are carried out in accordance with established safety practices and equipment operating instructions The handling of dangerous, hazardous and harmful stores complies with established safety practices Communications within the operator's area of responsibility are consistently successful
Apply precautions and contribute to the prevention of pollution of the marine environment	Knowledge of the precautions to be taken to prevent pollution of the marine environment Knowledge of use and operation of anti-pollution equipment Knowledge of approved methods for disposal of marine pollutants	Assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 practical training .3 examination .4 approved training ship experience	Procedures designed to safeguard the marine environment are observed at all times

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Apply occupational health and safety procedures	Working knowledge of safe working practices and personal shipboard safety, including: .1 electrical safety .2 lockout/tag-out .3 mechanical safety .4 permit to work systems .5 working aloft .6 working in enclosed spaces .7 lifting techniques and methods of preventing back injury .8 chemical and biohazard safety .9 personal safety equipment	Assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 practical training .3 examination .4 approved training ship experience	Procedures designed to safeguard personnel and the ship are observed at all times Safe working practices are observed and appropriate safety and protective equipment is correctly used at all times

Section A-III/6
Mandatory minimum requirements for certification of electro-technical officer

Training

1 The education and training required by paragraph 2.3 of regulation III/6 shall include training in electronic and electrical workshop skills relevant to the duties of electro-technical officer.

Onboard training

2 Every candidate for certification as electro-technical officer shall follow an approved programme of onboard training which:

.1 ensures that, during the required period of seagoing service, the candidate receives systematic practical training and experience in the tasks, duties and responsibilities of an electro-technical officer;

.2 is closely supervised and monitored by qualified and certificated officers aboard the ships in which the approved seagoing service is performed; and

.3 is adequately documented in a training record book.

Standard of competence

3 Every candidate for certification as electro-technical officer shall be required to demonstrate the ability to undertake the tasks, duties and responsibilities listed in column 1 of table A-III/6.

4 The minimum knowledge, understanding and proficiency required for certification is listed in column 2 of table A-III/6 and it shall take into account the guidance given in part B of this Code.

5 Every candidate for certification shall be required to provide evidence of having achieved the required standard of competence tabulated in columns 3 and 4 of table A-III/6.

Table A-III/6

Specification of minimum standards of competence for electro-technical officers

Function: **Electrical, electronic and control engineering at the operational level**

Column 1	**Column 2**	**Column 3**	**Column 4**
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Monitor the operation of electrical, electronic and control systems	Basic understanding of the operation of mechanical engineering systems, including: .1 prime movers, including main propulsion plant .2 engine-room auxiliary machineries .3 steering systems .4 cargo handling systems .5 deck machineries .6 hotel systems Basic knowledge of heat transmission, mechanics and hydromechanics *Knowledge of:* Electro-technology and electrical machines theory Fundamentals of electronics and power electronics Electrical power distribution boards and electrical equipment Fundamentals of automation, automatic control systems and technology Instrumentation, alarm and monitoring systems Electrical drives Technology of electrical materials	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved training ship experience .3 approved simulator training, where appropriate .4 approved laboratory equipment training	Operation of equipment and system is in accordance with operating manuals Performance levels are in accordance with technical specifications

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Monitor the operation of electrical, electronic and control systems (*continued*)	Electro-hydraulic and electro-pneumatic control systems Appreciation of the hazards and precautions required for the operation of power systems above 1,000 volts		
Monitor the operation of automatic control systems of propulsion and auxiliary machinery	Preparation of control systems of propulsion and auxiliary machinery for operation	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved training ship experience .3 approved simulator training, where appropriate .4 approved laboratory equipment training	Surveillance of main propulsion plant and auxiliary systems is sufficient to maintain safe operation condition
Operate generators	Coupling, load sharing and changing over generators	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved training ship experience .3 approved simulator training, where appropriate .4 approved laboratory equipment training	Operations are planned and carried out in accordance with established rules and procedures to ensure safety of operations

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Operate and maintain power systems in excess of 1,000 volts	*Theoretical knowledge* High-voltage technology Safety precautions and procedures Electrical propulsion of the ships' electrical motors and control systems *Practical knowledge* Safe operation and maintenance of high-voltage systems, including knowledge of the special technical type of high-voltage systems and the danger resulting from operational voltage of more than 1,000 volts	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved training ship experience .3 approved simulator training, where appropriate .4 approved laboratory equipment training	Operations are planned and carried out in accordance with operating manuals, established rules and procedures to ensure safety of operations
Operate computers and computer networks on ships	Understanding of: .1 main features of data processing .2 construction and use of computer networks on ships .3 bridge-based, engine-room-based and commercial computer use	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved training ship experience .3 approved simulator training, where appropriate .4 approved laboratory equipment training	Computer networks and computers are correctly checked and handled
Use hand tools, electrical and electronic measurement equipment for fault finding, maintenance and repair operations	Safety requirements for working on shipboard electrical systems Knowledge of the causes of electric shock and precautions to be observed to prevent shock Construction and operational characteristics of shipboard AC and DC systems and equipment	Assessment of evidence obtained from one or more of the following: .1 approved workshop skills training .2 approved practical experience and tests	Implementation of safety procedures is satisfactory Recognizes and reports electrical hazards and unsafe equipment Selection and use of test equipment is appropriate and interpretation of results is accurate

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Use hand tools, electrical and electronic measurement equipment for fault finding, maintenance and repair operations *(continued)*	Construction and operation of electrical test and measuring equipment Application of safe working practices		Selection of procedures for the conduct of repair and maintenance is in accordance with manuals and good practice Commissioning and performance testing of equipment and systems brought back to service after repair is in accordance with manuals and good practice
Use English in written and oral form	Adequate knowledge of the English language to enable the officer to use engineering publications and to perform the officer's duties	Examination and assessment of evidence obtained from practical instructions	English language publications relevant to the officer's duties are correctly interpreted Communications are clear and understood

Function: Maintenance and repair at the operational level

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Maintain and repair automation and control systems of main propulsion and auxiliary machinery	Appropriate electrical and mechanical knowledge and skills *Safety and emergency procedures* Safe isolation of equipment and associated systems required before personnel are permitted to work on such plant or equipment Practical knowledge for the testing, maintenance, fault finding and repair Test, detect faults and maintain and restore electrical and electronic control equipment to operating condition	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved training ship experience .3 approved simulator training, where appropriate .4 approved laboratory equipment training	The effect of malfunctions on associated plant and systems is accurately identified, ship's technical drawings are correctly interpreted, measuring and calibrating instruments are correctly used and actions taken are justified Isolation, dismantling and reassembly of plant and equipment are in accordance with manufacturer's safety guidelines and shipboard instructions and legislative and safety specifications. Action taken leads to the restoration of automation and control systems by the method most suitable and appropriate to the prevailing circumstances and conditions
Maintain and repair bridge navigation equipment and ship communication systems	Knowledge of the principles and maintenance procedures of navigation equipment, internal and external communication systems *Theoretical knowledge* Electrical and electronic systems operating in flammable areas *Practical knowledge* Carrying out safe maintenance and repair procedures Detection of machinery malfunction, location of faults and action to prevent damage		The effect of malfunctions on associated plant and systems is accurately identified, ship's technical drawings are correctly interpreted, measuring and calibrating instruments are correctly used and actions taken are justified Isolation, dismantling and reassembly of plant and equipment are in accordance with manufacturer's safety guidelines and shipboard instructions, legislative and safety specifications. Action taken leads to the restoration of bridge navigation equipment and ship communication systems by the method most suitable and appropriate to the prevailing circumstances and conditions

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Maintain and repair electrical, electronic and control systems of deck machinery and cargo-handling equipment	Appropriate electrical and mechanical knowledge and skills *Safety and emergency procedures* Safe isolation of equipment and associated systems required before personnel are permitted to work on such plant or equipment Practical knowledge for the testing, maintenance, fault finding and repair Test, detect faults and maintain and restore electrical and electronic control equipment to operating condition	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved training ship experience .3 approved simulator training, where appropriate .4 approved laboratory equipment training	The effect of malfunctions on associated plant and systems is accurately identified, ship's technical drawings are correctly interpreted, measuring and calibrating instruments are correctly used and actions taken are justified Isolation, dismantling and reassembly of plant and equipment are in accordance with manufacturer's safety guidelines and shipboard instructions, legislative and safety specifications. Action taken leads to the restoration of deck machinery and cargo-handling equipment by the method most suitable and appropriate to the prevailing circumstances and conditions
Maintain and repair control and safety systems of hotel equipment	*Theoretical knowledge* Electrical and electronic systems operating in flammable areas *Practical knowledge* Carrying out safe maintenance and repair procedures Detection of machinery malfunction, location of faults and action to prevent damage		The effect of malfunctions on associated plant and systems is accurately identified, ship's technical drawings are correctly interpreted, measuring and calibrating instruments are correctly used and actions taken are justified Isolation, dismantling and reassembly of plant and equipment are in accordance with manufacturer's safety guidelines and shipboard instructions, legislative and safety specifications. Action taken leads to the restoration of control and safety systems of hotel equipment by the method most suitable and appropriate to the prevailing circumstances and conditions

Function: Controlling the operation of the ship and care for persons on board at operational level

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Organize and manage subordinate crew	A knowledge of personnel management, organization and training on board ships A knowledge of international maritime conventions and recommendations, and related national legislation	Examination and assessment of evidence obtained from approved in-service training and experience	The crew are allocated duties and informed of expected standards of work and behaviour in a manner appropriate to the individuals concerned Training objectives and activities are based on an assessment of current competence and capabilities and operational requirements
Ensure compliance with pollution-prevention requirements	*Prevention of pollution of the marine environment* Knowledge of the precautions to be taken to prevent pollution of the marine environment Anti-pollution procedures and all associated equipment	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved training ship experience	Procedures for monitoring shipboard operations and ensuring compliance with MARPOL requirements are fully observed
Prevent, control and fight fire on board	*Fire prevention and fire-fighting appliances* Knowledge of fire prevention Ability to organize fire drills Knowledge of fire-fighting systems Action to be taken in the event of fire, including fires involving oil systems	Assessment of evidence obtained from approved fire-fighting training and experience as set out in section A-VI/3, paragraphs 1 to 3	The type and scale of the problem is promptly identified and initial actions conform with the emergency procedure and contingency plans for the ship Evacuation, emergency shutdown and isolation procedures are appropriate to the nature of the emergency and are implemented promptly The order of priority, and the levels and time-scales of making reports and informing personnel on board, are relevant to the nature of the emergency and reflect the urgency of the problem

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Operate life-saving appliances	Ability to organize abandon ship drills and knowledge of the operation of survival craft and rescue boats, their launching appliances and arrangements, and their equipment, including radio life-saving appliances, satellite EPIRBs, SARTs, immersion suits and thermal protective aids Knowledge of survival at sea techniques	Assessment of evidence obtained from approved training and experience as set out in section A-VI/2, paragraphs 1 to 4	Actions in responding to abandon ship and survival situations are appropriate to the prevailing circumstances and conditions and comply with accepted safety practices and standards
Apply medical first aid on board ship	Practical application of medical guides and advice by radio, including the ability to take effective action based on such knowledge in the case of accidents or illnesses that are likely to occur on board ship	Assessment of evidence obtained from approved training as set out in section A-VI/4, paragraphs 1 to 3	Identification of probable cause, nature and extent of injuries or conditions is prompt and treatment minimizes immediate threat to life

Section A-III/7
Mandatory minimum requirements for certification of electro-technical rating

1 Every electro-technical rating serving on a seagoing ship powered by main propulsion machinery of 750 kW propulsion power or more shall be required to demonstrate the competence to perform the functions at the support level, as specified in column 1 of table A-III/7.

2 The minimum knowledge, understanding and proficiency required of an electro-technical rating serving on a seagoing ship powered by main propulsion machinery of 750 kW propulsion power or more is listed in column 2 of table A-III/7.

3 Every candidate for certification shall be required to provide evidence of having achieved the required standard of competence in accordance with the methods for demonstrating competence and the criteria for evaluating competence specified in columns 3 and 4 of table A-III/7.

Table A-III/7

Specification of minimum standards of competence for electro-technical ratings

Function: Electrical, electronic and control engineering at the support level

Column 1 **Competence**	Column 2 **Knowledge, understanding and proficiency**	Column 3 **Methods for demonstrating competence**	Column 4 **Criteria for evaluating competence**
Safe use of electrical equipment	Safe use and operation of electrical equipment, including: .1 safety precautions before commencing work or repair .2 isolation procedures .3 emergency procedures .4 different voltages on board Knowledge of the causes of electric shock and precautions to be observed to prevent shock	Assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 practical training .3 examination .4 approved training ship experience	Understands and follows safety instructions of electrical equipment and machinery Recognizes and reports electrical hazards and unsafe equipment Understands safe voltages for hand-held equipment Understands risks associated with high-voltage equipment and onboard work
Contribute to monitoring the operation of electrical systems and machinery	Basic knowledge of the operation of mechanical engineering systems, including: .1 prime movers, including main propulsion plant .2 engine-room auxiliary machineries .3 steering systems .4 cargo-handling systems .5 deck machineries .6 hotel systems	Assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 practical training .3 examination .4 approved training ship experience	Knowledge that ensures: .1 operation of equipment and system is in accordance with operating manuals .2 performance levels are in accordance with technical specifications

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Contribute to monitoring the operation of electrical systems and machinery (*continued*)	*Basic knowledge of:* .1 electro-technology and electrical machines theory .2 electrical power distribution boards and electrical equipment .3 fundamentals of automation, automatic control systems and technology .4 instrumentation, alarm and monitoring systems .5 electrical drives .6 electro-hydraulic and electro-pneumatic control systems .7 coupling, load sharing and changes in electrical configuration		
Use hand tools, electrical and electronic measurement equipment for fault finding, maintenance and repair operations	Safety requirements for working on shipboard electrical systems Application of safe working practices *Basic knowledge of*: .1 construction and operational characteristics of shipboard AC and DC systems and equipment .2 use of measuring instruments, machine tools, and hand and power tools	Assessment of evidence obtained from one or more of the following: .1 approved workshop skills training .2 approved practical experience and tests	Implementation of safety procedures is satisfactory Selection and use of test equipment is appropriate and interpretation of results is accurate Selection of procedures for the conduct of repair and maintenance is in accordance with manuals and good practice

Function: Maintenance and repair at the support level

Column 1 **Competence**	Column 2 **Knowledge, understanding and proficiency**	Column 3 **Methods for demonstrating competence**	Column 4 **Criteria for evaluating competence**
Contribute to shipboard maintenance and repair	Ability to use lubrication and cleaning materials and equipment Knowledge of safe disposal of waste materials Ability to understand and execute routine maintenance and repair procedures Understanding manufacturer's safety guidelines and shipboard instructions	Assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 practical training .3 examination .4 approved training ship experience	Maintenance activities are carried out in accordance with technical, safety and procedural specifications Selection and use of equipment and tools is appropriate
Contribute to the maintenance and repair of electrical systems and machinery on board	*Safety and emergency procedures* Basic knowledge of electro-technical drawings and safe isolation of equipment and associated systems required before personnel are permitted to work on such plant or equipment Test, detect faults and maintain and restore electrical control equipment and machinery to operating condition Electrical and electronic equipment operating in flammable areas Basics of ship's fire-detection system Carrying out safe maintenance and repair procedures	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved training ship experience .3 approved simulator training, where appropriate .4 approved laboratory equipment training	The effect of malfunctions on associated plant and systems is accurately identified, ship's technical drawings are correctly interpreted, measuring and calibrating instruments are correctly used and actions taken are justified Isolation, dismantling and reassembly of plant and equipment is in accordance with manufacturer's safety guidelines and shipboard instructions

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Contribute to the maintenance and repair of electrical systems and machinery on board (*continued*)	Detection of machinery malfunction, location of faults and action to prevent damage Maintenance and repair of lighting fixtures and supply systems		

Function: Controlling the operation of the ship and care for persons on board at the support level

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Contribute to the handling of stores	Knowledge of procedures for safe handling, stowage and securing of stores	Assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 practical training .3 examination .4 approved training ship experience	Stores stowage operations are carried out in accordance with established safety practices and equipment operating instructions The handling of dangerous, hazardous and harmful stores complies with established safety practices Communications within the operator's area of responsibility are consistently successful
Apply precautions and contribute to the prevention of pollution of the marine environment	Knowledge of the precautions to be taken to prevent pollution of the marine environment Knowledge of use and operation of anti-pollution equipment/agents Knowledge of approved methods for disposal of marine pollutants	Assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 practical training .3 examination .4 approved training ship experience	Procedures designed to safeguard the marine environment are observed at all times

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Apply occupational health and safety procedures	Working knowledge of safe working practices and personal shipboard safety, including: .1 electrical safety .2 lockout/tag-out .3 mechanical safety .4 permit to work systems .5 working aloft .6 working in enclosed spaces .7 lifting techniques and methods of preventing back injury .8 chemical and biohazard safety .9 personal safety equipment	Assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 practical training .3 examination .4 approved training ship experience	Procedures designed to safeguard personnel and the ship are observed at all times Safe working practices are observed and appropriate safety and protective equipment is correctly used at all times

CHAPTER IV

Standards regarding radio operators

Section A-IV/1
Application

(No provisions)

Section A-IV/2
Mandatory minimum requirements for certification of GMDSS radio operators

Standard of competence

1 The minimum knowledge, understanding and proficiency required for certification of GMDSS radio operators shall be sufficient for radio operators to carry out their radio duties. The knowledge required for obtaining each type of certificate defined in the Radio Regulations shall be in accordance with those regulations. In addition, every candidate for certification of competency shall be required to demonstrate ability to undertake the tasks, duties and responsibilities listed in column 1 of table A-IV/2.

2 The knowledge, understanding and proficiency for endorsement under the Convention of certificates issued under the provisions of the Radio Regulations are listed in column 2 of table A-IV/2.

3 The level of knowledge of the subjects listed in column 2 of table A-IV/2 shall be sufficient for the candidate to carry out his duties*.

4 Every candidate shall provide evidence of having achieved the required standard of competence through:

.1 demonstration of competence to perform the tasks and duties and to assume responsibilities listed in column 1 of table A-IV/2, in accordance with the methods for demonstrating competence and the criteria for evaluating competence tabulated in columns 3 and 4 of that table; and

.2 examination or continuous assessment as part of an approved course of training based on the material set out in column 2 of table A-IV/2.

* The relevant IMO Model Course(s) may be of assistance in the preparation of courses.

Table A-IV/2

Specification of minimum standard of competence for GMDSS radio operators

Function: Radiocommunications at the operational level

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Transmit and receive information using GMDSS subsystems and equipment and fulfilling the functional requirements of GMDSS	In addition to the requirements of the Radio Regulations, a knowledge of: .1 search and rescue radiocommunications, including procedures in the International Aeronautical and Maritime Search and Rescue (IAMSAR) Manual .2 the means to prevent the transmission of false distress alerts and the procedures to mitigate the effects of such alerts .3 ship reporting systems .4 radio medical services .5 use of the International Code of Signals and the IMO Standard Marine Communication Phrases .6 the English language, both written and spoken, for the communication of information relevant to safety of life at sea *Note*: This requirement may be reduced in the case of the Restricted Radio Operator's Certificate	Examination and assessment of evidence obtained from practical demonstration of operational procedures, using: .1 approved equipment .2 GMDSS communication simulator, where appropriate* .3 radiocommunication laboratory equipment	Transmission and reception of communications comply with international regulations and procedures and are carried out efficiently and effectively English language messages relevant to the safety of the ship and persons on board and protection of the marine environment are correctly handled

* See paragraph 72 of section B-I/12 of this Code.

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Provide radio services in emergencies	The provision of radio services in emergencies such as: .1 abandon ship .2 fire on board ship .3 partial or full breakdown of radio installations Preventive measures for the safety of ship and personnel in connection with hazards related to radio equipment, including electrical and non-ionizing radiation hazards	Examination and assessment of evidence obtained from practical demonstration of operational procedures, using: .1 approved equipment .2 GMDSS communication simulator, where appropriate* .3 radiocommunication laboratory equipment	Response is carried out efficiently and effectively

* See paragraph 72 of section B-I/12 of this Code.