

Extract of telegraph orders

Extract of Telegraph orders Maersk Kendal- 16 September 2009

Local Time*	Order	RPM (Ordered)	RPM (Actual)
064828 Full		67	88
070311 Half		53	78
070815 Slow		41	73
071244 STOP		0	31
071314	Dead slow Astern	-24	-21
071341 Slow	astern	-40	-38
071433 Half	astern	-48	-37
071442 Full	astern	-62	-42
072249 Half	astern	-55	-53
072252 Slow	astern	-41	-53
072259	Dead slow astern	-28	-53
072308 STOP		0	-41

* Time stamp linked with engine room control computer- error not known due to number of system shut downs post accident.

MAIB's transcript of relevant VHF radio communications

MAIB's transcript of relevant VHF radio communications
on 16 September 2009

VTIS: Singapore Vessel Traffic Information Service

MK: *Maersk Kendal*

BP: *Bright Pacific*

KD: *Kota Delima*

Local Time	From	Content
0703	VTIS	<i>Maersk Kendal, Maersk Kendal</i> , VTIS.
	MK	VTIS, <i>Maersk Kendal</i> .
	VTIS	<i>Maersk Kendal</i> , require that you slow down/require you to slow down. Three ships coming out of the Jurong channel-ahead of you.
070404	MK	I can confirm that we have slowed down sir.
	VTIS	Thank you very much, keep a good lookout. For your information, bearing from you 267 degrees just under 3 nautical miles away is <i>Kota Delima, Kota Delima</i> going to EAST. Behind her, motor tanker <i>Bright Pacific</i> going to EAST. Exercise caution over.
	MK	Understood sir.
	KD	<i>Maersk Kendal, Maersk Kendal, Kota Delima</i> on your starboard bow.
	MK	<i>Kota Delima</i> , this is <i>Maersk Kendal</i> replying.
	KD	Your starboard bow, on your starboard bow, I crossing on your head.
070423	MK	Yes sir - You can cross, cross my bow.
	KD	Thank you.
	VTIS	<i>Maersk Kendal, Maersk Kendal</i> , VTIS.
	MK	VTIS, <i>Maersk Kendal</i> .
070720	VTIS	Bearing from you 277 degrees, distance 2 nautical miles away is the departure tanker <i>Bright Pacific, Bright Pacific</i> going to EAST. What are your intentions? Passing ahead or astern of her over.
	MK	We will pass astern of her.
	VTIS	You will pass astern of her. (PAUSE) Her name is <i>Bright Pacific</i> , if necessary you can call her, you can call her. And your speed is very high; your speed still very high. You are entering our port limit now.
	MK	We are slowing down now sir, speed is coming down.
	VTIS	Thank you, heavy traffic ahead of you.
	VTIS	<i>Bright Pacific, Bright Pacific</i> , VTIS.
	BP	This is <i>Bright Pacific</i> , go ahead.
070825	VTIS	<i>Bright Pacific</i> , on your port bow bearing 100 degrees distance 1.5 nautical miles away, there is the container <i>Maersk Kendal</i> ,

		<i>Maersk Kendal</i> (UNCLEAR) will pass astern of you over.
	BP	Thank you very much sir, the container vessel on my port bow, <i>Maersk</i> vessel she will pass astern of me. Thank you very much sir.
VTIS		Thank you
VTIS		<i>Maersk Kendal, Maersk Kendal, VTIS.</i>
MK		VTIS, <i>Maersk Kendal.</i>
071002	VTIS	Are you the Captain over?
	MK	Sir, the Captain is on the bridge, go ahead
	VTIS	Captain on the bridge. Right now you are already in the port limits, advice to you slow down your speed, slow your speed there's a lot of ----- stuff ---- over.
MK		Understood sir.
071038 MK		(Capt) VTIS, <i>Maersk Kendal, Maersk Kendal</i> , Listen I am slowing down all the time I have two ships out ahead and will pass astern of both of them, no problem.
071045	VTIS	Chemical tanker, Chemical tanker the name is <i>Samho Jewelry, Samho Jewelry</i> is a... is a piloted tanker. She is not leaving Singapore, she is not leaving Singapore.
071101	MK	Got the name of the tanker – <i>Samho Jewelry</i> . Thank you.
071106	VTIS	Thank you, it appears that you are heading towards her, over
	VTIS	<i>Maersk Kendal, Maersk Kendal, VTIS.</i>
	MK	VTIS, <i>Maersk Kendal.</i>
071129	VTIS	All ships standby, all ships standby. <i>Maersk Kendal</i> , warning to you, ahead of you is the chemical tanker <i>Samho Jewelry, Samho Jewelry</i> pilot onboard. She is, she is going to
071206	VTIS	<i>Maersk Kendal, Maersk Kendal</i> warning to you, ahead of you is <i>Samho Jewelry, Samho Jewelry</i> . What is your intention, over?
071222	MK	We are passing astern and will make an alteration of port after that.
071225	VTIS	Captain, next time, next time exercise caution please. Navigate with safe speed, Captain you cannot navigate like this.
071239	VTIS	<i>Maersk Kendal</i> , Captain do you copy?
071243	VTIS	<i>Maersk Kendal?</i>
	VTIS	<i>Maersk Kendal, Maersk Kendal, VTIS.</i>
	MK	UNCLEAR
071300	VTIS	<i>Maersk Kendal</i> , shallow water ahead of you, shallow water ahead of you.
0713	MK	OK sir
071355	VTIS	<i>Maersk Kendal, VTIS?????</i>
071401	VTIS	<i>Maersk Kendal, Maersk Kendal, VTIS?????</i>
071411	VTIS	<i>Maersk?????</i>
	VTIS	<i>Maersk Kendal, Maersk Kendal, VTIS.</i>
	MK	VTIS, <i>Maersk Kendal.</i>
071540	VTIS	<i>Maersk Kendal</i> are you grounded over?
071555	MK	That is Affirmative sir!

Stranding or grounding checklist

Library | Ship Operations | Bridge Procedures Guide | Part C Emergency Checklists | C3 Stranding or grounding

C3 Stranding or grounding

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Action to be carried out:	
<input type="checkbox"/>	Stop engines
<input type="checkbox"/>	Sound general emergency alarm
<input type="checkbox"/>	Close watertight doors, if fitted
<input type="checkbox"/>	Maintain a VHF watch on Channel 16 and, if appropriate, on Channel '13
<input type="checkbox"/>	Exhibit lights/shapes and make any appropriate sound signals
<input type="checkbox"/>	Switch on deck lighting at night
<input type="checkbox"/>	Check hull for damage
<input type="checkbox"/>	Sound bilges and tanks
<input type="checkbox"/>	Visually inspect compartments, where possible
<input type="checkbox"/>	Sound around ship
<input type="checkbox"/>	Determine which way deep water lies
<input type="checkbox"/>	Determine the nature of the seabed
<input type="checkbox"/>	Obtain information on local currents and tides, particularly details of the rise and fall of the tide
<input type="checkbox"/>	Consider reducing the draught of the ship
<input type="checkbox"/>	Consider taking on additional ballast to prevent unwanted movement
<input type="checkbox"/>	Make ship's position available to radio room/GMDSS station, satellite terminal and other automatic distress transmitters and update as necessary
<input type="checkbox"/>	Inform Coastal State Authorities if appropriate
<input type="checkbox"/>	Preserve VDR or S-VDR records if not automatically protected
<input type="checkbox"/>	Broadcast DISTRESS ALERT and MESSAGE if the ship is in grave and imminent danger and immediate assistance is required, otherwise broadcast an URGENCY message to ships in the vicinity
<input type="checkbox"/>	Reduce the draught of the ship
<input type="checkbox"/>	Make ship's position available to radio room/GMDSS station, satellite terminal and other automatic distress transmitters and up-date as necessary
<input type="checkbox"/>	Broadcast DISTRESS ALERT and MESSAGE if the ship is in grave and imminent danger and immediate assistance is required, otherwise broadcast an URGENC/ message to ships in the vicinity
Other actions:	
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	

Maersk Kendal - performance data



Maersk Kendal

1.3 PERFORMANCE DATA

1.3.1 REVOLUTIONS/SPEED/POWER DATA

Fuel Consumption (Main Engine)

Main engine load: MCR = 102.0 rpm
NCR = 96.6 rpm

Mean shaft power: 57,200kW (77,800 PS) MCR
48,620kW (66,130 PS) NCR

Daily consumption: Approximately 170 tonnes/day at NCR
Approximately 236 tonnes/day at MCR

Engine Order/RPM/Speed Table

Engine Order	RPM	Loaded Condition	Ballast Condition
Nav. full ahead	96.6	25.6	26.3
Full ahead	67	17.5	17.8
HQM ahead	51	13.3	13.6
Slow ahead	41	10.7	10.9
Dead slow ahead	30	7.9	8.1
Dead slow astern	30		
Slow astern	41		
Half astern	51		
Full astern	67		

Propulsion Particulars

Critical Speed (Revolutions)	None
Minimum Engine Revolutions / Ship Speed	20 rpm / 3.5 knots
Time Limit Jangle Running Astern	NA
Time Jangle Engine Running at Minimum Revolutions	NA
Full Ahead to Full Astern - Emergency	409 seconds
Stop to Full Astern	NA

Number of Starts of Main Engine from Air Reservoirs with Compressors Stopped

24 in number

Steering Particulars

Minimum steering speed:

5.5 knots, loaded

Type of rudder:

Self-balanced spade rudder, surface area 69.48m²

Maximum available rudder angle:

37.5° to port or starboard

Neutral effect:

Rudder angle 1° starboard

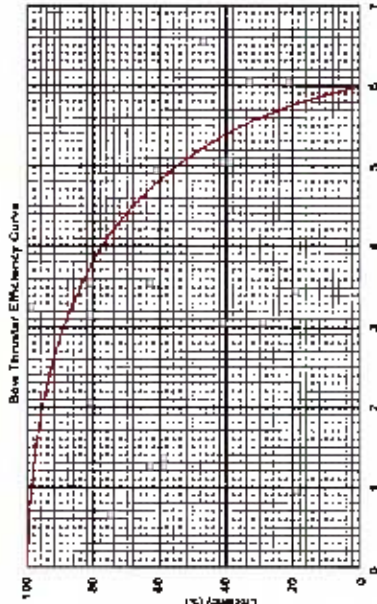
Hard over to hard over (35° to 30°):

1 pump out - 23 seconds

Emergency local operation, one pump (15° to 15°):

4.9 seconds at 70 rpm

Efficiency of Bow Thruster



Ship's Speed (knots): 20% 40% 60% 80% 100%
% Efficiency: 20% 40% 60% 80% 100%
Rate of Turn (°/min): 0 3.7 5.5 7.4 9.7

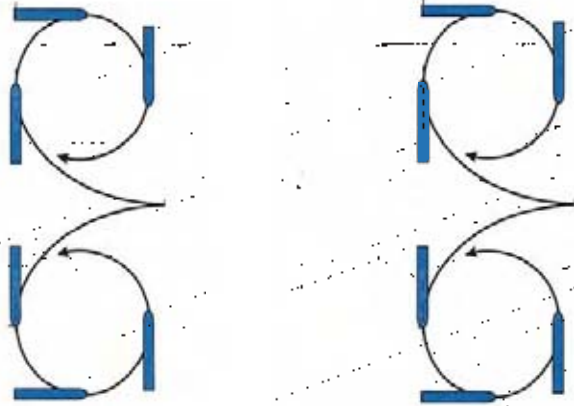
Ship's Condition

Loaded draught: 14.522m even keel

Ballast draught: 6.2m even keel

Time and Distance to Stop

	Normal Loaded Condition		Normal Ballast Condition	
	Time	Distance	Time	Distance
Full Ahead	4.4 minutes	1.81 nm	7.5 minutes	1.69 nm
Half speed	2.6 minutes	1.56 nm	7.0 minutes	1.37 nm



Master's standing orders – page 1



Master's Standing Orders

A.P.Møller Group ID:266 - 05/07/2006 - 03 - 12 months

Vessel: **Maersk Kendal**

Master: _____

Date: **18/08/09**

These Standing Orders are here so as to leave no member of the bridge watch keeping team in any doubt what so ever, as to what I require when they are in charge of a navigational watch. Please sign in the appropriate space at the end of these standing orders, and by doing so indicates that you have read and understood my instructions.

All officers are to be familiar with the following publications

- STCW Section A & B Chapter 8 Guidelines for Watchkeeping as well as Hours of rest regulations
- Guidelines for Navigators
- Bridge Procedures Guide (ICS publication)
- The International Collision Avoidance Regulations
- The Maersk Company's QE SMS system
- Environmental Protection Policy

The Officer Of The Watch (OOW)

The OOW has complete charge of the safety of the vessel during his duty period be this at sea, anchor or in port. My presence on the bridge does not relieve the OOW of this obligation. **I WILL DIRECTLY AND CLEARLY INFORM YOU THAT I HAVE THE CONN IN SUCH A WAY THAT THERE WILL BE NO DOUBT AS TO WHO HAS THE CONN.** When I do take the conn, an entry to that effect to be made in the deck log book. In this situation, the OOW shall continue to monitor both traffic and the vessels position along its intended route, advising me of anything unplanned and collision avoidance.

IF YOU ARE IN ANY DOUBT CONCERNING MY ACTIONS PLEASE SPEAK UP I may have missed something.

The collision regulations are to be strictly complied with in all cases. Early and positive action should be taken to avoid a close quarter situation and such action shall be carefully monitored to ensure that it is having the desired result and until the danger is gone and clear.

Usually the easiest method to avoid a close quarter situation developing is by an alteration of course, **BUT**, if you feel it is necessary then use the engine in plenty of time. The engine is there for your use, should you need it, of course please try to warn the engineers before you do so, however never let it delay your action.

Please ensure the correct lights and shapes are displayed as per the rules and appropriate sound signals made as required

The bridge is **NEVER** to be left unattended whilst at sea.

All officers are to ensure that they report to the bridge in ample time in order to relieve at the appointed hour, in a fit state, and well rested. If the OOW is in any doubt as to the suitability of his relief to assume the watch, then **CALL ME immediately**

I require you to maintain a general awareness as to what is happening about the vessel during your watch where people may be working and their attendant dangers. You are required to "keep a lookout, using all available means, appropriate to the prevailing circumstances and conditions" and in this end do not hesitate to call additional lookouts should you require them. During daylight hours I expect the duty watchman to be able to be summoned to the bridge at a moments notice.

RECORDS

It is of the greatest importance that proper records are kept of all navigation incidents so that in anytime in the future the event can be recreated. All logbooks, movement book (bellbook) etc shall be completed in a clear and accurate manner. It is better to have too much information than too little. Remember it might be you trying to recall the events in a court of law. Please ensure all data recording equipment i.e. course recorder, echo sounder and telegraph recorder, is kept to the correct time/date and signed where possible by the checking officer. Plotted chart positions are to remain on the chart until the end of the voyage so as to be available to the authorities should they require. Please record the weather at the end of your watch at sea and in port and in any case should the wind exceed beaufort force 6 then hourly.

CALLING THE MASTER

I am available 24 hours a day should you need me **NEVER** be afraid to call or ask for assistance.

In any event I expect to be called in the following circumstances:-

a) If you are in doubt as to the intentions of another vessel or what your actions should be.

If you find yourself asking the question "should I call the captain", then this is the time to call me. It does not matter if it subsequently turns out to be a false alarm. **I WOULD RATHER BE CALLED AND NOT BE NEEDED THAN NOT BE CALLED AT ALL.**

b) If restricted visibility is encountered and I expect rule 19 to be followed i.e. both radars operational, and all

Procedure 2.1 - Responsibility / Bridge discipline

Procedures and Instructions | Ship Operations | Operation | Nautical Operations | Guidelines for Navigators | Ch 2 Bridge Organisation | 2.1 Responsibility / Bridge discipline

2.1 Responsibility / Bridge discipline

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Purpose

Master and bridge team responsibility of Bridge discipline.

Scope

This procedure applies to all vessels, all systems and all owners.

Definitions

Bridge discipline is the co-operation and sharing of navigational duties which shall exist between members of the bridge team, e.g. master, officer of the watch, helmsman and lookout.

Roles and responsibilities

The Master has overall responsibility for the bridge discipline as well as for other matters. As part of this responsibility he shall organize and detail all officers' watch keeping duties. In determining the above the Master shall take into account to what extent and in what rotation the navigating officers shall conduct bridge watch keeping in the varying conditions under which the vessels navigates.

When The Master requires more than one navigating officer for the bridge watch keeping, each of them shall be assigned specific duties e.g. use of radar, position plotting, monitoring other traffic, operation of engine telegraph etc.

Random checks of Bridge discipline, procedure and equipment by the Master.

To ensure that all officers are complying with navigational procedures the Master has an obligation to carry out random audits, covering such items as mentioned in the Bridge Discipline Agenda, Navigational checklist, logbooks, charts correction (on the chart), and adherence to passage plan. The result and timing of such audits should be formally recorded in the minutes of the Bridge discipline meeting.

The Officer of the Watch is responsible for safe navigation of the vessel throughout the watch. Consequently the officer of the watch shall ensure that efficient watch keeping include lookout is maintained at all times.

Description

Bridge Discipline Meeting

Shortly after taking command or when new officers join the bridge team the Master shall conduct a Bridge Discipline Meeting for all Deck officers and apprentices. If new

navigating officers join the vessel a new bridge discipline meeting is to be conducted for the newcomers. If workload permits, all navigating officers shall attend additional meeting. The agenda I-form Id 104 and reporting tools I-form Id 105 in I-form application category 11 shall be used - and items added as applicable.

Minutes written in English shall be drawn up of each meeting to ensure that the decisions taken can be followed up in an effective manner.

Officer in Charge of Navigation

There shall be no uncertainty as to which member of the bridge team is the "officer of the watch" and therefore in charge of and responsible for safe navigation of the vessel.

Master Presence on the Bridge

Irrespective of the Master's or any other navigating officer's presence on the bridge, the officer of the watch continues to be solely responsible for safe navigation of the vessel.

If and when the master takes over navigation of the vessel he shall specifically advise the Officer of the watch of that fact and clearly establish mutual understanding thereof. The change of watch must be logged in the Deck logbook.

Under circumstances required the Master's urgent take over a full handover instruction as for changing duty officer shall take place. The time for change of navigational responsibility shall be recorded in the vessel's log book.

The officer of watch shall continue to navigate the ship until properly relieved by another navigation officer or otherwise instructed by the Master.

This also applies when the Master returns control to the Officer of the Watch.

Communication on the Bridge

To prevent misunderstanding between duty personnel on the bridge it is a prerequisite to maintain good communication for ensuring that information concerning navigation and other bridge activities are exchanged in a clear and precise manner.

It is the duty of any officer on the bridge to notify the Master immediately if he/she thinks that Master's navigation does not follow the planned track.

Precaution when Changing Duty Officer

When the master or the officer of the watch has control of navigation, change of watch shall not take place when a manoeuvre or other action to avoid any hazard is taking place or under conditions where close attention is required. The change of watch shall be deferred until such action has been completed. The relieving officer shall have time with the Master or the Officer of the Watch to study and plan the navigation ensuring both are familiar with all buoys, lights and leading lights and traffic that are in the area.

Other Duties

The officer of the Watch shall not be assigned or undertake any other duties which could interfere with the safe navigation of the vessel.

Duty of Helmsman

Whenever the vessel is to be hand steered, the wheel shall be taken by a competent helmsman whose sole purpose is to steer the vessel. The helmsman shall not be assigned other duties.

References

Bridge Procedures Guide - ICS

International Regulations for Preventing Collisions at Sea

Check list For changes of officers - I-Form Id 449

Check list For changes of officers - I-Form Id 028

I-Form Id 104

I-Form Id 105

Definitions

Records *

The bridge discipline Minutes shall be filed for a period of not less than 12 month.

One copy shall be filed in the Minutes file held on board. An electronic version shall also be retained on board (I-Form) - One copy shall be forwarded to the Owner's TVO-department on request.

IMO Resolution A.893(21) - Guidelines for Voyage Planning

RESOLUTION A.893(21) adopted on 25 November 1999
Guidelines For Voyage Planning

THE ASSEMBLY,

RECALLING Article 15(j) of the Convention on the International Maritime Organization concerning the functions of the Assembly in relation to regulations and guidelines concerning maritime safety and the prevention and control of marine pollution from ships,

RECALLING ALSO section A-VIII/2, Part 2 (Voyage planning) of the Seafarers' Training, Certification and Watchkeeping Code,

RECALLING FURTHER the essential requirements contained in the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers and the International Convention for the Safety of Life at Sea concerning voyage planning, including those relating to officers and crew, shipborne equipment, and safety management systems,

RECOGNIZING the essential importance for safety of life at sea, safety of navigation and protection of the marine environment of a well planned voyage, and therefore the need to update the 1978 Guidance on voyage planning issued as SN/Circ.92,

NOTING the request of the Assembly in resolution A.790(19) that the Maritime Safety Committee consider the issue of voyage planning in conjunction with its review of the Code for the Safe Carriage of Irradiated Nuclear Fuel, Plutonium and High-Level Radioactive Wastes in Flasks on Board Ships (INF Code), and the Committee's decision that consideration of the issue of voyage planning should not be restricted to vessels carrying materials subject to the INF Code but should apply to all ships engaged on international voyages,

HAVING CONSIDERED the recommendation made by the Sub-Committee on Safety of Navigation at its forty-fifth session:

- 1.)** ADOPTS the Guidelines for voyage planning set out in the Annex to the present resolution;
- 2.)** INVITES Governments to bring the annexed Guidelines to the attention of masters of vessels flying their countries' flag, shipowners, ship operators, shipping companies, maritime pilots, training institutions and all other parties concerned, for information and action as appropriate;
- 3.)** REQUESTS the Maritime Safety Committee to keep the said Guidelines under review and to amend them as appropriate.

ANNEX

Draft Guidelines For Voyage Planning

1.) Objectives

1.1) The development of a plan for voyage or passage, as well as the close and continuous monitoring of the vessel's progress and position during the execution of such a plan, are of essential importance for safety of life at sea, safety and efficiency of navigation and protection of the marine environment.

1.2) The need for voyage and passage planning applies to all vessels. There are several factors that may impede the safe navigation of all vessels and additional factors that may impede the navigation of large vessels or vessels carrying hazardous cargoes. These factors will need to be taken into account in the preparation of the plan and in the subsequent monitoring of the execution of the plan.

1.3) Voyage and passage planning includes appraisal, i.e. gathering all information relevant to the contemplated voyage or passage; detailed planning of the whole voyage or passage from berth to berth, including those areas necessitating the presence of a pilot; execution of the plan; and the monitoring of the progress of the vessel in the implementation of the plan. These components of voyage/passage planning are analysed below.

2.) Appraisal

2.1) All information relevant to the contemplated voyage or passage should be considered. The following items should be taken into account in voyage and passage planning:

2.1.1) the condition and state of the vessel, its stability, and its equipment; any operational limitations; its permissible draught at sea in fairways and in ports; its manoeuvring data, including any restrictions;

2.1.2) any special characteristics of the cargo (especially if hazardous), and its distribution, stowage and securing on board the vessel;

2.1.3) the provision of a competent and well-rested crew to undertake the voyage or passage;

2.1.4) requirements for up-to-date certificates and documents concerning the vessel, its equipment, crew, passengers or cargo;

2.1.5) appropriate scale, accurate and up-to-date charts to be used for the intended voyage or passage, as well as any relevant permanent or temporary notices to mariners and existing radio navigational warnings;

2.1.6) accurate and up-to-date sailing directions, lists of lights and lists of radio aids to navigation; and

2.1.7) any relevant up-to-date additional information, including:

2.1.7.1) mariners' routing guides and passage planning charts, published by competent authorities;

2.1.7.2) current and tidal atlases and tide tables;

2.1.7.3) climatological, hydrographical, and oceanographic data as well as other appropriate meteorological information;

2.1.7.4) availability of services for weather routing (such as that contained in Volume D of the World Meteorological Organization's Publication No. 9);

2.1.7.5) existing ships' routing and reporting systems, vessel traffic services, and marine environmental protection measures;

2.1.7.6) volume of traffic likely to be encountered throughout the voyage or passage;

2.1.7.7) if a pilot is to be used, information relating to pilotage and embarkation and disembarkation including the exchange of information between master and pilot;

2.1.7.8) available port information, including information pertaining to the availability of shore-based emergency response arrangements and equipment; and

2.1.7.9) any additional items pertinent to the type of the vessel or its cargo, the particular areas the vessel will traverse, and the type of voyage or passage to be undertaken.

2.2) On the basis of the above information, an overall appraisal of the intended voyage or passage should be made. This appraisal should provide a clear indication of all areas of danger; those areas where it will be possible to navigate safely, including any existing routing or reporting systems and vessel traffic services; and any areas where marine environmental protection considerations apply.

3.) Planning

3.1) On the basis of the fullest possible appraisal, a detailed voyage or passage plan should be prepared which should cover the entire voyage or passage from berth to berth, including those areas where the services of a pilot will be used.

3.2) The detailed voyage or passage plan should include the following factors:

3.2.1) the plotting of the intended route or track of the voyage or passage on appropriate scale charts: the true direction of the planned route or track should be indicated, as well as all areas of danger, existing ships' routing and reporting systems, vessel traffic services, and any areas where marine environmental protection considerations apply;

3.2.2) the main elements to ensure safety of life at sea, safety and efficiency of navigation, and protection of the marine environment during the intended voyage or passage; such elements should include, but not be limited to:

3.2.2.1) safe speed, having regard to the proximity of navigational hazards along the intended route or track, the manoeuvring characteristics of the vessel and its draught in relation to the available water depth;

3.2.2.2) necessary speed alterations en route, e.g., where there may be limitations because of night passage, tidal restrictions, or allowance for the increase of draught due to squat and heel effect when turning;

3.2.2.3) minimum clearance required under the keel in critical areas with restricted water depth;

3.2.2.4) positions where a change in machinery status is required;

3.2.2.5) course alteration points, taking into account the vessel's turning circle at the planned speed and any expected effect of tidal streams and currents;

3.2.2.6) the method and frequency of position fixing, including primary and secondary options, and the indication of areas where accuracy of position fixing is critical and where maximum reliability must be obtained;

3.2.2.7) use of ships' routing and reporting systems and vessel traffic services;

3.2.2.8) considerations relating to the protection of the marine environment; and

3.2.2.9) contingency plans for alternative action to place the vessel in deep water or proceed to a port of refuge or safe anchorage in the event of any emergency necessitating abandonment of the plan, taking into account existing shore-based emergency response arrangements and equipment and the nature of the cargo and of the emergency itself.

3.3) The details of the voyage or passage plan should be clearly marked and recorded, as appropriate, on charts and in a voyage plan notebook or computer disk.

3.4) Each voyage or passage plan as well as the details of the plan, should be approved by the ships' master prior to the commencement of the voyage or passage.

4.) Execution

4.1) Having finalized the voyage or passage plan, as soon as time of departure and estimated time of arrival can be determined with reasonable accuracy, the voyage or passage should be executed in accordance with the plan or any changes made thereto.

4.2) Factors which should be taken into account when executing the plan, or deciding on any departure therefrom include:

4.2.1) the reliability and condition of the vessel's navigational equipment;

4.2.2) estimated times of arrival at critical points for tide heights and flow;

4.2.3) meteorological conditions, (particularly in areas known to be affected by frequent periods of low visibility) as well as weather routing information;

4.2.4) daytime versus night-time passing of danger points, and any effect this may have on position fixing accuracy; and

4.2.5) traffic conditions, especially at navigational focal points.

4.3) It is important for the master to consider whether any particular circumstance, such as the forecast of restricted visibility in an area where position fixing by visual means at a critical point is an essential feature of the voyage or passage plan, introduces an unacceptable hazard to the safe conduct of the passage; and thus whether that section of the passage should be attempted under the conditions prevailing or likely to prevail. The master should also consider at which specific points of the voyage or passage there may be a need to utilize additional deck or engine room personnel.

5.) Monitoring

5.1) The plan should be available at all times on the bridge to allow officers of the navigational watch immediate access and reference to the details of the plan.

5.2) The progress of the vessel in accordance with the voyage and passage plan should be closely and continuously monitored. Any changes made to the plan should be made consistent with these Guidelines and clearly marked and recorded.

Associated Documents

Regulation 34 - Safe Navigation

ANNEX 24 – MCA Guidance Notes for Voyage Planning

MCA guidance notes on SOLAS, Chapter V –
Safety of Navigation, Annex 24 – Voyage Planning

Annex 24 - Voyage Planning

The Annex to IMO Resolution A.893(21) (See ANNEX 25), "Guidelines for Voyage Planning", should be followed on all vessels. The key elements of the Voyage Plan are:

- Appraising** all relevant information
- Planning** the intended voyage
- Executing** the plan taking account of prevailing conditions
- Monitoring** the vessel's progress against the plan continuously

These notes should be read in conjunction with the IMO Guidelines for Voyage Planning.

1.) General

Investigations show that human error contributes to 80% of navigational accidents and that in many cases essential information that could have prevented the accident was available to but not used by those responsible for the navigation of the vessels concerned. Most accidents happen because of simple mistakes in use of navigational equipment and interpretation of the available information, rather than because of any deficiency in basic navigational skills or ability to use equipment.

Masters, skippers and watchkeepers should therefore adhere to the IMO Guidelines taking the following measures to ensure that they appreciate and reduce the risks to which they are exposed:

- a)** ensure that all the vessel's navigation is planned in adequate detail with contingency plans where appropriate;
- b)** ensure that there is a systematic bridge organisation that provides for:
 - i)** comprehensive briefing of all concerned with the navigation of the vessel;
 - ii)** close and continuous monitoring of the vessel's position ensuring as far as possible that different methods of determining the position are used to check against error in any one system;
 - iii)** cross-checking of individual human decisions so that errors can be detected and corrected as early as possible;
 - iv)** information available from plots of other traffic is used carefully to ensure against over-confidence, bearing in mind that other vessels may alter course and/or speed
- c)** ensure that optimum and systematic use is made of all appropriate information that becomes available to the navigational staff; and
- d)** ensuring that the intentions of a pilot are fully understood and acceptable to the vessel's navigational staff.

2.) Responsibility for Voyage planning

In most deep-sea vessels the master delegates the initial responsibility for preparing the plan for a voyage to the officer responsible for navigational equipment and publications (hereafter referred to as the navigating officer.) On smaller vessels, including fishing vessels, the master or skipper may have the responsibility of the navigating officer for voyage planning purposes. Prior to departure the navigating officer will prepare the detailed voyage plan from berth to

berth in accordance with the Guidelines and to the master's requirements. If the port of destination is not known or is subsequently altered, the navigating officer must extend or amend the original plan as appropriate.

3.) Principles of Voyage planning

The four stages of Appraisal, Planning, Execution and Monitoring logically follow each other. An appraisal of all information available must be made before detailed plans can be drawn up and a plan must be in existence before tactics for its execution can be decided upon. Once the plan and the manner in which it is to be executed have been decided, monitoring must be carried out to ensure that the plan is followed.

4.) Appraisal is the process of gathering all information relevant to the proposed voyage, including ascertaining risks and assessing its critical areas. The Guidelines list the items that should be taken into account.

An overall assessment of the intended voyage should be made by the master, in consultation with the navigating officer and other deck officers who will be involved, after all relevant information has been gathered. This appraisal will provide the master and his bridge team with a clear and precise indication of all areas of danger, and delineate the areas in which it will be possible to navigate safely taking into account the calculated draught of the vessel and planned under-keel clearance. Bearing in mind the condition of the vessel, her equipment and any other circumstances, a balanced judgement of the margins of safety which must be allowed in the various sections of the intended voyage can now be made, agreed and understood by all concerned.

Once a full appraisal has been carried out the navigating officer carries out the **Planning** process, acting on the master's instructions. The detailed plan should cover the whole voyage, from berth to berth, and include all waters where a pilot will be on board. The plan should be completed and include all the relevant factors listed in the Guidelines.

The appropriate charts should be marked clearly showing all areas of danger and the intended track taking into account the margins of allowable error. Where appropriate, due regard should be paid to the need for advanced warning to be given on one chart of the existence of a navigational hazard immediately on transfer to the next. The planned track should be plotted to clear hazards at as safe a distance as circumstances allow. A longer route should always be accepted in preference to a shorter more hazardous route. The possibility of main engine or steering gear breakdown at a critical moment must not be overlooked.

Additional information which should be marked on the charts include:

- All radar-conspicuous objects and RACONs, which may be used in radar position fixing.
- Any transit marks, clearing bearings or clearing ranges (radar) which may be used to advantage. It is sometimes possible to use two conspicuous clearing marks where a line drawn through them runs clear of natural dangers with the appropriate margin of safety; if the vessel proceeds on the safe side of this transit she will be clear of the danger. If no clearing marks are available, a line or lines of bearing from a single object may be drawn at a desired safe distance from the danger; provided the vessel remains in the safe segment, it will be clear of the danger. Parallel index lines should also be drawn where appropriate.

If an electronic chart system is used to assist voyage planning the plan should also be drawn up on the paper charts. Where official (ENC) vector data is available an ECDIS provided with fully compliant ENC data for the vessel's voyage may be used instead of paper charts. Raster Chart Display Systems (RCDS) using official and up to date Raster charts can be used in conjunction with paper charts to assist voyage planning and route monitoring. Hazards should

be marked on the RCDS as well as on the paper chart. Systems that use unofficial chart data should not be used for voyage planning or navigation.

Depending on circumstances, the main details of the plan should be marked in appropriate and prominent places on the charts to be used during the voyage. They should also be programmed and stored electronically on an ECDIS or RCDS where fitted. The main details of the voyage plan should also be recorded in a bridge notebook used specially for this purpose to allow reference to details of the plan at the conning position without the need to consult the chart. Supporting information relative to the voyage, such as times of high and low water, or of sunrise or sunset, should also be recorded in this notebook.

It is unlikely that every detail of a voyage will have been anticipated, particularly in pilotage waters. Much of what will have been planned may have to be adjusted or changed after embarking the pilot. This in no way detracts from the real value of the plan, which is to mark out in advance, areas where the vessel must not go and the appropriate precautions which must be taken, and to give initial warning that the vessel is standing into danger.

5.) Execution of the finalised the voyage plan should be carried out taking into account the factors listed in the Guidelines. The Master should take into account any special circumstances which may arise, such as changes in weather, which may require the plan to be reviewed or altered.

6.) Monitoring of the vessel's progress along the pre-planned track is a continuous process. The officer of the watch, whenever in any doubt as to the position of the vessel or the manner in which the voyage is proceeding, should immediately call the master and, if necessary, take appropriate action for the safety of the vessel.

The performance of navigational equipment should be checked prior to sailing, prior to entering restricted or hazardous waters and at regular and frequent intervals at other times throughout the voyage.

Advantage should be taken of all the navigational equipment with which the vessel is fitted for position monitoring, bearing in mind the following points:

- a.)** positions obtained by electronic positioning systems must be checked regularly by visual bearings and transits whenever available;
- b.)** visual fixes should, if possible, be based on at least three position lines;
- c.)** transit marks, clearing bearings and clearing ranges (radar) can be of great assistance;
- d.)** it is dangerous to rely solely on the output from a single positioning system;
- e.)** the echo sounder provides a valuable check of depth at the plotted position;
- f.)** buoys should not be used for position fixing but may be used for guidance when shore marks are difficult to distinguish visually; in these circumstances their positions should first be checked by other means;
- g.)** the charted positions of offshore installations should be checked against the most recent navigational notices;
- h.)** the functioning and correct reading of the instruments used should be checked;
- i.)** account must be taken of any system errors and the predicted accuracy of

positions displayed by electronic position fixing systems; and

j.) the frequency at which the position is to be fixed should be determined for each section of the voyage.

Each time the vessel's position is fixed and marked on the chart in use, the estimated position at a convenient interval of time in advance should be projected and plotted. With ECDIS or RCDS care should be taken to ensure that the display shows sufficient "look-ahead" distance and that the next chart can be readily accessed.

Radar can be used to advantage in monitoring the position of the vessel by the use of parallel indexing, which is a simple and most effective way of continuously monitoring that a vessel is maintaining its track in restricted coastal waters. Parallel indexing can be used in any situation where a radar-conspicuous navigation mark is available and it is practicable to monitor continuously the vessel's position relative to such an object. It also serves as a valuable check on the vessel's progress when using an electronic chart.

7.) Pilotage

The Plan covers the voyage from berth to berth and therefore includes the Pilotage stage. The IMO Guidelines do not give specific advice on this important stage therefore the following notes should be taken into consideration when planning and executing the pilotage stages.

Pilots make a significant contribution to the safety of navigation in the confined waters and port approaches of which they have up to date knowledge, but it must be stressed that the responsibilities of the vessel's navigational team and the officer of the watch do not transfer to the pilot. After boarding the vessel, in addition to being advised by the master of the manoeuvring characteristics and basic details of the vessel for its present condition, the pilot should be clearly consulted on the voyage plan to be followed. The general aim of the master should be to ensure that the expertise of the pilot is fully supported by the vessel's bridge team.

Attention is drawn to the following extract from IMO Resolution A.285 (VIII):

"Despite the duties and obligations of a pilot, his presence on board does not relieve the officer of the watch from his duties and obligation for the safety of the vessel. He should co-operate closely with the pilot and maintain an accurate check on the vessel's position and movements. If he is in any doubt as to the pilot's actions or intentions, he should seek clarification from the pilot and if doubt still exists he should notify the master immediately and take whatever action is necessary before the master arrives."

8.) Weather Routeing Services

Regulation 34.2.3 specifies "adverse weather conditions" as one of the principal considerations that should be used by masters when formulating the voyage plan. Weather Routeing Services are available to mariners but they are largely unregulated and in some cases operate as an enhancement for commercial expedience rather than directly as a safety precaution. Safer use of Weather Routeing Services can be achieved by increased dialogue between ship's masters and their weather routeing service providers and through a continuous review of the information that is provided by them. MSC/Circ.1063 itemises the minimum standards that should be adhered to for the provision of Weather Routeing Services.

9.) Small vessels and pleasure craft

Regulation 34 applies to all vessels but the degree of voyage planning may sensibly be less for small vessels and pleasure craft. There is still a need for prior planning but the plan need not

be written down. The following should particularly be taken into account when planning a trip:

- **weather:** before you leave harbour, check the weather forecast and get regular updates if you are planning to be out for any length of time.
- **tides:** check the tidal predictions for your trip and ensure that they fit with what you are planning to do.
- **limitations of the vessel:** consider whether your vessel and crew are suited to the proposed trip and that you have sufficient safety equipment and stores with you.
- **navigational dangers:** make sure that you are familiar with any navigational dangers you may encounter during your trip. This generally means checking an up to date chart and a current pilot book or almanac.
- **contingency plan:** always have a contingency plan should anything go wrong. Before you sail, consider "bolt-holes" and places where you can take refuge should conditions deteriorate or if you suffer an accident or injury. Bear in mind that your GPS set is vulnerable and could fail at any time. It is sensible and good practice to make sure that you are not over-reliant on your GPS and that you can navigate yourself to safety without it should it fail you.
- **information ashore:** make sure that someone ashore knows your plans and knows what to do should they become concerned for your well being. The Coastguard Voluntary Safety Identification Scheme (commonly known as CG66) is also free and easy to join.

Although Regulation 34 only applies when proceeding to sea, small craft users should adhere to the voyage planning principles when also sailing in categorised waters.

10.) Other publications

In addition to the IMO Guidelines mariners are also referred to the following publications which contain valuable advice on bridge watchkeeping in general and voyage planning in particular:

"Bridge Team Management - A practical guide" published by the Nautical Institute and

"Bridge Procedures Guide" published by the International Chamber of Shipping.

See also: ANNEX 25 – IMO Resolution A.893(21)

Associated Documents

Regulation 34 - Safe Navigation

Extract from IMO Safety of Navigation Circular 198
Annex 1 - Amended Rules for vessels navigating
through the straits of Malacca and Singapore

ANNEX 1**ROUTEING MEASURES OTHER THAN TRAFFIC SEPARATION SCHEMES****AMENDED RULES FOR VESSELS NAVIGATING THROUGH THE STRAITS OF MALACCA AND SINGAPORE****I Definitions**

For the purpose of these Rules the following definitions shall apply:

- 1 A vessel having a draught of 15 metres or more shall be deemed to be a deep draught vessel.
- 2 A tanker of 150,000 dwt and above shall be deemed to be a very large crude carrier (VLCC).

Note: The above definitions do not prejudice the definition of "vessel constrained by her draught" described in Rule 3(h) of the International Regulations for Preventing Collisions at Sea, 1972.

II General Provisions

- 1 Deep draught vessels and VLCCs shall allow for an under keel clearance of at least 3.5 metres at all times during the entire passage through the Straits of Malacca and Singapore and shall also take all necessary safety precautions, when navigating through the traffic separation schemes.
- 2 Masters of deep draught vessels and VLCCs shall have particular regard to navigational constraints when planning their passage through the Straits.
- 3 All deep draught vessels and VLCCs navigating within the traffic separation schemes are recommended to use the pilotage service of the respective countries when they become available.
- 4 Vessels shall take into account the precautionary areas where crossing traffic may be encountered and be in a maximum state of manoeuvring readiness in these areas.

III Rules

- Rule 1 Eastbound deep draught vessels shall use the designated deep water routes.
- Rule 2 Eastbound deep draught vessels navigating in the deep-water routes in Phillip Channel and Singapore Strait shall as far as practicable, avoid overtaking.
- Rule 3 All vessels navigating within the traffic separation scheme shall proceed in the appropriate traffic lane in the general direction of traffic flow for that lane and maintain as steady a course as possible, consistent with safe navigation.
- Rule 4 All vessels having defects affecting operational safety shall take appropriate measures to overcome these defects before entering the Straits of Malacca and Singapore.
- Rule 5 In the event of an emergency or breakdown of a vessel in the traffic lane, the vessel shall, as far as practicable and safe, leave the lane by pulling out to the starboard side.

- Rule 6
- (a) Vessels proceeding in the westbound lane of the traffic separation scheme "In the Singapore Strait" when approaching Raffles Lighthouse shall proceed with caution, taking note of the local warning system, and, compliance with Rule 18(d) of the International Regulations for Preventing Collisions at Sea, 1972, avoid impeding the safe passage of a vessel constrained by her draught which is exhibiting the signals required by Rule 28 and which is obliged to cross the westbound lane of the scheme in order to approach the single point mooring facility (in approximate position 01E11'.42N, 103E47'.50E, from Phillip Channel).
 - (b) Vessels proceeding in the traffic separation schemes when approaching any of the precautionary areas shall proceed with caution, taking note of the local warning system, and, in compliance with Rule 18(d) of the International Regulations for Preventing Collisions at Sea, 1972, avoid impeding the safe passage of a vessel constrained by her draught which is exhibiting the signals required by Rule 28 and which is obliged to cross that precautionary area.
 - (c) Information relating to the movement of ships constrained by their draught as referred to in paragraphs (a) and (b) above will be given by radio broadcasts. The particulars of such broadcasts are promulgated by Notices to Mariners. All vessels navigating in the area of the traffic separation scheme should monitor these radio broadcasts and take account of the information received.
- Rule 7
- VLCCs and deep draught vessels navigating in the Straits of Malacca and Singapore shall, as far as it is safe and practicable, proceed at a speed of not more than 12 knots over the ground in the following areas:
- (a) At One Fathom Bank traffic separation scheme;
 - (b) deep-water routes in the Phillip Channel and in Singapore Strait; and
 - (c) Westbound lanes between positions 01E12'.51 N 103E52'.25 E and 01E11'.59 N 103E50'.31 E and between position 01E11'.13 N 103E49'.18 E and 01E08'.65 N 103E44'.40 E .
- Rule 8
- All vessels navigating in the routeing system of the Straits of Malacca and Singapore shall maintain at all times a safe speed consistent with safe navigation, shall proceed with caution, and shall be in a maximum state of manoeuvring readiness.
- Rule 9
- (a) Vessels which are fitted with VHF radio communication are to participate in the ship reporting system adopted by the Organization.
 - (b) VLCCs and deep draught vessels navigating in the Straits of Malacca and Singapore are advised to broadcast, eight hours before entering the traffic separation schemes, navigational information giving name, deadweight tonnage, draught, speed and times of passing One Fathom Bank Lighthouse, Raffles Lighthouse and Horsburgh Lighthouse. Difficult and unwieldy tows are also advised to broadcast similar information.

- Rule 10 All vessels navigating in the Straits of Malacca and Singapore are requested to report by radio to the nearest shore authority any damage to or malfunction of the aids to navigation in the Straits, or any aids out of position in the Straits.
- Rule 11 Flag States, owners and operators should ensure that their vessels are adequately equipped in accordance with the appropriate international conventions/recommendations.

IV Warning

Mariners are warned that local traffic could be unaware of the internationally agreed regulations and practices of seafarers and may be encountered in or near the traffic separation schemes, and should take any precautions which may be required by the ordinary practice of seamen or by the special circumstances of the case.

Procedure 3.1- Introduction to passage planning

Procedures and Instructions | Ship Operations | Operation | Nautical Operations | Guidelines for Navigators | Ch 3 Passage Planning | 3.1 Introduction to Passage Planning

3.1 Introduction to Passage Planning

Editor.:Marine Dept| **Approver.:**Head of Marine Dept | **Released By.:**APMM TO Q-Manager | **Revision Date.:**15/01/2005 | **Revision Number.:**0 | **Document ID.:**1360

Before commencing a voyage an adequate and detailed passage plan for the entire voyage shall be prepared.

The Passage Plan is prepared by the navigating officer appointed by the Master.

The Master shall approve the Plan.

The Plan shall be available for each stage of the vessel's progress from berth in departure port to berth in arrival port including pilotage waters.

References

Definitions

GSMS

[Apps home page](#)

GLOBAL SHIP MANAGEMENT SYSTEM [Issue: 09.00.00]

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Editor.:Marine Dept| **Approver.:**Head of Marine Dept | **Released By.:**APMM TO Q-Manager | **Revision Date.:**11/06/2007 | **Revision Number.:**1 | **Document ID.:**1363

Useful links: *The following external links are relevant to this document.*

- [203 Checklist - Passage Plan](#)

3.2.3 Passage Plan Format

The passage plan shall be prepared in detail with due regard to navigational hazards and limitations including limitations imposed by vessel particulars such as draught, stability, engine power etc.

The plan shall include all applicable recommendations laid down in the [Bridge Procedures Guide](#), which is available on board all A. P. Møller vessels.

The plan is intended for use from berth of departure to berth of destination, including sea passages and pilotage waters.

The passage plan format is to be drafted on board in accordance with these Guidelines and to the Master's requirement.

Checklist for Preparing Passage Plan

As a tool to keep track of all applicable parts of the passage plan, and as a convenient way to demonstrate passage planning and commitment to safe navigation, the Master shall check off all items in the Checklist for Preparing Passage Plan.

Items shall be commented in the passage plan when clarification is deemed necessary.

Non applicable items in the Checklist for Preparing Passage Plan shall be marked as such.

Changes to Passage Plan

Deviation or changes to the original passage plan shall be appended to the passage plan. The original passage plan shall be marked to indicate where these deviations or changes

become effective.

Alternatively, the plan can be changed and reprinted if it has been stored as a computer file.

References

Definitions

Voyage plan from Leam Chabang to Tanjung Pelepas



VOYAGE PLAN

Laem Chabang To TPP

(ADVANCE / RETARD 1 HRS)

PILOT OUT: 4.5 Nm
PILOT TO PILOT: 823.0 Nm
PILOT IN: 7.2 Nm
BERTH TO BERTH: 834.7 Nm

CONTENT:

- 1 VES ROUTE
- 2 CHECK LISTS
- 3 PILOT&PORT CONTACTS AND REPORTS
- 4 TIDES
- 5 SAFE PORT MEMOS

DONE BY:

APPROVED BY:

MASTER :

.....

Route - LZP-TPP

Information

Description Laem Chabang-TANJUNG PELEPAS
Departure port Laem Chabang - Laem Chabang Terminal (THLZPTR), Zone Time: 07:00
Arrival port Tanjung Pelepas - Pelabuhan Tanjung Pelepas Terminal (MYTPPTM), Zone Time: 08:00
Safe port memo Malaysia - Tanjung Pelepas - BERTH 1-10
Buffer speed 22.00
Preferred N

Reminders

GPS ROUTE : LAEM CHABANG TO TPP
ECDIS ROUTE:LAEM CHABANG TO TPP

DISTANCES:
LAEM CHABANG OUT:7
PILOT TO PILOT :818.5
TPP IN :6.2

CLOCKS: ADVANCED 1 HOUR

POSITION: MUST BE PLOTTED AT AN INTERVAL THAT IS HALF THE TIME IT TAKES VESSEL TO RUN
INTO THE NEAREST DANGER AND STRICT ACCORDANCE WITH GSMS PROCEDURE 1386

WOP & TURN RADIUS ARE SHOWED ON THE ECDIS AND CONNING DISPLAY

APART OF THE COMPANY POLICY GSMS 1125 REGARDING PIRACY AND ARMED ROBBERY. ALRS VOL 1-2
SHALL BE USED AS REFERENCE

FOR TIDE SEE ATTACHED PAGES

FOR REPORTS SEE ATTACHED PAGES .ALL REPORTING POINTS ARE MARKED ALSO ON THE CHARTS

Shallow zones

Charts & lights

Charts used 986, 1046, 3965, 67, 66, 3985, 3542, 3543, 2403, 3831, 4042, 4041, 4040, 4039, 4038
Overview charts 5502, 2414.
Book & tables NP: 30, 44
Various ALRS 6(4), ATT VOL 3
ALL VOL. F

GUIDELINES FOR NAVIGATORS

ICS BRIDGE PROCEDURE GUIDE

Date:	Approved by Navigation Officer:	Captain:

**THLZPTR-
MYTPPTM**

**Laem Chabang - Laem Chabang Terminal to Tanjung Pelepas -
Pelabuhan Tanjung Pelepas Terminal**

Waypoint Numbering		Waypoint Position		RL	Course	Turnrate	Distance		Max Speed	Waypoint Details
Sequence #	User Seq #	Latitude	Longitude	GC		x Speed	To Waypoint	Remaining		
3	1	13°05.30 N	100°49.94 E	RL	234°6	N/A	3.5 nm	827.4 nm	5.00 knots	DOP UKC >1.1
4		13°03.31 N	100°47.07 E	RL	211°5	N/A	3.9 nm	824.0 nm		
5	2	13°00.00 N	100°45.00 E	RL	183°7	N/A	15.0 nm	820.1 nm	10.00 knots	N KO PAI UKC >10
6	4	12°45.00 N	100°44.00 E	RL	180°0	N/A	23.0 nm	805.0 nm	24.00 knots	S KO RIN UKC >10
7	5	12°22.00 N	100°44.00 E	RL	144°3	N/A	174.7 nm	782.0 nm	24.00 knots	KO CHUANG UKC >10
8	6	10°00.00 N	102°27.00 E	RL	161°3	N/A	190.0 nm	607.4 nm		WP 10
9	7	07°00.00 N	103°28.00 E	RL	165°6	N/A	278.7 nm	417.4 nm	24.00 knots	CAKERA WALA OIL FIELD UKC >10
10	8	02°30.00 N	104°37.00 E	RL	181°0	N/A	57.0 nm	138.7 nm	24.00 knots	PALAU AI UKC >10
11	9	01°33.00 N	104°36.00 E	RL	228°9	N/A	21.3 nm	81.7 nm	24.00 knots	Singapore Str. In UKC >10
12	10	01°19.00 N	104°20.00 E	RL	260°1	N/A	20.4 nm	60.3 nm	24.00 knots	WSW of Horsburgh LT. UKC >10
13	11	01°15.50 N	104°00.00 E	RL	249°2	N/A	5.9 nm	39.9 nm	24.00 knots	Sector 8 In UKC >10
14	12	01°13.40 N	103°54.50 E	RL	245°6	N/A	7.3 nm	34.0 nm	24.00 knots	Passing Keepel Harbour UKC >10
15	13	01°10.40 N	103°47.90 E	RL	240°0	N/A	4.4 nm	26.7 nm	2.00 knots	BUFALO ROCK UKC >10
16	14	01°08.20 N	103°44.10 E	RL	303°5	N/A	5.4 nm	22.3 nm	24.00 knots	VTIS West In UKC >10
17	15	01°11.20 N	103°39.60 E	RL	279°1	N/A	7.5 nm	16.8 nm	15.00 knots	RASAI BUOY UKC >10
18	16	01°12.40 N	103°32.20 E	RL	360°0	N/A	2.1 nm	9.3 nm	10.00 knots	S WBA UKC >10
19	17	01°14.50 N	103°32.20 E	RL					5.00 knots	Tpp Pilot Stn UKC >1.1
Pilot to pilot distance:							820.2 nm			
<p>Have in mind, that positions of buoys might differ between the chart and the actual positions. Buoys may also be extinguished or missing, ask the pilot if there is any conditions we should know about. Do not rely on one position reference only, especially not on buoys.</p>										



MAERSK

Checklist - Passage Plan

A.P.Moller Group ID:203 - 08/06/2007 - 07 - 12 months

(Refer to GSMS Procedure 1363 - Passage Plan Format)

Vessel: **Maersk Kendal**

A tick indicates that the check has been considered and/or prepared, N/A indicates that the check is not applicable to the vessel type or prevailing conditions.

Port of Departure - ETD (date/time)	<input checked="" type="checkbox"/>	Laem Chabang 14/09/09
Port of Destination - ETA (date/time)	<input checked="" type="checkbox"/>	TPP 16/09/09 0230 GMT+8 0930
Total Distance	<input checked="" type="checkbox"/>	834.7nm
Pilot to pilot distance	<input checked="" type="checkbox"/>	823.0nm
Average speed and steaming time in open waters	<input checked="" type="checkbox"/>	
Charts and nautical publications available and updated	<input checked="" type="checkbox"/>	
Chart changes marked	<input checked="" type="checkbox"/>	Marked on chart
No-go areas marked	<input checked="" type="checkbox"/>	Marked on chart
Change in machinery status	<input checked="" type="checkbox"/>	
Activation of echo	<input checked="" type="checkbox"/>	Marked on chart
Abort positions (No way of return positions) marked	<input checked="" type="checkbox"/>	Marked on chart
Local information / VHF Channels	<input checked="" type="checkbox"/>	Marked on chart and in passage plan
Tides and currents	<input checked="" type="checkbox"/>	Marked on chart and in passage plan
Vessel traffic service areas	<input checked="" type="checkbox"/>	Marked on chart and in passage plan
Pilots - time to notify	<input checked="" type="checkbox"/>	Marked on chart and in passage plan
Tugboats - time to notify	<input checked="" type="checkbox"/>	
Pilot embarkation / disembarkation areas	<input checked="" type="checkbox"/>	Marked on chart
Route planning - waypoints / courses / distances	<input checked="" type="checkbox"/>	Marked on chart and in passage plan
Alternative routes and emergency anchoring	<input checked="" type="checkbox"/>	Marked on chart
Traffic separation / routing schemes	<input checked="" type="checkbox"/>	Marked on chart
Underkeel clearance - draught, speed and squat	<input checked="" type="checkbox"/>	Marked on chart and in passage plan
Position fixing methods	<input checked="" type="checkbox"/>	As per passage plan
Position fixing intervals	<input checked="" type="checkbox"/>	As per passage plan
Navigation marks, including parallel indexing	<input checked="" type="checkbox"/>	Marked on chart
Traffic likely to be encountered	<input checked="" type="checkbox"/>	
Obstructions and hazards to navigation	<input checked="" type="checkbox"/>	Marked on chart
Vessel's security incl. piracy taken into consideration	<input checked="" type="checkbox"/>	Anti piracy measures in gulf of thailand
Weather information and weather routing	<input checked="" type="checkbox"/>	Wx Fax, Navtex, SPOS, Sat-C, Observations
Passage plan signed by the officer who prepared it	<input checked="" type="checkbox"/>	
Passage plan approved and signed by the Master	<input type="checkbox"/>	
Environmental Protection (SOLAS Ch.V, Reg.34, Sec. 2.4)	<input checked="" type="checkbox"/>	
	<input type="checkbox"/>	

Completed by the navigational officer: _____

Date: 14-Sep-2009

Time: 0800

Checked and approved by the Master: _____

(signature)

Procedure 4.8 - Navigation in confined waters

Procedures and Instructions | Ship Operations | Operation | Nautical Operations | Guidelines for Navigators | Ch 4 Navigation | 4.8 Navigation in confined Waters

4.8 Navigation in confined Waters

Editor: Ib H Pedersen | **Approver:** Hans P Mikkelsen | **Released By:** APMM TO Q-Manager | **Revision Date:** 26/08/2009 | **Revision Number:** 14 | **Document ID:** 11389

Scope

This procedure covers the precautions to be taken into consideration when preparing a passage plan.

Confined Waters

When preparing the passage plan the navigational conditions for confined waters shall be carefully studied and conspicuous, readily identifiable bearing objects for radar as well as terrestrial observations shall be marked in the chart. In ample time before approaching confined waters the study shall be repeated.

Possible anchorages shall be identified enabling the vessel to be anchored clear of the main route in case of restricted visibility or other unexpected circumstances.

Routes

When laying off courses for large vessels consideration shall be given to ensuring the greatest possible depth of water for the vessel's track and, whenever possible, such vessels shall follow recommended routes.

Trim

The ahead movement of large vessels affects trim resulting in the vessel trimming more by the head than when she has no way upon her, thus as speed increases so does the forward draft.

When passing through areas with restricted depths it is desirable that the vessel should proceed on an even keel.

Observations should therefore be made in calm weather conditions to ascertain the effect of the vessel's speed on trim.

Speed

Reference is made to [Id.1369 "3.7 Speed"](#).

Generator capacity

In confined waters a sufficient number of generators shall be employed to ensure that a generator failure does not create a general black out. This applies irrespectively of the engine room design and irrespectively whether the engine room is manned or un-manned. An exception, however, is vessel classed with the notation PSMR (Propulsion and Steering Machinery Redundancy).

Echo Sounder

The echo sounder shall be used and water depth checked during the entire approach.

Position Fixing

While navigating in narrow waters, the vessel's radar and other navigational aids shall be in operation even in clear weather and a navigating officer shall be assigned to keep check on the vessel's position and plot in the chart.

The vessel's position shall always be plotted on the chart at such frequent intervals as will immediately call attention to deviation from the planned track.

Each time the vessel's position is fixed and marked on the chart, the estimated position after the predetermined position fixing interval must be calculated and projected ahead to ensure position fixing interval is appropriate, hazards reviewed and as a gauge for subsequent fixes.

Wherever possible, fixing shall be verified by more than one method.

References

[Id 1369 - 3.7 Speed](#)

[Definitions](#)

Procedure 3.7 - Speed

3.7 Speed

Editor:Insurance Dept| **Approver:**Head of Insurance Dept | **Released By:**APMM TO Q-Manager | **Revision Date:**15/01/2005 | **Revision Number:**0 | **Document ID:**1369

Scope

This procedure covers precautions to be taken into consideration when increasing/reducing speed. It does not apply in emergency situations.

In vessels with large and powerful main engines it is essential that manoeuvring is undertaken in such way that the load on the engines is kept within approved limits.

With exception to emergency situations the specific instructions for each engine must be followed.

Large engines are equipped with a load programme which means that revolutions are increased slowly from manoeuvring full speed to full sea speed and the same applies when speed reduction takes place.

It is essential that engine revolutions and the speed is reduced in due time during approach in order to get immediate response to astern manoeuvres, if so required.

The actual speed of the vessel shall always be chosen with due consideration to the vessel's manoeuvrability, stopping distance, draught, squat, heel and dynamic stability.

Also current, wind, visibility and traffic density shall be considered.

Ocean Passages

During ocean passages special attention shall be paid to adverse wind and sea conditions particularly at night time.

The speed and course of the vessel shall be chosen to avoid damage to the vessel and her cargo.

Confined Waters and Port Approaches

The Passage Plan shall include a maximum speed for navigating in confined waters, congested waters and port approaches taking into consideration the vessel's draught and manoeuvrability, squat and stopping distance.

Current, visibility and any other conditions requiring special attention shall also be considered.

In confined and congested waters the speed shall be suitably low to eliminate navigational risks due to excessive speed.

The influence of the speed on the vessel's manoeuvrability and stopping characteristics shall always be taken into account.

If for instance the speed is increased from 6 to 9 knots, the vessel's stopping distance will typically double.

Entering and Leaving Berth

When approaching and leaving berth the vessel's speed shall normally be as low as possible maintaining steerage way and taking into consideration the vessel's manoeuvrability and safe passage.

When steerage way cannot be maintained, e.g. when manoeuvring in close proximity to berth, the vessel's thrusters and/or tugs must be employed.

The effect of astern engine manoeuvres is reduced in confined waters and therefore the vessel's speed should be adjusted so she can be stopped in time by using "slow astern" only when approaching a berth.

References

[Definitions](#)

Extracts from the ICS's Bridge Procedures Guide

EFFECTIVE ORGANISATION

Preparing a passage plan and carrying out the voyage necessitate that bridge resources are appropriately allocated according to the demands of the different phases of the voyage.

Depending upon the level of activity likely to be experienced, the master may need to ensure the availability of adequately rested back-up for the navigational watch.

Where equipment is concerned, errors can occur for a variety of reasons and poor equipment calibration may be significant. In the case of integrated systems, it is possible that the failure of one component could have unpredictable consequences for the system as a whole. It is important to ensure that electronic navigational equipment is carefully synchronised with the appropriate chart datum. Failure to achieve or maintain accurate synchronisation and alignment has been the cause of groundings.

It is therefore essential that navigational information is always cross-checked and, where there is doubt concerning the ship's position, it is always prudent to assume a position that is closest to danger and proceed accordingly.

MOTIVATION

Motivation comes from within and cannot be imposed. It is, however, the responsibility of the master to create the conditions in which motivation is encouraged.

A valuable asset in any organisation is teamwork and this is enhanced by recognising the strengths, competence and limitations of the people within a team, and organising the work of the bridge team to take best advantage of the attributes of each team member.

Working in isolation when carrying out critical operations carries the risk of an error going undetected. Working together and sharing information in a professional way enhances the bridge team and the master/pilot relationship. Training in bridge resource management can further support this.

1 BRIDGE ORGANISATION

1.1 OVERVIEW

General principles of safe manning, consistent with those agreed by IMO, should be used to establish the levels of manning that are appropriate to any ship.

At all times, ships need to be navigated safely in compliance with the COLREGS and also to ensure that protection of the marine environment is not compromised.

An effective bridge organisation should manage efficiently all the resources that are available to the bridge and promote good communication and teamwork.

The need to maintain a proper look-out should determine the basic composition of the navigational watch. There are, however, a number of circumstances and conditions that could influence at any time the actual watchkeeping arrangements and bridge manning levels.

Effective bridge resource and team management should eliminate the risk that an error on the part of one person could result in a dangerous situation.

The bridge organisation should be properly supported by a clear navigation policy incorporating shipboard operational procedures, in accordance with the ship's Safety Management System as required by the ISM Code.

1.2 BRIDGE RESOURCE MANAGEMENT AND THE BRIDGE TEAM

1.2.1 Composition of the navigational watch under the STCW Code

In determining whether the composition of the navigational watch is adequate to ensure that a proper look-out can be maintained continuously, the master should take into account all relevant factors including the following:

- visibility, state of weather and sea;
- traffic density, and other activities occurring in the area in which the ship is navigating;
- the attention necessary when navigating in or near traffic separation schemes or other routing measures, or within industrially controlled work zones;
- the additional workload caused by the nature of the ship's functions, immediate operating requirements and anticipated manoeuvres;
- the fitness for duty of any crew members on call who are assigned as members of the watch, including compliance with applicable work hour regulations;
- knowledge of and confidence in the professional competence of the ship's officers and crew;
- the experience of each OOW, and the familiarity of that OOW with the ship's equipment, procedures and manoeuvring capability;
- activities taking place on board the ship at any particular time, including radiocommunication activities, and the availability of assistance to be summoned immediately to the bridge when necessary;

The bridge team should have a clear understanding of the information that should be routinely reported to the master, of the requirements to keep the master fully informed, and of the circumstances under which the master should be called (see bridge checklist B13).

When the master has arrived on the bridge, his decision to take over control of the bridge from the OOW must be clear and unambiguous (see section 3.2.7).

The master should consider the benefit of the OOW retaining control of navigation. Such action could strengthen the bridge team as the master may provide more effective support and monitoring in this role.

1.2.7 Working within the bridge team

1.2.7.1 Assignment of duties

Duties should be clearly assigned, limited to those duties that can be performed effectively, and clearly prioritised.

Team members should be asked to confirm that they understand the tasks and duties assigned to them.

The positive reporting on events while undertaking tasks and duties is one way of monitoring the performance of bridge team members and detecting any deterioration in watchkeeping performance.

1.2.7.2 Co-ordination and communication

The ability of ship's personnel to co-ordinate activities and communicate effectively with each other is particularly vital during emergency situations. During routine sea passages, port approaches and pilotage, the bridge team personnel must always work as an effective team.

A bridge team which has a plan that is understood and is well briefed, with all members supporting each other, will have good situational awareness. Its members will then be able to anticipate dangerous situations arising and recognise the development of a chain of errors, thus enabling them to take action to break the sequence.

All non-essential activity or distractions to watchkeeping should be avoided.

Caution should be exercised regarding the use of mobile phones by members of the bridge team (see section 3.1.4).

1.2.8 New personnel and familiarisation

There are obligations under the ISM Code and the STCW Convention for ship's personnel who are new to a particular ship to receive ship specific familiarisation in safety matters. The ISM Code also requires training needs in support of the SMS to be both identified and implemented.

For those personnel who have a direct involvement in ship operations such as watchkeeping, a reasonable period of time must be allocated for them to become acquainted with the equipment that they will be using and any associated ship procedures. The familiarisation procedures must be covered in written instructions that the company is required to provide to the master.

While responsibility for the plan in pilotage waters rests with the master, the pilot on boarding, or before if practicable, should advise the master of any local circumstances so that the plan can be updated (see section 2.7).

While responsibility for the plan in pilotage waters rests with the master, any necessary amendments may take place subsequent to the Master/Pilot Exchange (see section 2.7).

2.3 NOTES ON PASSAGE PLANNING

In accordance with IMO Resolution A.893(21) Guidelines for Voyage Planning, there are four distinct stages in the planning and achievement of a safe passage:

- Appraisal;
- Planning;
- Execution;
- Monitoring.

2.3.1 Plan appraisal

Before planning can commence, the charts, publications and other information appropriate for the voyage will need to be gathered together and studied. A passage appraisal checklist is included in this Guide as bridge checklist B5.

2.3.2 Charts and publications

Only official nautical charts and publications should be used for passage planning, and they should be fully corrected to the latest available notices to mariners and radio navigation warnings. Any missing charts and publications needed for the intended voyage should be identified from the chart catalogue and obtained before the ship sails (see section 4.11).

For coastal and pilotage planning and for plotting each course alteration point (or waypoint), large scale charts should be used. For ocean passage planning and open water legs, the largest scale charts that are appropriate should be used.

2.3.3 The passage plan

The passage plan should incorporate the following details:

- planned track showing the true course of each leg;
- leg distances;
- any speed changes required en route;
- abort/cancellation points for critical manoeuvres;
- wheel over positions for each course alteration, where appropriate;
- turn radius for each course alteration, where appropriate;
- maximum allowable off-track margins for each leg, where appropriate.

At any time during the voyage, the ship may need to leave the planned leg temporarily at short notice. Marking on the chart relatively shallow waters and minimum clearing distances in critical sea areas is one technique which will assist the OOW when having to decide quickly to what extent to deviate without jeopardising safety and the marine environment. However, in using this technique, care should be taken not to obscure chart features. On paper charts, only pencil should be used.

The passage plan should also take into account the need to monitor the ship's position along the route, identify contingency actions at waypoints, and allow for collision avoidance in line with the COLREGS.

Appropriate details of the passage plan may be copied so that the plan can be readily referred to at the main conning position.

2.3.4 Passage planning and electronic navigation systems

2.3.4.1 Planning using electronic chart display systems

Passage planning can be undertaken either on paper charts or using an electronic chart display and information system (ECDIS) displaying electronic navigational charts (ENC), subject to the approval of the flag state administration. Raster chart display systems (RCDS) displaying raster navigational charts (RNC) can be used for passage planning in conjunction with paper charts. (See section 4.11.)

When passage planning using ECDIS, the navigating officer should be aware that a safety contour can be established around the ship. The crossing of a safety contour, by attempting to enter water which is too shallow or attempting to cross the boundary of a prohibited or specially defined area such as a traffic separation zone, will be indicated automatically by the ECDIS while the route is both being planned and executed.

When passage planning using a combination of electronic and paper charts, particular care needs to be taken at transition points between areas of electronic and paper chart coverage. The voyage involves distinct pilotage, coastal and ocean water phases. Planning within any one phase of the voyage should be undertaken using either all electronic or all paper charts rather than a mixture of chart types.

Where a passage is planned using paper charts, care should be taken when transferring the details of the plan to an electronic chart display system. In particular, the navigating officer should ensure that:

- o positions are transferred to, and are verified on, electronic charts of an equivalent scale to that of the paper chart on which the position was originally plotted;
- o any known difference in chart datum between that used by the paper chart and that used by the electronic chart display system is applied to the transferred positions;
- o the complete passage plan as displayed on the electronic chart display system is checked for accuracy and completeness before it is used.

2.3.4.2 Transferring route plans to other navigation aids

Care must be taken when transferring route plans to electronic navigation aids such as GPS, since the ship's position that is computed by the navaid is likely to be in WGS84 datum. Route plans sent to the GPS for monitoring cross track errors must therefore be of the same datum.

Ships' routing schemes, restricted areas and reporting systems along the route, as well as vessel traffic services, should be taken into account (see sections 2.8, 2.9 and 2.10).

Coastal weather bulletins, including gale warnings, and coastal navigational warnings broadcast by coast radio stations and NAVTEX may require changes to be made to the route plan.

2.6 MONITORING THE PASSAGE PLAN

It is important that, when navigation is planned through coastal or restricted waters, due consideration is given to ensuring that the progress of the ship can be monitored effectively. Therefore, the route plan should, if possible, be readily available at the main conning position so that continuous monitoring can be performed easily.

Of particular importance is the need to monitor the position of the ship approaching the wheel over position at the end of a track, and checking that the ship is safely on the new track after the alteration of course.

The passage plan should include details regarding the required frequency of position-fixing, regardless of whether or not electronic navigation systems are used, and should also include details regarding cross-checking the ship's position by other means, including when electronic navigation systems are used.

Distinctive chart features should be used for monitoring the ship's position visually, by radar and by echo sounder, and therefore these need to be an integral part of the passage plan.

2.6.1 Visual monitoring techniques

Ahead, transits can provide a leading line along which a ship can steer safely. Abeam, transits provide a ready check for use when altering course. At anchor, several transits can be used to monitor the ship's position.

Bearing lines can also be used effectively. A head mark, or a bearing line of a conspicuous object lying ahead on the track line, can be used to steer the ship, while clearing bearings can be used to check that a ship is remaining within a safe area.

2.6.2 Radar monitoring techniques

When radar conspicuous targets are available, effective use can be made of radar clearing bearings and ranges.

Ships with good athwartship track control can use clearing bearings to monitor the advance of a ship towards a wheel over position, while parallel indexing can be used to check that the ship is maintaining track and not drifting to port or starboard. For details on radar and navigation, refer to section 4.2.3 of this Guide.

Extracts from the comprehensive review of the STCW Convention and the STCW Code -
Sub-Committee on Standards of Training and Watchkeeping 40th session



SUB-COMMITTEE ON STANDARDS OF
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DISCLAIMER

As at its date of issue, this document, in whole or in part, is subject to consideration by the IMO organ to which it has been submitted. Accordingly, its contents are subject to approval and amendment of a substantive and drafting nature, which may be agreed after that date.

**COMPREHENSIVE REVIEW OF THE STCW CONVENTION
AND THE STCW CODE**

Chapters I, II, III and VII

Report of the Working Group

Attached herewith is annex 1 (chapter 2) to the report of the Working Group.

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)	<p><i>Meteorology</i> Ability to use and interpret information obtained from shipborne meteorological instruments</p> <p>Knowledge of the characteristics of the various weather systems, reporting procedures and recording systems</p> <p>Ability to apply the meteorological information available</p>		<p>Measurements and observations of weather conditions are accurate and appropriate to the passage</p> <p>Meteorological information is correctly interpreted and applied</p>

Function: Navigation at the operational level (continued)

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	<p><i>Watchkeeping</i> Thorough knowledge of the content, application and intent of the International Regulations for Preventing Collisions at Sea</p> <p>Thorough knowledge of the Principles to be observed in keeping a navigational watch</p> <p>Thorough knowledge of effective Bridge Team-Work procedures</p>	<p>Examination and assessment of evidence obtained from one or more of the following:</p> <p>.1 approved in-service experience;</p> <p>.2 approved training ship experience</p> <p>.3 approved simulator training, where appropriate</p>	<p>The conduct, handover and relief of the watch conforms with accepted principles and procedures</p> <p>A proper look-out is maintained at all times and in such a way as to conform to accepted principles and procedures</p> <p>Lights, shapes and sound signals conform with the requirements contained in the</p>

Column 1 Competence	Column 2 Knowledge, understanding and proficiency	Column 3 Methods for demonstrating competence	Column 4 Criteria for evaluating competence
	<p>The use of routing in accordance with the General Provisions on Ships' Routing</p> <p>The use of information from navigational equipment for maintaining a safe navigational watch</p> <p>Knowledge of blind pilotage techniques</p> <p>The use of reporting in accordance with the General Principles for Ship Reporting Systems and VTS procedures</p> <p><i>Bridge Resource Management.</i></p> <p>Knowledge of bridge resource management principles including:</p> <p>4.1 allocation, assignment, and prioritization of resources,</p> <p>2.2 effective communication</p> <p>3.3 Assertiveness and leadership</p>	<p>.4 approved laboratory equipment training</p> <p>Assessment of evidence obtained from one or more of the following:</p> <p>.1 approved training</p> <p>.2 approved in-service experience</p> <p>.3 approved simulator training</p>	<p>International Regulations for Preventing Collisions at Sea and are correctly recognized</p> <p>The frequency and extent of monitoring of traffic, the ship and the environment conform with accepted principles and procedures</p> <p>A proper record is maintained of the movements and activities relating to the navigation of the ship</p> <p>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</p> <p>Resources are allocated and assigned as needed in correct priority to perform necessary tasks.</p> <p>Communication is clearly and unambiguously given and received</p> <p>Questionable decisions and/or actions result in appropriate challenge and response</p>

Column 1 Competence	Column 2 Knowledge, understanding and proficiency	Column 3 Methods for demonstrating competence	Column 4 Criteria for evaluating competence
	4.4 Obtaining and maintaining situational awareness		Effective leadership behaviours are identified Team member(s) share accurate understanding of current and predicted vessel state, navigation path, and external environment
<p>Use of radar and ARPA to maintain safety of navigation</p> <p><i>Note:</i> 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</p>	<p><i>Radar navigation</i> Knowledge of the fundamentals of radar and automatic radar plotting aids (ARPA)</p> <p>Ability to operate and to interpret and analyse information obtained from radar, including the following:</p> <p>Performance, including:</p> <p>.1 factors affecting performance and accuracy</p> <p>.2 setting up and maintaining displays</p> <p>.3 detection of misrepresentation of information, false echoes, sea return, etc., racons and SARTs</p>	<p>Assessment of evidence obtained from approved radar simulator and ARPA simulator training plus in-service experience</p>	<p>Information obtained from radar and ARPA is correctly interpreted and analysed, taking into account the limitations of the equipment and prevailing circumstances and conditions</p> <p>Action taken to avoid a close encounter or collision with other vessels is in accordance with the International Regulations for Preventing Collisions at Sea</p> <p>Decisions to amend course and/or speed are both timely and in accordance with accepted navigation practice</p>

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	<p>Thorough knowledge of life-saving appliance regulations (International Convention for the Safety of Life at Sea)</p> <p>Organization of fire and abandon ship drills</p> <p>Maintenance of operational condition of life-saving, fire-fighting and other safety systems</p> <p>Actions to be taken to protect and safeguard all persons on board in emergencies</p> <p>Actions to limit damage and save the ship following a fire, explosion, collision or grounding</p>	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	<p>Preparation of contingency plans for response to emergencies</p> <p>Ship construction, including damage control</p> <p>Methods and aids for fire prevention, detection and extinction</p> <p>Functions and use of life-saving appliances</p>	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
<p>Organize and Manage the crew</p> <p>Use of Leadership and managerial skill</p>	<p>A knowledge of personnel management, organizing and training on-board ship</p> <p>Knowledge of shipboard personnel management and training</p>	<p>Examination and assessment of evidence obtained from approved in-service training and experience</p> <p>Assessment of evidence obtained from one or more of the following:</p>	<p>The crew are allocated duties and informed of expected standards of work and behaviour in a manner appropriate to the individuals concerned</p> <p>Training objectives and activities are</p>

Column 1 Competence	Column 2 Knowledge, understanding and proficiency	Column 3 Methods for demonstrating competence	Column 4 Criteria for evaluating competence
	<p>A knowledge of related international maritime conventions and recommendations, and national legislation</p> <p>Ability to apply Task and workload management including:</p> <ul style="list-style-type: none"> .1 planning and coordination .2 personnel assignment .3 time and resource constraints .4 prioritization <p>Knowledge and ability to apply effective resource management</p> <ul style="list-style-type: none"> .1 allocation, assignment, and prioritization of resources .2 effective communication onboard and ashore .3 assertiveness and leadership including motivation .4 obtaining and maintaining situation awareness <p>Knowledge and ability to apply decision making techniques:</p>	<ul style="list-style-type: none"> .1 approved training .2 approved in-service experience .3 approved simulator training 	<p>based on assessment of current competence and capabilities and operational requirements</p> <p>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</p> <p>Communication is clearly and unambiguously given and received</p> <p>Effective leadership behaviours are demonstrated</p> <p>Necessary team member(s) share accurate understanding of current and predicted vessel and operational status and external environment</p> <p>Decisions are most effective for the situation</p>

Joint paper submitted by ICS and ISF to the 41st Session of the Sub-committee
on Standards of Training and Watchkeeping



SUB-COMMITTEE ON STANDARDS OF
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COMPREHENSIVE REVIEW OF THE STCW CONVENTION AND THE STCW CODE

Chapter II of the STCW Convention and Code

Review of Table A-II/I and A-II/2 of the STCW Code

Leadership and managerial skills

Submitted by the International Shipping Federation (ISF) and the International Chamber of Shipping (ICS)

SUMMARY

Executive summary: This document contains a proposal to amend tables A-II/I and A-II/2 of chapter II of the STCW Code to include elements relating to leadership and managerial skills, situational awareness and decision making. The proposal has been developed using document STW 41/7/3 as the base document.

Strategic direction: 5

High-level action: 5.2

Planned output: 5.2.2.1

Action to be taken: Paragraph 10

Related documents: STW 39/7/3, STW 40/14/Add.1, STW/ISWG 1/3/4 and STW 41/7/3

Introduction

1 The Sub-Committee on Standards of Training and Watchkeeping at its thirty-eighth session (22 to 26 January 2007), agreed that the proposed review of the STCW Convention and the STCW Code should address requirements for effective communications (STW 39/17, annex 11, paragraph 3.5).

2 Document STW 39/7/3 (Australia, *et al.*) noted that “Analysis into the report of the Casualty Investigation relating to the explosion and sinking of **Bow Mariner** reported:

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- .1 operators and senior officers failed to follow proper relief and familiarization training for critical crew members; and
- .2 there was evidence of lack of cohesiveness between the three senior officers, who shared the same nationality and the other officers and crew who shared a different nationality.

3 In document STW/ISWG 1/3/4, Japan drew attention to its own analysis of draft texts in document STW/ISWG 1/3 that identified the importance of “Leadership and managerial skills” as competencies that support situational awareness and decision-making, and proposed draft amendments to table A-II/2 of section A-II/2 of the STCW Code.

General

4 Document STW 40/14/Add.1 provides draft amendments to table A-II/2 regarding the Function: “*Controlling the operation of the ship and care for persons on board at the management level*”. ICS/ISF consider that, in addition to such competencies being appropriate at “management level”, they are also appropriate at the operational level and, specifically, in table A-II/1 at the Function: “*Controlling the operation of the ship and care for persons on board at the operational level*”.

5 Deck officers with responsibility for: “*Controlling the operation of the ship and care for persons on board*” will, irrespective of their managerial or operational function require leadership and management skills. Deck officers in charge of a watch whether during cargo operations, during mooring or on the bridge will require leadership skills when communicating with their junior officers and ratings and will also require assertiveness skills when dealing with third parties, passengers and with senior officers.

6 Mooring operations are a representative example, typical of many shipboard tasks when a non-management level officer will require leadership and assertiveness skills. Directing crew members to safely and effectively run and secure mooring ropes and wires is a routine operation of a particularly hazardous nature. The ability to lead team members and when necessary assert authority is essential to the safe conduct of such operations.

7 In document STW 39/7/3, Australia, *et al.* refer to the report of the Casualty Investigation relating to the explosion and sinking of the **Bow Mariner**. This report draws attention to the fact that junior officers experienced difficulty in registering their concerns with the master who directed them to conduct unsafe cargo-related operations that were against accepted industry guidelines and company procedures, and contributed to the escalation of the incident. If the junior officers on the **Bow Mariner** had received leadership and assertiveness training they may have been better able to effectively raise their concerns with a similarly-trained master.

8 ICS/ISF consider that in table A-II/2 under the KUP: *Knowledge and ability to apply effective resource management*, the addition of a requirement for decisions to be taken in light of teamwork experiences will further address failings in shipboard management practice identified in the **Bow Mariner** report referred to in document STW 39/7/3.

Proposal

9 It is proposed that in:

- .1 table A-II/1 under function: *Controlling the operation of the ship and care for persons on board at the operational level* the additional competence *Application of leadership and teamworking skills* is included, as set out in annex 1; and
- .2 table A-II/2 under function: *Controlling the operation of the ship and care for persons on board at the management level* and the KUP *Knowledge and ability to apply effective resource management* the additional requirement is included “*that decisions reflect consideration of team experiences*”, as set out in annex 2.

Action requested of the Sub-Committee

10 The Sub-Committee is invited to consider this issue and decide as appropriate.

ANNEX 1

PROPOSED AMENDMENTS TO TABLE A-II/I OF THE STCW CODE

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

Table A-II/I

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

Column 1 Competence	Column 2 Knowledge, understanding and proficiency	Column 3 Methods for demonstrating competence	Column 4 Criteria for evaluating competence
Application of leadership and teamworking skills	<p>Working knowledge of shipboard personnel management and training</p> <p>A knowledge of related international maritime conventions and recommendations, and national legislation</p> <p>Ability to apply task and workload management including:</p> <p>.1 planning and coordination</p> <p>.2 personnel assignment</p> <p>.3 time and resource constraints</p> <p>.4 prioritization</p> <p>Knowledge and ability to apply effective resource management:</p> <p>.1 allocation, assignment, and prioritization of resources</p>	<p>Assessment of evidence obtained from one or more of the following:</p> <p>.1 approved training</p> <p>.2 approved in-service experience</p> <p>.3 practical demonstration</p>	<p>The crew are allocated duties and informed of expected standards of work and behaviour in a manner appropriate to the individuals concerned</p> <p>Training objectives and activities are based on assessment of current competence and capabilities and operational requirements</p> <p>Operations are demonstrated to be in accordance with applicable rules</p> <p>Operations are planned and resources are allocated as needed in correct priority to perform necessary tasks</p> <p>Communication is clearly and unambiguously given and received</p> <p>Effective leadership behaviours are demonstrated</p>

Column 1 Competence	Column 2 Knowledge, understanding and proficiency	Column 3 Methods for demonstrating competence	Column 4 Criteria for evaluating competence
Application of leadership and teamworking skills <i>(continued)</i>	<p>.2 effective communication onboard and ashore</p> <p>.3 decisions reflect consideration of team experiences</p> <p>.4 assertiveness and leadership including motivation</p> <p>.5 obtaining and maintaining situational awareness</p> <p>Knowledge and ability to apply decision-making techniques:</p> <p>.1 situation and risk assessment</p> <p>.2 identify and consider generated options</p> <p>.3 selecting course of action</p> <p>.4 evaluation of outcome effectiveness</p>		<p>Necessary team member(s) share accurate understanding of current and predicted vessel and operational status and external environment</p> <p>Decisions are most effective for the situation</p> <p>Operations are demonstrated to be effective and in accordance with applicable rules</p>

ANNEX 2

PROPOSED AMENDMENTS TO TABLE A-II/2 OF THE STCW CODE

Table A-II/2

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

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

Column 1 Competence	Column 2 Knowledge, understanding and proficiency	Column 3 Methods for demonstrating competence	Column 4 Criteria for evaluating competence
Organize and Manage the crew Use of leadership and managerial skill	<p>A knowledge of personnel management, organizing and training on-board ship</p> <p>Knowledge of shipboard personnel management and training</p> <p>A knowledge of related international maritime conventions and recommendations, and national legislation</p> <p>Ability to apply task and workload management including:</p> <p>.1 planning and coordination</p> <p>.2 personnel assignment</p> <p>.3 time and resource constraints</p> <p>.4 prioritization</p> <p>Knowledge and ability to apply effective resource management:</p> <p>.1 allocation, assignment, and prioritization of resources</p>	<p>Examination and assessment of evidence obtained from approved in-service training and experience</p> <p>Assessment of evidence obtained from one or more of the following:</p> <p>.1 approved training</p> <p>.2 approved in-service experience</p> <p>.3 approved simulator training</p>	<p>The crew are allocated duties and informed of expected standards of work and behaviour in a manner appropriate to the individuals concerned</p> <p>Training objectives and activities are based on assessment of current competence and capabilities and operational requirements</p> <p>Operations are demonstrated to be in accordance with applicable rules</p> <p>Operations are planned and resources are allocated as needed in correct priority to perform necessary tasks</p> <p>Communication is clearly and unambiguously given and received</p> <p>Effective leadership behaviours are demonstrated</p>

Column 1 Competence	Column 2 Knowledge, understanding and proficiency	Column 3 Methods for demonstrating competence	Column 4 Criteria for evaluating competence
<p>Organize and Manage the crew</p> <p>Use of leadership and managerial skill (continued)</p>	<p>.2 effective communication onboard and ashore</p> <p>.2bis decisions reflect consideration of team experiences</p> <p>.3 assertiveness and leadership including motivation</p> <p>.4 obtaining and maintaining situation awareness</p> <p>Knowledge and ability to apply decision making techniques:</p> <p>.1 situation and risk assessment</p> <p>.2 identify and generate options</p> <p>.3 selecting course of action</p> <p>.4 evaluation of outcome effectiveness</p> <p>Development, implementation, and oversight of standard operating procedures</p>		<p>Necessary team member(s) share accurate understanding of current and predicted vessel and operational status and external environment</p> <p>Decisions are most effective for the situation</p> <p>Operations are demonstrated to be effective and in accordance with applicable rules</p>

Rules 2, 5, 6, 7, 8, 15, 16 and 17 of the International Regulations for the
Prevention of Collisions at Sea 1972 (as amended)

COLREGS

Rule 2

Responsibility

(a) Nothing in these Rules shall exonerate any vessel, or the owner, master or crew thereof, from the consequences of any neglect to comply with these Rules or of the neglect of any precaution which may be required by the ordinary practice of seamen, or by the special circumstances of the case.

(b) In construing and complying with these Rules due regard shall be had to all dangers of navigation and collision and to any special circumstances, including the limitations of the vessels involved, which may make a departure from these Rules necessary to avoid immediate danger.

Rule 5

Lookout

Every vessel shall at all times maintain a proper look-out by sight and hearing as well as by all available means appropriate in the prevailing circumstances and conditions so as to make a full appraisal of the situation and of the risk of collision.

Rule 6

Safe speed

Every vessel shall at all times proceed at a safe speed so that she can take proper and effective action to avoid collision and be stopped within a distance appropriate to the prevailing circumstances and conditions. In determining a safe speed the following factors shall be among those taken into account:

(a) By all vessels:

- (i) the state of visibility.
- (ii) the traffic density including concentrations of fishing vessels or any other vessels;
- (iii) the manoeuvrability of the vessel with special reference to stopping distance and turning ability in the prevailing conditions;
- (iv) at night the presence of background light such as from shore lights or from back scatter of her own lights;
- (v) the state of wind, sea and current, and the proximity of navigational hazards;
- (vi) the draught in relation to the available depth of water.

(b) Additionally, by vessels with operational radar:

- (i) the characteristics, efficiency and limitations of the radar equipment;
- (ii) any constraints imposed by the radar range scale in use;
- (iii) the effect on radar detection of the sea state, weather and other sources of interference;
- (iv) the possibility that small vessels, ice and other floating objects may not be detected by radar at an adequate range;
- (v) the number, location and movement of vessels detected by radar;

(vi) the more exact assessment of the visibility that may be possible when radar is used to determine the range of vessels or other objects in the vicinity.

Rule 7

Risk of Collision

(a) Every vessel shall use all available means appropriate to the prevailing circumstances and conditions to determine if risk of collision exists. If there is any doubt such risk shall be deemed to exist.

(b) Proper use shall be made of radar equipment if fitted and operational, including long-range scanning to obtain early warning of risk of collision and radar plotting or equivalent systematic observation of detected objects.

(c) Assumptions shall not be made on the basis of scanty information, especially scanty radar information.

(d) In determining if risk of collision exists the following considerations shall be among those taken into account:

(i) Such risk shall be deemed to exist if the compass bearing of an approaching vessel does not appreciably change;

(ii) Such risk may sometimes exist even when an appreciable bearing change is evident, particularly when approaching a very large vessel or a tow or when approaching a vessel at close range.

Rule 8

Action to avoid collision

(a) Any action to avoid collision shall, if the circumstances of the case admit, be positive, made in ample time and with due regard to the observance of good seamanship.

(b) Any alteration of course and/or speed to avoid collision shall, if the circumstances of the case admit, be large enough to be readily apparent to another vessel observing visually or by radar; a succession of small alterations of course and/or speed should be avoided.

(c) If there is sufficient sea-room, alteration of course alone may be the most effective action to avoid a close-quarters situation provided that it is made in good time, is substantial and does not result in another close-quarters situation.

(d) Action taken to avoid collision with another vessel shall be such as to result in passing at a safe distance. The effectiveness of the action shall be carefully checked until the other vessel is finally past and clear.

(e) If necessary to avoid collision or allow more time to assess the situation, a vessel shall slacken her speed or take all way off by stopping or reversing her means of propulsion.

(f) (i) A vessel which, by any of these Rules, is required not to impede the passage or safe passage of another vessel shall, when required by the circumstances of the case, take early action to allow sufficient sea-room for the safe passage of the other vessel.

(ii) A vessel required not to impede the passage or safe passage of another vessel is not relieved of this obligation if approaching the other vessel so as to involve risk of collision and shall, when taking action, have full regard to the action which may be required by the Rules of this part.

(iii) A vessel the passage of which is not to be impeded remains fully obliged to comply with the Rules of this part when the two vessels are approaching one another so as to involve risk of collision.

Rule 15

Crossing situation

When two power-driven vessels are crossing so as to involve risk of collision, the vessel which has the other on her own starboard side shall keep out of the way and shall, if the circumstances of the case admit, avoid crossing ahead of the other vessel.

Rule 16

Action by give-way vessel

Every vessel which is directed to keep out of the way of another vessel shall, so far as possible, take early and substantial action to keep well clear.

Rule 17

Action by stand-on vessel

(a) (i) Where one of two vessels is to keep out of the way the other shall keep her course and speed.

(ii) The latter vessel may however take action to avoid collision by her manoeuvre alone, as soon as it becomes apparent to her that the vessel required to keep out of the way is not taking appropriate action in compliance with these Rules.

(b) When, from any cause, the vessel required to keep her course and speed finds herself so close that collision cannot be avoided by the action of the give-way vessel alone, she shall take such action as will best aid to avoid collision.

(c) A power-driven vessel which takes action in a crossing situation in accordance with subparagraph (a)(ii) of this Rule to avoid collision with another power-driven vessel shall, if the circumstances of the case admit, not alter course to port for a vessel on her own port side.

(d) This Rule does not relieve the give-way vessel of her obligation to keep out of the way.

ICS Circular RN(10) 04-UK MAIB Concern regarding
standards of bridge team management

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To: RADIO & NAUTICAL SUB-COMMITTEE

RN(10)04

**Copy: All Full and Associate Members (for information)
Marine Committee**

UK MAIB CONCERN REGARDING STANDARDS OF BRIDGE TEAM MANAGEMENT


Action required: Members are requested to note concern expressed by the UK MAIB that in a number of recent incidents, a breakdown in the conduct of bridge team management has been identified as a major factor. It should also be noted that ICS strongly supports training for relevant navigation officers in bridge team management.

ICS is often invited to participate in meetings held by the UK MAIB prior to publication of incident reports. On these occasions details of incidents are considered together with a range of potential remedial measures.

Investigations by the MAIB into a number of recent incidents have identified that a breakdown of bridge team management (BTM) has frequently been a central factor. BTM addresses a number of disciplines and failures, identified by the MAIB, include deficiencies relating to:

- Passage planning
- Communication and interaction with VTS
- Situational awareness
- Use of Navigation equipment
- Knowledge of own ship's manoeuvring characteristics
- Understanding of roles and responsibilities

These MAIB investigations have identified occasions when statutory requirements, company procedures and industry guidelines including the ICS BPG were not followed. It has been established that, effective monitoring by a company of its Safety Management System (SMS) will help to identify areas of non compliance and where corrective action is required. In addition it may be noted that, the attendance by appropriate officers with responsibility for ship's navigation on BTM training courses is strongly supported by ICS.


Secretary to the Committee