

A Rough Guide to interpreting the Principles of Safe Manning

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On 30 November 2011, the IMO adopted Resolution A.1047(27) - **Principles of Minimum Safe Manning** - which revokes Resolutions A.890(21) and A.955(23).

Paragraph 1.4 of Annex 2 - **Guidelines for Determination of Minimum Safe Manning** – states that in determining the minimum safe manning of a ship, consideration should also be given to 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.

A few definitions of peak work load conditions could be:

- for cargo ships: the ability to moor safely in adverse weather conditions where springs and ropes must be put out together and possibly tugs lines tended, all supervised by a responsible officer;
- for cruise ships: the ability to evacuate the ship safely in poor weather conditions at night without assistance from the shore facilities in the time specified by the IMO;
- for smaller vessels: the ability to enter port, work cargo and sail the same day and comply with the requirements for hours of work and hours of rest;
- for engineering staff: the ability to man the machinery control room or machinery monitoring station when navigating in restricted waters and/or berthing/unberthing;
- for maintenance: the ability to undertake essential ship/system/machinery maintenance in harbour during cargo operations or bunkering operations whilst attending to inspectors and port or company officials.

The **Guidelines for Determination of Minimum Safe Manning** are only viable if they are strictly complied with. To date, there is no mathematical formula for assessing the manpower requirements of a ship taking into account these Guidelines - while these are very sensible guidelines, they are nevertheless open to individual interpretation, and we can only offer our own thoughts on how to apply them.

This we have done by way of this Template titled **A Rough Guide to interpreting the Principles of Safe Manning**. This is a 'live' document which will be updated on the receipt of any feedback from the various stakeholders.

To this end, feedback is welcome and should be sent to editor@he-alert.org

OPERATIONAL FUNCTION	OPERATIONAL FACTORS TO CONSIDER	RELEVANT INSTRUMENTS	TASK CAPABILITY	ATTRIBUTES	WORKLOAD ASSESSMENT
<p>NAVIGATION</p> <p>Plan and conduct safe navigation</p> <p>Maintain a safe navigational watch in accordance with the requirements of the STCW Code</p> <p>Manoeuvre and handle the ship in all conditions</p> <p>Moor and unmoor the ship safely</p>	<p>Ocean navigation Coastal navigation Ice navigation Port approaches Pilotage Equipment functionality Weather Visibility Manoeuvrability Sea & air draft Communications</p> <p>Ocean navigation Coastal navigation Pilotage waters Weather Traffic density Visibility NavAid functionality Communications</p> <p>Weather Port approaches River/channel navigation Ice areas Ship type & manoeuvrability Visibility Traffic density Ship handling Communications Pilotage needs Duration of passage Availability of tugs</p> <p>Anchoring Mooring to buoy(s) Alongside berth Ship to ship Berthing in a tideway RO-RO berth Weather Equipment availability & functionality Tug availability Mooring line type and conditions Pilot requirements Ship size Manoeuvrability Availability of linesmen ashore</p>	<p>STCW Code</p> <p>STCW Code</p> <p>STCW Code</p> <p>STCW Code ISM Code Codes of Safe Working practice</p>	<p>Passage planning Anchorage planning Maintenance of NavAids, charts etc Communications</p> <p>Principles to be observed in keeping a safe navigational watch Bridge resource management principles Situational awareness Communications</p> <p>Ship handling in all weather conditions Knowledge of ship's manoeuvrability Knowledge of river and mud navigation Knowledge of ice navigation</p> <p>Ability to moor the ship in all weathers</p>	<p>Duration: Constant Frequency: Depends on trading pattern Competence: STCW Importance: High</p> <p>Duration: Variable depending on trading pattern Frequency: Frequent Competence: STCW Importance: High</p> <p>Duration: Short Frequency: Frequent Competence: STCW, BRM, ice experience, river experience Importance: Critical</p> <p>Duration: Short Frequency: Variable depending on trading pattern Competence: STCW Importance: Critical</p>	<p>Additional to watchkeeping duties</p> <p>Decide on watchkeeping pattern: 4/8, 6/6 or other Allow contingency to increase for weather & traffic density</p> <p>Normal watchkeeping pattern & lookout requirements Increasing to high for poor visibility, coastal, port approaches & pilotage Highest workload for master and bridge officers</p> <p>Depends on availability of sufficiently trained crew to moor the ship safely in all weathers & under adequate supervision and of sufficient linesmen ashore</p> <p>Peak workload condition: Ability to moor safely in adverse weather conditions where springs and ropes must be put out together and possibly tugs lines tended, all supervised by a responsible officer</p>
<p>CARGO HANDLING AND STOWAGE</p> <p>Plan, monitor and ensure safe loading of cargo</p> <p>Plan, monitor and ensure stowage of cargo</p> <p>Plan, monitor and ensure securing of cargo</p>	<p>Ship & hold/tank preparation Cargo type Division of responsibilities between ship & shore Shore equipment availability</p> <p>Onboard equipment availability Ship stability De-ballasting requirements Weather Berth suitability Time restrictions Charter Party Draft Loading rates</p>	<p>STCW Code IMDG Code CSS Code TDC Code IMSBC Code</p> <p>BC Code International Grain Code MARPOL Load Line Convention BWM Convention</p>	<p>Knowledge of:</p> <ul style="list-style-type: none"> - ship loading facilities - stability - cargo and stowage requirement - Charter Party terms <p>- Bills of Lading</p>	<p>Duration: Planning done at sea; constant in port Frequency: Dictated by trading & port working patterns Competence: STCW</p> <p>Importance: High</p>	<p>Heavy to critical Security restrictions may impose on ship's work pattern Preparation for sea critical Peak workload condition: In for smaller vessels, the ability to enter port, work cargo and sail the same day and comply with the requirements for hours of work and hours of rest</p>

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<p>Plan, monitor and ensure care of cargo during the voyage</p> <p>Plan, monitor and ensure unloading of cargo</p>	<p>Type of cargo Weather Stowage of cargo Duration of voyage Ventilation Charter Party Extra watch keeping requirements</p> <p>Ship preparation Cargo type Division of responsibilities between ship & ship. Shore equipment availability Onboard equipment availability Ship stability Ballasting requirements Weather Berth suitability Time restrictions Charter Party Draft Discharge rates</p>	<p>STCW Code IMDG Code CSS Code TDC Code IMSBC Code BC Code International Grain Code MARPOL Load Line Convention</p> <p>STCW Code IMDG Code CSS Code TDC Code IMSBC Code BC Code International Grain Code MARPOL BWM Convention Load Line Convention</p>	<p>General cargo knowledge Specialist cargo knowledge dependent on type</p> <p>Knowledge of ship and port discharge facilities Inspection and survey of holds/tanks</p>	<p>Duration: Continuous Frequency: Cargo dependent Competence: STCW Importance: High</p> <p>Duration: Continuous during discharge Frequency: Dictated by trading & port working patterns Competence: STCW Importance: High</p>	<p>Normal to critical depending on nature of cargo Possible additional watch keeping requirements for deck and engine departments (officers & ratings)</p> <p>Heavy to critical Security restrictions may impose on ships work pattern Heaviest period on arrival and in preparation for departure</p>
<p>OPERATION OF THE SHIP AND CARE FOR PERSONS ON BOARD</p> <p>Maintain the safety and security of all persons on board</p> <p>Keep life-saving, fire-fighting and other safety systems in operational condition</p> <p>Operate and maintain all watertight closing arrangements</p> <p>Perform operations, as appropriate, to muster and disembark all persons on board</p> <p>Perform operations, as appropriate, to ensure protection of the marine environment</p>	<p>In port & at sea Training levels of crew Safety Management System Permits to work Security level Availability of ship & port facilities Entry into, & rescue from enclosed spaces</p> <p>Training and drills Equipment maintenance Equipment certification Company SMS requirements Manufacturer's maintenance instructions Station Bill Fitness of crew for assigned tasks</p> <p>Ships SMS requirements Maintenance instructions Weather conditions Safety of personnel</p> <p>Training & drills for crew members Knowledge of special requirements for aged or infirm on board Weather conditions Number of persons to muster & disembark Injured persons Time to disembark</p> <p>Communications</p> <p>Port & sea preparation Availability of anti-pollution equipment Pollution risk areas on board Co-ordination between departments Company SMS Communications</p>	<p>SOLAS ISM Code ISPS Code SUA Conventions and Protocols ILO/IMO Code of practice on security in ports Djibouti Code of Conduct</p> <p>SOLAS STCW Code LSA Code</p> <p>STCW Code SOLAS 2008 IS Code IACS UI SC156</p> <p>STCW Code SOLAS LSA Code</p> <p>SOLAS MARPOL STCW Code</p>	<p>Knowledge of Port security facilities Ship Security Officer Certification Shipboard knowledge</p> <p>Fire certification to appropriate level Knowledge of the operation and control of all fire fighting equipment on board Specialist knowledge of BA sets</p> <p>Knowledge of the W/T door regulations, the position of W/T doors and their operation</p> <p>Boatwork Crowd management Leadership Communication Seamanship</p> <p>Pollution prevention & control</p>	<p>Duration: Area dependant; constant in port Frequency: Dictated by trading patterns & port visits Competence: Ship Security Officer certification. Crew trained Importance: Critical</p> <p>Duration: Depending on fit and In accordance with maintenance requirements Frequency: Depending on fit and In accordance with maintenance requirements Competence: STCW Importance: Critical</p> <p>Duration: Periodic Frequency: Testing, entering/leaving harbour & during heavy sea states Competence: STCW Importance: High</p> <p>Duration: As prescribed in SOLAS Frequency: Training & drills as prescribed in SOLAS Competence: STCW Importance: Critical</p> <p>Duration: As required Frequency: As required Competence: STCW Importance: Critical</p>	<p>High to critical, depending on security level Can be manpower intensive Extra watchkeeping in port and in piracy areas at sea</p> <p>Division of labour between normal ship work and safety essential Essential to establish priorities (few ships can manage both)</p> <p>Not manpower intensive Power operated doors Care required over safety</p> <p>Manpower intensive, particularly on passenger-carrying ships</p> <p>Peak workload condition: The ability to evacuate a cruise ship safely in poor weather conditions at night without assistance from shore facilities in the time specified by the IMO</p> <p>Manpower intensive during exercises and actual clean-up operations</p>

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<p>Provide for medical care on board the ship</p> <p>Undertake administrative tasks required for the safe operation and the security of the ship</p>	<p>At sea In port Availability of onboard facilities Helicopter availability First Aid stations Hospital preparation Stretcher parties Equipment availability Access to medical records</p> <p>Certification upkeep Conducting surveys Accompanying shore surveys Updating risk assessments Monitoring hours of work Upkeep of maintenance records Upkeep of regulations Dealing with Port Officials Catering administration Stores administration Personnel administration Inspections Updating navigation information Updating port information Checking navigation equipment Checking safety equipment Inventories Safety meetings Administration meetings Cargo meetings Medical administration Portage bill Cash advances Payments Budgeting Security Training</p>	<p>STCW Code International Medical Guide for Ships ILO Guidelines on the medical examinations of seafarers</p> <p>SOLAS ISM Code PSC</p>	<p>Certification appropriate to rank</p> <p>Leadership Accountancy Personnel skills Catering Skills Health and Safety Patience Diplomacy</p>	<p>Duration: As required Frequency: As Required Competence: At least to STCW standards, other than in ships required to carry a medical practitioner Importance: Critical</p> <p>Duration: Constant Frequency: Constant Competence: Variable increasing with experience Importance: Critical</p>	<p>Not manpower intensive, except during emergencies</p> <p>Normally to be undertaken outside of watchkeeping duties Consider Administration tasks for everyone from master and chief engineer downwards</p>
<p>MARINE ENGINEERING</p> <p>Operate and monitor the ship's main propulsion and auxiliary machinery and evaluate the performance of such machinery</p> <p>Maintain a safe engineering watch in accordance with the requirements of the STCW Code</p>	<p>Complexity of machinery spaces UMS conditions Technical complexity of machinery, control & monitoring systems Redundancy of essential machinery Maintenance regime employed in the upkeep of machinery & control systems Level & availability of technical shore support Operational checks on machinery & systems</p> <p>Complexity of machinery spaces UMS conditions Technical complexity of machinery, control & monitoring systems</p>	<p>STCW Code</p> <p>STCW Code</p>	<p>Operation, surveillance, performance assessment & maintaining safety of propulsion plant and auxiliary machinery Preparation, operation, fault detection & necessary measures to prevent damage for the following machinery items & control systems:</p> <ul style="list-style-type: none"> - main engine & associated auxiliaries - steam boiler & associated auxiliaries & steam systems - auxiliary prime movers & associated systems - other auxiliaries, including refrigeration, air conditioning & ventilation systems <p>Principles to be observed in keeping an engineering watch Engine-room resource management principles Communications</p>	<p>Duration: Constant Frequency: Constant Competence: STCW Importance: High</p> <p>Duration: Constant but dependant on UMS conditions Frequency: Constant Competence: STCW Importance: High</p>	<p>Dependant on UMS conditions and maintenance Peak workload conditions: The ability to man the machinery control room or machinery monitoring station when navigating in restricted waters and/or berthing/unberthing</p> <p>Dependant on UMS conditions Decide on watchkeeping pattern: 4/8, 6/6 or other Allow contingency to increase for lengthy transits during poor visibility, coastal, port approaches & pilotage</p>

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<p>Manage and perform fuel and ballast operations</p> <p>Maintain safety of the ship's engine equipment, systems and services</p>	<p>Safety regulations & company procedures Operational hazards Risks to personnel, ship & environment Safety, hazard minimisation & pollution control Entry into enclosed spaces Machinery failure Equipment failure Emergency & contingency planning Ship stability Loadline requirements</p> <p>Different types of machinery installation Company & survey requirements Detection & rectification of malfunctions Safety, environmental & hazard control precautions Control measures for hazards & safety risks Normal & emergency situations</p>	<p>STCW Code MARPOL Load Line Convention BWM Convention</p> <p>STCW Class MARPOL</p>	<p>Preparations for fuelling & transfer operations Connecting & disconnecting fuelling & transfer hoses Safe function, operation & maintenance of bilge and ballast systems</p> <p>Safety issues, hazards & precautions associated with the operation of:</p> <ul style="list-style-type: none"> - engine(s) & propulsion plant - fuel systems - engine cooling & lubrication systems - electrical plant & distribution systems - marine control systems - auxiliary machinery & associated systems 	<p>Duration: As required Frequency: As required Competence: STCW Importance: High</p> <p>Duration: Constant Frequency: Constant Competence: STCW Importance: Critical</p>	<p>May be undertaken outside of normal watchkeeping</p> <p>Contingency for extra available manpower to rectify malfunctions outside of normal watchkeeping</p>
<p>ELECTRICAL, ELECTRONIC AND CONTROL ENGINEERING</p> <p>Operate the ship's electrical and electronic equipment</p> <p>Maintain the safety of the ship's electrical and electronic systems</p>	<p>All electrical, electronic & control equipment, including navigation aids & internal & external communication systems Type/complexity of ship Technical complexity of systems Redundancy of essential systems Operational checks on electrical/electronic systems</p> <p>Maintenance regime employed in the upkeep of electrical, electronic & control engineering systems & internal & external communication systems Type/complexity of ship Level & availability of technical shore support Company & survey requirements Detection & rectification of malfunctions Different types of machinery installation Safety, environmental & hazard control precautions Control measures for hazards & safety risks Normal & emergency situations Different types of electrical, electronic & control equipment</p>	<p>STCW</p> <p>STCW Class</p>	<p>Principles to be observed in keeping an engineering watch (where appropriate) Engine-room resource management principles Communications</p> <p>Safety issues, hazards & precautions associated with the operation of all electrical, electronic & control equipment, including navigation aids & internal & external communication systems Safe operation and maintenance of high-voltage systems</p>	<p>Duration: Constant Frequency: Constant Competence: STCW Importance: High to critical</p> <p>Duration: Constant Frequency: Constant Competence: STCW Importance: High to critical</p>	<p>Manning requirements greater on passenger vessels</p> <p>Contingency for extra available manpower to rectify malfunctions outside of normal watchkeeping</p>
<p>RADIOCOMMUNICATIONS</p> <p>Transmit and receive information using the radio equipment of the ship</p> <p>Maintain a safe radio watch in accordance with the requirements of the ITU Radio Regulations and the 1974 SOLAS Convention, as amended</p>	<p>GMDSS radiocommunication equipment & sub-systems MF VHF HF Satellite communications EPIRBs SARTs Passenger radio/telephone services Operational checks on equipment Normal vessel-to-vessel service Normal vessel-to-shore service On-demand service Auto seaphone service</p>	<p>SOLAS ITU Radio Regulations STCW</p>	<p>The principles of marine radiotelephony to accurately transmit and receive messages. Use of correct procedures for transmitting and receiving of signals using HF and VHF</p> <p>Primary duties for radio watchkeeping not to be adversely affected by attending to radio traffic not relevant to the safe movement of the ship & safety of navigation</p>	<p>Duration: As required Frequency: As required Competence: STCW Importance: High</p>	<p>Additional to normal bridge watchkeeping</p>

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Provide radio services in emergencies	Auto seaphone 999 service Safety services Navigational services Distress Urgency Medical advice service Emergency position signals Search & rescue Abandon ship Fire on board ship Partial or full breakdown of radio installations	SOLAS ITU Radio Regulations STCW	Principles of marine radiotelephony to accurately transmit & receive messages Use of correct procedures for transmitting & receiving of signals using HF and VHF Deployment & operation of satellite EPIRBs and SARTs	Duration: Constant during emergency Frequency: Constant during emergency Competence: STCW Importance: Critical	May require additional manpower above normal watchkeeping
MAINTENANCE AND REPAIR 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	Planned maintenance Condition-based maintenance Operational repairs Rectification of machinery/equipment/system malfunctions Residual repairs after departing a shipyard Technical in-voyage repairs maintenance & overhaul of hull, machinery & equipment in accordance with manufacturers' recommended procedures Use of riding gangs	SOLAS STCW Class	Undertake essential ship/system/machinery maintenance during peak workload conditions	Duration: Maintenance, continuous. Repairs, as required Frequency: Maintenance, continuous. Repairs, as required Competence: STCW Importance: High to critical	May be additional to normal bridge and engine room watchkeeping routines Peak workload conditions: The ability to undertake essential ship/system/machinery maintenance in harbour during cargo operations or bunkering operations whilst attending to inspectors and port or company officials