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REVIEW OF THE PRINCIPLES FOR ESTABLISHING THE SAFE MANNING LEVELS OF SHIPS

Report of the Correspondence Group

Submitted by the United States

SUMMARY

- Executive summary:** This is the report from the Correspondence Group established by STW 38 to consider the review of the principles for establishing the safe manning levels of ships
- Action to be taken:** Paragraph 16
- Related documents:** STW 38/WP.5/Rev.1, STW 38/13, STW 38/13/2, STW 38/13/3, STW 38/13/4, STW 38/13/5, STW 38/13/6 and STW 38/13/7/Rev.1; MSC/Circ.878-MEPC/Circ.346 and resolution A.890(21)

Introduction

1 The Sub-Committee on Standards of Training and Watchkeeping at its thirty-eighth session (22 to 26 January 2007) established a working group on the review of the principles for establishing the safe manning levels of ships. The report of the working group has been circulated under the symbol STW 38/WP.5/Rev.1. Based on the recommendation of the working group, STW 38 established a correspondence group under the co-ordination of the United States with the following terms of reference:

- .1 based on the report of the Working Group on Review of the principles of safe manning convened at STW 38 (STW 38/WP.5/Rev.1) and taking into account documents STW 38/13 (ICS/ISF), STW 38/13/2 and STW 38/13/3 (ICFTU), STW 38/13/4 (IFSMA), STW 38/13/5 (United States), STW 38/13/6 (Australia) and STW 38/13/7/Rev.1 (United Kingdom *et al*) and MSC/Circ.878-MEPC/Circ.346 on Human Element Analysing Process (HEAP), the Correspondence Group on Review of the principles of safe manning should review the resolution A.890(21), as amended, and identify possible needs for revision; and
- .2 prepare a comprehensive report for submission to STW 39.

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Background

2 The principles contained in resolution A.890(21) as amended, are to be taken into account by Member States when preparing national laws to establish minimum safe manning on ships. The national laws should at the very least contain the key elements of this resolution. Furthermore, this resolution is intended to assist Member States in achieving compliance with the ship manning goals and standards set forth in various IMO regulations. This is also re-enforced by SOLAS regulation V/14 which states that “Contracting Governments undertake, each for its national ships, to maintain, or, if its necessary, to adopt, measures for the purposes of ensuring that, from the point of view of safety of life at sea, all ships shall be sufficiently and efficiently manned”. In addition, STCW regulation I/14.1.2 requires that companies ensure that its ships are manned in compliance with the applicable safe manning requirements of the Administration. STCW regulation VIII/1 requires that “each Administration shall for the purpose of preventing fatigue, establish and enforce rest periods for watchkeeping personnel and that further require that watch systems are so arranged that the efficiency of all watchkeeping personnel is not impaired by fatigue and that duties are so organized that the first watch at the commencement of a voyage and subsequent relieving watches are sufficiently rested and otherwise fit for duty”. Furthermore, the STCW Code section A-VIII/1 also stipulates that the minimum number of hours of rest for all crew members within any 24-hour period shall be at least 10 hours and that if divided into two parts at least one period shall be of 6 continuous hours.

Correspondence Group Strategy

3 A strategy to evaluate potential revisions to resolution A.890(21) as amended, was developed and accepted by the correspondence group. As part of the strategy the term “revision” was defined as: “additions, deletions, substitutions and transfer or replication in whole or in part of resolution A.890(21) as amended, to IMO regulations, instruments and documents.”

4 Based on later correspondence the group also considered the need for “reorganization” of the existing content of resolution A.890(21) as amended, to provide a more logical flow to users conducting manning evaluations. Some members of the group did not agree on the need for “reorganization” of resolution A.890(21) as amended. The proposed reorganized text of the annexes to A.890(21), as amended, is set out in annex 1.

5 The initial phase of the correspondence group strategy was to solicit from the Members their national methodologies for manning level determinations under A.890(21) as amended, with a view to create an international goal-based system that would add uniformity to the current manning determination process. The information submitted was then to be populated into the format of resolution A.890(21) as amended, insofar as practicable with the purpose of adding clarity to the items listed for consideration during manning evaluations. Several Member States submitted copies of forms and other examples drawn from their national manning methodologies which derive or expand upon the information in A.890(21) as amended, to achieve safe manning of ships’ flying their flag. A table of the items submitted by the correspondence group members and information gleaned from public sources is set out in annex 2 to this paper.

6 None of the methodologies submitted by Member States were fully definitive that could be used as a universal decision support tool which could provide specific outputs in relation to specific inputs. From the information submitted it was evident that present practices for determining ‘safe manning’ require detailed evaluation by experienced persons with extensive professional knowledge of shipboard operations both within the company proposing the manning and the flag Administration issuing the safe manning document. In the absence of prescriptive manning rules a high level of knowledge and experience is essential on the part of both the

company submitter and reviewer while considering all of the factors set out in resolution A.890(21) as amended, in order to achieve consistent and balanced outcomes for safe and efficiently manned ships. In addition to copies of national manning processes, comments of a more general nature were received regarding areas of emphasis to consider when arriving at a manning determination, including the issue of fatigue. These comments are set out in annex 3 without attribution as to their source.

Discussion

7 It was evident that an accurate and comprehensive task analysis is necessary to form the baseline for any manning evaluation. The information needed for this evaluation has to be provided by the ship owner and/or ship operator to the flag Administration. Most administrations manning evaluations typically start with the establishment of navigational and engineering watch requirements based on a 24-hour operational rotation at sea. Manning evaluation then expands to encompass the list of items captured in resolution A.890(21) as amended, such as maintenance, cargo operations, port entry, mooring, record keeping, response to emergency situations, regulatory requirements, records/reporting, training, drills and others tasks. In some cases this information was elicited from vessels owners in the form of questions posed regarding how various emergency scenarios would be addressed by the ships crew while simultaneously maintaining watch standing. One approach that some of the national Administrations used to evaluate adequate manning for non-routine situations was to pose a variety of scenarios to the owner who must then identify what personnel resources would be required to respond to the scenario, e.g., an engine room fire at sea. In such a scenario many specific tasks need to be completed in a timely manner to prevent personnel injury, loss of life or loss of the vessel. Some of these tasks may require specific training or skills for the individuals involved. These scenarios overlapped with other ongoing operations to establish the boundaries of what it means to be minimally manned. Based on the judgment of the reviewer with respect to risk, what constitutes minimum manning vice the resultant recommended manning may or may not be congruent.

8 Resolution A.890(21), as amended, is therefore intended to be both a listing of the goals that should be met as well as a non-exhaustive list of the tasks that represent “work” on a typical commercial ship. Concern was expressed by several members of the correspondence group that many of the tasks secondary to watch standing have not been completely or accurately recorded as “work” when calculating the total number of hours expended in their completion by various members of the crew. The only definitive method of measuring this secondary work is to conduct a detailed task analysis using direct observation of actual work hour consumption for each ship. Since this type of analysis is both resource and time intensive most Administrations have developed standardized estimates of routine work based on historical information for categories of vessels types and operations. Further, these estimates have in some cases been translated into a series of sample manning scales in national regulations that serve as a baseline which establishes a point from which manning may be increased or decreased depending upon the unique circumstances of the individual vessel. Although the correspondence group members overwhelmingly supported a goal-based approach to manning vice prescriptive manning scales, several members supported the establishment of a mandatory manning scale limited to deck watch officers. The proponents of this proposal argued that in the case of deck watch officers that a minimum manning of one Master and two deck officers should be the baseline requirement and that manning below this level must be justified as an exception from the Administration with notice to IMO. The primary rationale for this mandatory minimum is that deck officer watchkeepers who suffer from fatigue are impaired in their ability to perform a critical navigational function the result of which is that they pose a risk to their own vessel, other vessels and the marine environments of coastal nations. Manning scales are currently absent from IMO mandatory standards and continue to be the prerogative of the national Administrations as a

strategy for implementing the mandatory requirements of IMO and the attendant guidelines. The total abandonment of manning scales in favour of performance goals is for some the theoretical ideal, but the reality of implementing this approach may represent a substantially increased level of effort in setting manning levels for some administrations since it would require a comprehensive evaluation for each ship. This workload increase for the Administrations could require additional manning evaluator resources in order to ensure that the number and qualifications of mariners match prescribed goals in a “safe and efficient” manner.

9 As previously noted, determination of safe manning is a continuous process, which must be responsive to changing circumstances. The primary responsibility for providing the information for evaluating the safe manning of a ship belongs to the vessel owner (or “company” as defined in STCW and SOLAS Chapter IX, the ISM Code). The flag Administration however is responsible to evaluate this information in a consistent manner through onboard verification and analysis. Nothing in resolution A.890(21) as amended, or in the mandatory instruments precludes the national administrations from using every evaluation tool at its disposal. Although resolution A.890(21) as amended, provides the minimum recommended factors to consider in making manning evaluations this list should by no means be considered exhaustive.

10 Where technology is available to automate certain aspects of shipboard work, the flag Administration may consider this efficiency in the calculation of manning with respect to reductions in crew based on the substitution of automation for certain work tasks that were previously performed manually. As with other manning evaluations a task analysis is the only definitive method of establishing true manning, but in the case of automation the measurement of system reliability also needs to be established. Such manning reductions can only be made to the extent that other baseline requirements continue to be met, including the ability to respond to emergency situations or mechanical failures as well as the maintenance of the system that allows the reduction in manning. Periodic reinstatement of manual operation of automated machinery (reinstatement of manual operation may not even be possible with some automation systems) requires that a cushion of available personnel work hours are available in reserve. Reducing manning to a minimum operational level based on fully functional systems under nothing but ideal circumstances leaves little room for deviation. Maintaining a temporary reserve of available workforce hours may not maximize productivity during normal operations but it provides a necessary response capability that contributes to contingency preparedness. This singular case provides a clear example of the difference between minimum manning and recommended manning. Additionally, shipboard personnel have in some cases been reduced by increasing shore based support in the form of maintenance, administration, record keeping and other non-watch standing tasks which are not operational in nature. All of this is acceptable provided that the number of persons onboard is sufficient to respond to emergency situations and other non-routine or unplanned occurrences some examples of which are listed in Annex I of resolution A.890(21) as amended.

11 The correspondence group concurred that manning is an integral aspect of the overall safety management system (SMS) required to be maintained by the International Code for the Safe Management of Ships (ISM Code). Under the overall SMS, it is essential that the company periodically evaluate the efficiency of the safety management system. In real terms, this can only be achieved by the setting of goals and the means to measure their achievement. Failure to achieve goals, especially in the area of regulatory compliance, may be the result of a variety of factors including inadequate or improper human resources. This iterative process of evaluation is the responsibility of the ship owner or the company designated by the owner as required by regulation 3 of the ISM code. Further, regulation 6 of the ISM Code specifies that “The Company should ensure that each ship is manned with qualified, certificated and medically fit seafarers in accordance with the national and international requirements”. During the audits of the company’s

SMS special attention should be given to the procedures to ensure the provision of adequate human resources. Effective use and implementation of the elements contained in resolution A.890(21) as amended, should be considered by ISM auditors as essential to a continuous manning evaluation process. Companies that do not use resolution A.890(21) as amended, directly, should be able to demonstrate that its elements are incorporated into the manning and human resource evaluation process used by their company. Failure to do so may be considered a non-conformity. Several members of the correspondence group suggested that regulation 6 of the ISM code should be revised to give specific emphasis to the need for evaluation of manning and fatigue as part of the company and shipboard safety management system.

12 Several of the correspondence group members expressed serious concern that the scope of the review and revision work for resolution A.890(21), as amended, requested of the correspondence group was overly ambitious for the time allotted. Furthermore, the assumption that a definitive manning decision support tool could be derived based entirely on existing national best practices was not accurate. Although several of the Member States have initiated projects to automate in whole or in part, the assignment of manning based on standard inputs, at the present time the determination of manning remains a process based on the knowledge and experience of the company submitting the request and the flag Administration reviewing with a view to achieving a manning scale that is both safe and efficient.

13 Several correspondence group members felt that the current regulations and guidelines are sufficient to assure safe and efficient manning if enforced vigorously. Regretfully, enforcement may have been lax in too many instances and the current regulations and guidelines could work adequately if enforced. This was likely the case for a number of past IMO regulations and guidelines for a wide variety of applications which were ultimately made more detailed and specific when international compliance levels continuously failed to achieve consistent expectations.

Conclusions

14 In light of the foregoing, the correspondence group recommends that the Sub-Committee define and clarify the intent and terms of objectives embodied in resolution A.890(21) as amended. In addition, the Working Group should develop a framework, based on scientific knowledge and expertise in areas such as Human system's integration, ship construction, training, vessel operations, and fatigue research.

15 The framework of the revised A.890(21) as amended, shall exemplify the processes and practices that vessel owners, flag States, and port States shall follow to determine whether a ship is safely manned for the specific operations being carried out. The framework shall be developed with a systemic/holistic perspective, giving appropriate consideration to elements such as the functions necessary to perform safely the capabilities specific to a ship's operations; the human element factors that can contribute to and/or exasperate fatigue and performance degradation in crewmembers; the human/organizational factors that, left unmanaged, impacts crewmember morale and psychological well-being; organizational and/or shipboard policies and operating procedures that exert unnecessary or excessive demands on crewmembers; the types of technology and equipment utilized in the conduct of operations on a specific voyage; and the training, qualifications and experience of the seafarer in their assignment to a particular vessel type, operations, and tasks. This framework shall include, as means to validate its effectiveness, guidelines for implementing the processes and practices, description of actions in the use of the framework, interpretations of framework results or measures of performance, and tools for

conducting standardized assessments during inspections and for documenting the elements used in determining the proposed manning complement for a vessel.

Action requested of the Sub-Committee

16 The Sub-Committee is invited to note the above information and take action as appropriate.

ANNEX 1

PROPOSED REORGANIZED TEXT OF THE ANNEXES TO A.890(21), AS AMENDED

ANNEX 1

**GUIDELINES FOR THE APPLICATION OF
PRINCIPLES OF SAFE MANNING**

1 Introduction

1.1 These guidelines should be used in applying the principles of safe manning set out in Annex 1 to this resolution to ensure the safe operation of, and the prevention of pollution from, ships to which article III of the 1978 STCW Convention, as amended, applies and to ensure the security of ships to which chapter XI-2 of 1974 SOLAS Convention, as amended, applies.

1.2 The Administration may retain or adopt arrangements which differ from the provisions herein recommended and which are especially adapted to technical developments and to special types of ships and trades. However, at all times the Administration should satisfy itself that the detailed manning arrangements ensure a degree of safety at least equivalent to that established by these guidelines.

This section was copied and pasted from beginning of Annex 2 of original A.890(21). Rationale for the rearrangement is that the document required an introduction into the purpose/objective.

PRINCIPLES OF SAFE MANNING

1 The purpose of determining the minimum safe manning level of a ship is to ensure that its complement includes the grades/capacities and number of persons required for the safe operation and the security of the ship and for the protection of the marine environment. The following principles should be observed in determining the minimum safe manning of a ship:

- .1 the capability to:
 - .1.1 maintain safe navigational, engineering and radio watches in accordance with regulation VIII/2 of the 1978 STCW Convention, as amended, and also maintain general surveillance of the ship;
 - .1.2 moor and unmoor the ship safely;
 - .1.3 manage the safety functions of the ship when employed in a stationary or near-stationary mode at sea;
 - .1.4 perform operations, as appropriate, for the prevention of damage to the marine environment;

- .1.5 maintain the safety arrangements and the cleanliness of all accessible spaces to minimize the risk of fire;
- .1.6 provide for medical care on board ship;
- .1.7 ensure safe carriage of cargo during transit; and
- .1.8 inspect and maintain, as appropriate, the structural integrity of the ship;
- .1.9 operate in accordance with the approved Ship's Security Plan; and
- .2 the ability to:
 - .2.1 operate all watertight closing arrangements and maintain them in effective condition, and also deploy a competent damage control party;
 - .2.2 operate all on-board fire-fighting and emergency equipment and life-saving appliances, carry out such maintenance of this equipment as is required to be done at sea, and muster and disembark all persons on board; and
 - .2.3 operate the main propulsion and auxiliary machinery and maintain them in a safe condition to enable the ship to overcome the foreseeable perils of the voyage.

~~2—In applying such principles, Administrations should take proper account of existing IMO, ILO, ITU and WHO instruments in force which deal with:~~

- ~~.1—watchkeeping;~~
- ~~.2—hours of work or rest;~~
- ~~.3—safety management;~~
- ~~.4—certification of seafarers;~~
- ~~.5—training of seafarers;~~
- ~~.6—occupational health and hygiene; and~~
- ~~.7—crew accommodation.~~

This section was moved to proposed Annex 3.

3 The following on-board functions, when applicable, should also be taken into account:

- .1 ongoing training requirements for all personnel, including the operation and use of fire-fighting and emergency equipment, life-saving appliances and watertight closing arrangements;

- .2 specialized training requirements for particular types of ships and in instances where crewmembers are engaged in labour agreements that contain the term “Interdepartmental Flexibility” and performs shipboard tasks, as indicated in the ISM Code, that cross departmental boundaries;
- .3 provision of proper food and drinking water;
- .4 need to undertake emergency duties and responsibilities; and
- .5 need to provide training opportunities for entrant seafarers to allow them to gain the training and experience needed.

The new text was proposed for addition by a correspondence group member to express the need that appropriate training must be provided in circumstances when crewmembers perform functions and tasks indicated in the ISM Code that cross departmental domains.

ANNEX 2

GUIDELINES FOR THE APPLICATION OF PRINCIPLES OF SAFE MANNING

~~1 — Introduction~~

~~1.1 — These guidelines should be used in applying the principles of safe manning set out in Annex 1 to this resolution to ensure the safe operation of, and the prevention of pollution from, ships to which article III of the 1978 STCW Convention, as amended, applies and to ensure the security of ships to which chapter XI-2 of 1974 SOLAS Convention, as amended, applies.~~

~~1.2 — The Administration may retain or adopt arrangements which differ from the provisions herein recommended and which are especially adapted to technical developments and to special types of ships and trades. However, at all times the Administration should satisfy itself that the detailed manning arrangements ensure a degree of safety at least equivalent to that established by these guidelines.~~

This section was moved to the beginning ANNEX 1.

GUIDELINES FOR DETERMINATION OF SAFE MANNING LEVELS

The words “Guidelines For” are add-ins to create a main title for this section. The rationale for the main title is to separate this section of the resolution from the section on the Principles of Safe Manning.

The logic framework used to determine safe manning of a ship should take into account the following concerns:

Additional information to be developed to enhance and refine the use of this resolution as a decision support tool.

~~2 — Hours of work or rest~~

~~2.1 — Every company is obliged to ensure that the master, officers and ratings do not work more hours than is safe in relation to the performance of their duties and the safety of the ship. The same responsibility is placed on the master in relation to the members of the ship's complement. Manning levels should be such as to ensure that the time and place available for taking rest periods are appropriate for achieving a good quality of rest. Further guidance about fitness for duty is contained in section B-VIII/1 of the STCW Code.~~

~~2.2 — A record of the actual hours of work performed by the individual seafarer should be maintained on board, in order to verify that the minimum periods of rest required under relevant and applicable international instruments in force have been complied with.~~

This section was moved to the proposed Annex 3

~~3 — Determination of minimum safe manning levels~~

~~3.1 — The purpose of determining the minimum safe manning level of a ship is to ensure that its complement includes the grades/capacities and number of persons required for the safe operation and the security of the ship and for the protection of the marine environment.~~

This text was moved to Annex 1

3.12 The minimum safe manning level of a ship should be established taking into account all relevant factors, including the following:

- .1 size and type of ship;
- .2 number, size and type of main propulsion units and auxiliaries;
- .3 construction and equipment of the ship;
- .4 method of maintenance used;
- .5 cargo to be carried;
- .6 frequency of port calls, length and nature of voyages to be undertaken;
- .7 trading area(s), waters and operations in which the ship is involved;
- .8 extent to which training activities are conducted on board;
- .9 applicable work hour limits and/or rest requirements; and
- .10 the provisions of the approved Ship's Security Plan.

3.3 The determination of the minimum safe manning level of a ship should be based on performance of the functions at the appropriate level(s) of responsibility, as specified in the STCW Code, which include the following:

- .1 navigation, comprising the tasks, duties and responsibilities required to:
 - .1 plan and conduct safe navigation;
 - .2 maintain a safe navigational watch in accordance with the requirements of the STCW Code;
 - .3 manoeuvre and handle the ship in all conditions; and
 - .4 moor and unmoor the ship safely;
- .2 cargo handling and stowage, comprising the tasks, duties and responsibilities required to:

- .1 plan, monitor and ensure safe loading, stowage, securing, care during the voyage and unloading of cargo to be carried on the ship;
- .3 operation of the ship and care for persons on board, comprising the tasks, duties and responsibilities required to:
 - .1 maintain the safety and security of all persons on board and keep life-saving, fire-fighting and other safety systems in operational condition;
 - .2 operate and maintain all watertight closing arrangements;
 - .3 perform operations, as appropriate, to muster and disembark all persons on board;
 - .4 perform operations, as appropriate, to ensure protection of the marine environment;
 - .5 provide for medical care on board the ship; and
 - .6 undertake administrative tasks required for the safe operation and the security of the ship;
- .4 marine engineering, comprising the tasks, duties and responsibilities required to:
 - .1 operate and monitor the ship's main propulsion and auxiliary machinery and evaluate the performance of such machinery;
 - .2 maintain a safe engineering watch in accordance with the requirements of the STCW Code;
 - .3 manage and perform fuel and ballast operations; and
 - .4 maintain safety of the ship's engine equipment, systems and services;
- .5 electrical, electronic and control engineering, comprising the tasks, duties and responsibilities required to:
 - .1 operate the ship's electrical and electronic equipment; and
 - .2 maintain the safety of the ship's electrical and electronic systems;
- .6 radiocommunications, comprising the tasks, duties and responsibilities required to:
 - .1 transmit and receive information using the radio equipment of the ship;
 - .2 maintain a safe radio watch in accordance with the requirements of the ITU Radio Regulations and the 1974 SOLAS Convention, as amended; and
 - .3 provide radio services in emergencies;

- .7 maintenance and repair, comprising the tasks, duties and responsibilities required to:
 - .1 carry out maintenance and repair work to the ship and its machinery, equipment and systems, as appropriate to the method of maintenance and repair used.

3.4 In addition to the factors and functions in paragraphs 3.2 and 3.3, the determination of the minimum safe manning level should also take into account:

- .1 the management of the safety functions of a ship at sea when not under way;
- .2 except in ships of limited size, the provision of qualified deck officers to ensure that it is not necessary for the master to keep regular watches by adopting a three-watch system;
- .3 except in ships of limited propulsion power or operating under provisions for unattended machinery spaces, the provision of qualified engineer officers to ensure that it is not necessary for the chief engineer to keep regular watches by adopting a three-watch system;
- .4 the maintenance of applicable occupational health and hygiene standards on board; and
- .5 the provision of proper food and drinking water for all persons on board, as required.

3.5 In determining the minimum safe manning level of a ship, consideration should also be given to:

- .1 the number of qualified and other personnel required to meet peak workload situations and conditions, with due regard to the number of hours of shipboard duties and rest periods assigned to seafarers; and
- .2 the capability of the master and the ship's complement to co-ordinate the activities necessary for the safe operation and for the security of the ship and for the protection of the marine environment.

3.6 In determining safe manning level, the following on board activities should be taken into account:

- .1 intensive cargo operations and preparations for immediate sailing;
- .2 long pilotage or possibility of adverse weather conditions requiring the master to be on the bridge for extended period; and
- .3 lengths of tours of duty served by seafarers
- .4 degree of shore-side support provided to the ship by the company.

The new text was proposed for addition by a correspondence group member. A member opposes the addition on the basis that the key to safe manning is the enforcement of existing rules and guidelines and to clarify the responsibilities of shipowners, masters and administrations.

ANNEX 3

RESPONSIBILITIES IN THE APPLICATION OF PRINCIPLES OF SAFE MANNING

This title and the designation of an Annex 3 are to provide clear delineation of the previous two sections from the responsibilities that this resolution designates for companies, flag States, and port States.

4 Responsibilities of companies

4.1 The Administration may require the company responsible for the operation of the ship to prepare and submit its proposal for the minimum safe manning level of a ship in accordance with a form specified by the Administration.

4.2 In preparing a proposal for the minimum safe manning level of a ship, the company should apply the principles, recommendations and guidelines contained in this resolution and should be required to:

- .1 make an assessment of the tasks, duties and responsibilities of the ship's complement required for its safe operation, for its security, for protection of the marine environment, and for dealing with emergency situations;
- .2 ensure that the master, officers and ratings do not work more hours than is safe in relation to the performance of their duties and the safety of the ship. The same responsibility is placed on the master in relation to the members of the ship's complement. Manning levels should be such as to ensure that the time and place available for taking rest periods are appropriate for achieving a good quality of rest. Further guidance about fitness for duty is contained in section B-VIII/1 of the STCW Code;
- .3 require records of the actual hours of work performed by the individual seafarer be maintained on board, in order to verify that the minimum periods of rest required under relevant and applicable international instruments in force have been complied with.

These sections were cut and pasted from Annex 2, Section 2 marked "hours of work and rest" in original resolution A.890(21). Rationale for the move is, it makes clear the responsibility of the company to ensure that hours of work/rest and its reporting are conducted.

- ~~.42~~ make an assessment of numbers and grades/capacities in the ship's complement required for its safe operation, for its security, for protection of the marine environment, and for dealing with emergency situations;
- ~~.53~~ prepare and submit to the Administration a proposal for the minimum safe manning level based upon the assessment of the numbers and grades/capacities in the ship's complement required for its safe operation, for its security and for protection of the marine environment, justifying the proposal by explaining how

the proposed ship's complement will deal with emergency situations, including the evacuation of passengers, where necessary;

- .64 ensure that the minimum safe manning level is adequate at all times and in all respects, including meeting peak workload situations, conditions and requirements, and is in accordance with the principles, recommendations and guidelines contained in this resolution; and
- .75 prepare and submit to the Administration a new proposal for the minimum safe manning level of a ship in the case of changes in trading area(s), construction, machinery, equipment or operation and maintenance of the ship, which may affect the safe manning level.

5 Approval by the Administration

5.1 A proposal for the minimum safe manning level of a ship submitted by a company to the Administration should be evaluated by the Administration to ensure that:

- .1 the proposed ship's complement contains the number and grades/capacities of personnel to fulfil the tasks, duties and responsibilities required for the safe operation of the ship, for its security, for protection of the marine environment and for dealing with emergency situations; and
- .2 the master, officers and other members of the ship's complement are not required to work more hours than is safe in relation to the performance of their duties and the safety of the ship and that the requirements for work and rest hours, in accordance with applicable national regulations, can be complied with.

5.1bis In applying such principles, Administrations should take proper account of existing IMO, ILO, ITU and WHO instruments in force which deal with:

- .1 watchkeeping;
- .2 hours of work or rest;
- .3 safety management;
- .4 certification of seafarers;
- .5 training of seafarers;
- .6 occupational health and hygiene; and
- .7 crew accommodation.

This text was cut, adapted, and pasted from Annex 1, Section 2 of the original resolution A.890(21). Rationale for its relocation is the fact it discusses the administrations responsibility to ensure that the criteria in existing international documents are taken into account by vessel owners in their manning proposals.

5.2 The Administration should require a company to amend a proposal for the minimum safe manning level of a ship if, after evaluation of the original proposal submitted by the company, the Administration is unable to approve the proposed composition of the ship's complement.

5.3 The Administration should only approve a proposal for the minimum safe manning level of a ship and issue accordingly a minimum safe manning document if it is fully satisfied that the proposed ship's complement is established in accordance with the principles, recommendations and guidelines contained in this resolution, and is adequate in all respects for the safe operation and the security of the ship and for the protection of the marine environment.

5.4 The Administration may withdraw the minimum safe manning document of a ship if the company fails to submit a new proposal for the ship's minimum safe manning level when changes in trading area(s), construction, machinery, equipment or operation and maintenance of the ship have taken place which affect the minimum safe manning level.

5.5 The Administration should review and may withdraw, as appropriate, the minimum safe manning document of a ship which persistently fails to be in compliance with rest hours requirements.

6. Validation of Compliance by the Port State.

A new section was recommended by the Correspondence Group members to provide port States clear guidance in resolution A.890(21) on validation requirements, such as ensuring that the number of crew is in compliance with a vessel's Safe Manning Document, the requirements for hours of work/rest.

ANNEX 4 ~~3~~

**GUIDANCE ON CONTENTS AND MODEL FORM OF
MINIMUM SAFE MANNING DOCUMENT**

1 The following information should be included in the minimum safe manning document issued by the Administration specifying the minimum safe manning level:

- .1 a clear statement of the ship's name, port of registry, distinctive number or letters, IMO number, gross tonnage, main propulsion power, type and trading area and whether or not the machinery space is unattended;
- .2 a table showing the number and grades/capacities of the personnel required to be carried, together with any special conditions or other remarks;
- .3 a formal statement by the Administration that, in accordance with the principles and guidelines set out in Annexes 1 and 2, the ship named in the document is considered to be safely manned if, whenever it proceeds to sea, it carries not less than the number and grades/capacities of personnel shown in the document, subject to any special conditions stated therein;
- .4 a statement as to any limitations on the validity of the document by reference to particulars of the individual ship and the nature of service upon which it is engaged; and
- .5 the date of issue and any expiry date of the document together with a signature for and the seal of the Administration.

2 It is recommended that the minimum safe manning document be drawn up in the form corresponding to the model given in the appendix to this annex. If the language used is not English, the information given should include a translation into English.

ANNEX 5

FRAMEWORK FOR DETERMINING SAFE MANNING LEVEL

This annex is recommended for addition to include the aid/framework for determining manning levels if and when developed. A description of the framework is mentioned in the report. The framework should take into account relevant elements such as platform and operational differences, fatigue, and crewmember training, qualifications, and experience.

The rest of the resolution remains the same.

ANNEX 2

INFORMATION RELEVANT TO MANNING DETERMINATION

This Annex is an indexed listing of useful references provided by the correspondence group members to assist users of the guidelines on manning by providing additional information. For documents that are available on the internet a link is listed. Some of the documents without a link may be available from the source directly or may become available on a web page to be identified at a later date with the concurrence of the document source provider.

	Document Title	Source	HyperLink
1.	Solas Chapter V - Reg 34 – Safe Navigation and Avoidance of Dangerous Situations	IMO	https://mcanet.mcga.gov.uk/public/c4/solas/solas_v/Regulations/regulation34.htm
2.	Statutory Instrument 2002	UK Maritime and Coastguard Agency	https://mcanet.mcga.gov.uk/public/c4/solas/si/crew/si_2125_02/si_2125_02_p1_old.htm
3.	Crew Endurance Management: A Guide for Commercial Maritime Operations	U.S. Coast Guard	www.uscg.mil/hq/g-m/cems/PDF/Guide_for_Maritime_Operations.pdf
4.	R142 Prevention of Accidents (Seafarers) Recommendation, 1970	ILO	http://www.ilo.org/ilolex/cgi-lex/convde.pl?R142
5.	Maritime Labor Convention, 2006	ILO	http://www.ilo.org/public/english/standards/norm/mlc2006/text.htm
6.	U.S. Coast Guard NVIC 09-04 – Guidelines For Assessing Merchant Mariners Through Demonstrations of Proficiency as Officers in Charge of Engineering Watches in Manned Engine-Rooms or as Designated Duty Engineers in Periodically Unmanned Engine-Rooms	U.S. Coast Guard	http://www.uscg.mil/hq/g-m/nvic/index00.htm

	Document Title	Source	HyperLink
7.	U.S. Coast Guard NVIC 02-02 – Guidelines for Assessment of Seafarers’ Proficiency For Certification As Ratings Forming Part of a Navigational Watch Through Demonstration of Skills	U.S. COAST GUARD	http://www.uscg.mil/hq/g-m/nvic/index00.htm
8.	Health and Safety in Ports	ILO	www.ilo.org/public/english/dialogue/sector/techmeet/messhp03/messhp-cp-b.pdf
9.	Guidelines on Occupational Safety and Health Management Systems	ILO	www.ilo.org/public/english/protection/safework/cops/english/download/e000013.pdf
10.	Ambient Factors in the Workplace	ILO	www.ilo.ch/public/english/protection/safework/cops/english/download/e000009.pdf
11.	Accident Prevention On Board Ship At Sea and In Port	ILO	www.ilo.org/public/english/support/public/pdf/accident.pdf
12.	Marine Guidance Note (MGN 308) Mooring, Towing, or Hauling Equipment on All Vessels – Safe Installation and Safe Operation	Maritime Coastguard Agency, UK	www.mcga.gov.uk/c4mca/308.pdf
13.	Guidance on Voluntary Assessment By Administrations and For Ship Security – MSC.1/Circ.1193	IMO	www.un.org/sc/ctc/pdf/1193.pdf
14.	Measures to Prevent Unlawful Acts Against Passengers and Crews On Board Ships	IMO MSC Circ. 443	www.imo.org/includes/blastData.asp/doc_id=1658/msc%20circ%20443%20measure%20to%20prevent.pdf
15.	Guidance Regarding Radiocommunications and Radio Personnel	STCW Code, Section B-IV/2	

	Document Title	Source	HyperLink
16.	Marine Guidance Note (MGN 324) Radio: operational guidance on the use of VHF Radio and Automatic Identification Systems at Sea	Maritime and Coastguard Agency, UK	https://mcanet.mcga.gov.uk/public/c4/solas/m_notice/mgn/mgn324.pdf
17.	Guidelines for the Control and Management of Ship's Ballast Water To Minimize the Transfer of Harmful Aquatic Organisms and Pathogens	IMO A20/Res.868	
18.	STCW Chapter III – Standards Regarding the Engineer Department	STCW Code, Section A-III/1	
19.	STCW Chapter VIII – Standards Regarding Watchkeeping	STCW Code – Section A-VIII/1	
20.	Cyprus Code for Safe Working Practices for Seafarers	Department of Merchant Shipping, Cyprus	www.shipping.gov.cy/circulars/c2005/circular_2005_20_code_print.pdf
21.	U.S. Coast Guard Marine Safety Manual – Chapter 24 – Ship working conditions	U.S. Coast Guard	www.uscg.mil/hq/g-m/nmc/pubs/msm/v3/c24.pdf
22.	U.S. Coast Guard NVIC (04-97) – Guidance on Company Rules and Responsibilities under the 1995 Amendments to the International Convention on STCW	U.S. Coast Guard	www.uscg.mil/hq/g-m/nvic/4_97/n4-97.pdf
23.	Guidelines for a Structure Of An Integrated System Of Contingency Planning For Shipboard Emergencies – MSC/Circ.760-MEPC/Circ.310	IMO	www.uscg.mil/hq/g-m/nmc/imo/pdf/Circ1/Msc0/760.pdf

	Document Title	Source	HyperLink
24.	U.S. Coast Guard NVIC (03-98) – Port State Control Guidelines for the Enforcement of the 1995 Amendments to the International Convention on Standards of STCW for Seafarers, (1978)	U.S. Coast Guard NVIC 3-98	www.uscg.mil/hq/g-m/nvic/3_98/n3-98.pdf
25.	U.S. Coast Guard NVIC (2-94) – Guidance Regarding Voluntary Compliance with the International Management Code For the Safe Operation of Ships and For Pollution Prevention	U.S. Coast Guard NVIC 2-94	www.uscg.mil/hq/g-m/nvic/2_94/n2-94.pdf
26.	Marine Information Note – Development of Guidance for the Mitigation of Human Error in Automated Shipborne Maritime Systems	Maritime and Coast Guard Agency, UK	www.mcga.gov.uk/c4mca/min261.pdf
27.	Cardiff Research Report: Seafarer Fatigue	Cardiff Research Center, UK	http://www.google.com/search?hl=en&q=cardiff+research+report+2006+on+Seafarer+Fatigue
28.	TNO-report 20834/11353 – Fatigue in the Shipping Industry	TNO, Netherlands	www.he-alert.org/documents/published/he00605.pdf
29.	Guidance on Fatigue Mitigation and Management – MSC/Circ.1014	IMO STW	www.imo.org/includes/blastData.asp?doc_id=1184/1014.pdf
30.	Manning Proposal Form	Netherlands	
31.	Decision Making Aid (in development)	Netherlands	
32.	Safe Manning Application, Seven Day “Voyage Plan”	UK	

33.	Application for Safe Manning Document (under review)	UK	
34.	Hours of Work, Safe Manning, and Watchkeeping – Revised Provisions from 7 September 2002	Merchant Shipping Notice 1767 – UK	https://mcanet.mcga.gov.uk/public/c4/sola sv/m_notice/msn/msn1767.pdf
35.	linkage between the Res. A.890(21) and the IMO / ILO / EU relevant instruments	Italy	
36.	Guidelines for the Implementation of International Standards to Define Safe Minimum Manning	Italy	
37.	The Maritime Italian Administration Functional Model for Assessing the Crew Manning Levels	Italy	

ANNEX 3

CORRESPONDENCE GROUP MEMBER COMMENTS ON AREAS OF EMPHASIS THAT SHOULD BE CONSIDERED WHEN ARRIVING AT A MANNING DETERMINATION

General Comments

Recommend changing the term “minimum” to “normal.”

Safe manning should be discussed in the context of the “practices” and “factors” that are followed to assess a ship’s ability to maintain a safe watch keeping system while maintaining compliance with rest/work hour regulations. Less emphasis should be placed on a prescriptive approach and more on enforcement.

Minimum safe manning should not be prescriptive but rather should take into account the factors listed in resolution A.890(21) (e.g., size, type of ship, cargo, trading area, etc.).

Manning determination should not be prescriptive and focused on a specific number.

Make explicit in resolution A.890(21) that “safe manning” is the number and grade of officers and crew required for all normal operations, including peak workload conditions. This is necessary to offset the reduction of crew to levels that are not sufficient for conduct of normal operations, an ambiguity that is raised by the words “minimum safe manning” in resolution A.890(21).

Number of deck officers – 2 or 3

Make mandatory, for ships over 500GT, to have a minimum of three qualified deck officers in the ships proposed manning.

Make a three watch (1 Master, 2 Officers) normal practice without exception unless it can be accomplished without conflicting with work/rest hours in STCW and ILO. Also, need to have a standardized methodology to determine manning. This method would be the one used to determine whether an exception can be granted.

Certain vessel size (e.g., 3000 GT) and operations encounter difficulty operating with two-watch system due to requirements of the Code. These requirements include the following:

- relief officer has to allow time for his vision to adjust to light conditions during hours of darkness
- officer of the watch shall not be assigned duties that interfere with safe navigation (e.g., Administrative, maintenance) and, therefore, need to be carried out during a “rest period”
- Master as watchkeeper has to be on call for specific navigational situations and on the bridge when a pilot is on board.

More focus needs to be placed on vessels that are manned by two deck officers as more accidents seem to occur under this condition.

Make addition to the resolution to require, on vessels of 500 GT or more, a Master and two other deck officers as minimum in most circumstances.

Requirement of a Master and two other deck officers should be considered normal in most circumstances.

More focus on the fatigue issue is necessary for vessels operating on a 2-watch system.

Hours of Work/Rest

Administrations should carefully scrutinize safe manning documents, prior to issuing to vessel owners, to ensure that the requirements of hours of work and rest are adhered to.

Fatigue is accentuated for vessels of smaller tonnage, particularly under 1600 GT. More consideration should be given to this issue.

Emergencies or other overriding operational conditions should be accounted for in assigning duty times and recorded into official log books when such events occur.

Reporting of work/rest hours is both a flag State and port State issue. Through the enforcement of a reliable method of recording work/rest hours, both flag and port state can assess whether a vessel's crew are able to meet the regulation requirements. These recordings, however, will not determine whether seafarers are fatigued.

Training, experience and workload

Provide proper training to crewmembers who have negotiated labour agreements containing "Interdepartmental Flexibility" in their position descriptions and/or performs shipboard tasks that crosses departmental boundaries.

Training and experience need to be considered in determination of manning. Although certified, crewmembers lack opportunities to gain experience due to lack of delegation of duties by senior officers or are poorly trained. This indicates that organizational policies regarding training needs to be evaluated to address crewmember training and experience issues.

Cross-training in administrative and security functions are means to distribute workload among crewmembers and alleviate workload from those performing duties critical to safe navigation/watchkeeping.

Administrations should give consideration to the importance of keeping a bridge lookout during the night when issuing a safe manning document.

Fatigue/Human Factors

Manning levels should take into consideration fatigue, training and experience, and workload.

Fatigue and other human element factors, such as inadequate living and working conditions, should be considered in the determination of fitness for duty. The current STCW code implies that rest periods alone ensure fitness for duty.

Focus should be placed on the prevention of fatigue rather than on specifying the number of watch keepers. Through fatigue management considerations, the number of watch keepers necessary to keep a watch will become evident. Watch keepers should, during normal operations, not be fatigued in order they can meet peak workload conditions in situations such as:

- covering for sick or injured colleagues
- port arrival and inspections workload
- (in smaller vessels manned by a two watch system) either officer should, individually, be able to take the vessel to a location to re-establish safe manning if the other watch keeper is incapacitated.

Manning as Goal Based Standards

Use provisions of resolution A.890(21) to determine the goal-based criteria for manning. This avoids the one size fit all/prescriptive approach and requires ship owners and flag states to provide a comprehensive description on how they will operate their ship.

Evaluations of manning levels should use the Goal Based Standards to account for all operational factors at sea and ashore.

Manning should remain a goal-based system that places responsibility on vessel owners/operators, therefore, linking it to the ISM code.

A goal-based approach to manning is valid and desirable. Making resolution A.890(21) mandatory will actually not detract from it being goal-based but rather make it mandatory that the principles are considered when manning scales are developed.

“Age” as a factor

Age of a vessel is a relevant factor that should be accounted for in the determination of ship's manning and added to resolution A.890(21).

Age of a vessel should not be a parameter for determining the manning of a ship. Older specialized ships may be more technologically sophisticated than new bulk carriers. Rather “level of automation” and “use of technology” should replace the recommendation to include “age of vessel” as a determining factor for manning levels.

Accounting of “on-board activities”

Include the following information in resolution A.890(21):

In determining safe manning level, the following on board activities should be taken into account:

1. intensive cargo operations and preparations for immediate sailing;
2. long pilotage or possibility of adverse weather conditions requiring the master to be on the bridge for extended period;
3. lengths of tours of duty served by seafarers; and
4. degree of shore-side support provided to the ship by the company.

Responsibility of Administrations

Include the following Administration’s responsibility into resolution A.890(21):

- Administration should ensure that the requirement for hours of work and rest are adhered to in the safe manning documents before issuing them to the vessel owners.
 - Administrations should take proper account of existing IMO, ILO, ITU, and WHO instruments in force that deal with disembarkation of any crew members following an unforeseen, prevailing circumstance.
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