



A Guide to Best Practice for Navigational Assessments and Audits

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Glossary

The following are agreed definitions for terms used within this paper.

Assessment An observation and evaluation of the practices and skill-sets of the individuals and bridge team to provide assurance of standards of navigation.

Assessor An individual appointed to assess the competence of marine terminal staff.

Audit Conducted to verify onboard compliance with the Safety Management System (SMS) and industry regulations.

Best practice OCIMF views this as a method of working or procedure to aspire to as part of continuous improvement.

Closed loop communication A communication process in which an order is given and repeated back by the person receiving the order, and the outcome is monitored.

Company The owner of the ship, or any other organisation such as a ship manager or bareboat charterer that has assumed responsibility for the operation of the ship from the owner of the ship, including the duties and responsibilities imposed by the International Safety Management (ISM) Code. May also be referred to as operator.

Competence A specific skill, knowledge or ability that is specified to perform a role to a specified proficiency.

Dynamic assessment A comprehensive review through observation of navigational practices during a voyage.

Fatigue The reduction in physical or mental capability due to physical, mental or emotional exertion resulting in the reduction of an individual's performance level.

Guidance Provision of advice or information by OCIMF.

Human factors The interaction of people with procedures, equipment and each other. Often referred to as the human element.

Master The officer in command of a merchant vessel. He or she is the owner's representative on board and holds ultimate responsibility for all actions undertaken on board, particularly the safe and efficient operation of the vessel.

Permit to work A document issued by a responsible person that allows work to be performed in compliance with an SMS.

Recommendations OCIMF supports and endorses a particular method of working or procedure.

Safety Management System (SMS) A formal, documented system required by the ISM Code, compliance with which should ensure that all operations and activities on board a ship are carried out in a safe manner.

Static assessment A review of passage plans, chart corrections, navigational records, navigational equipment, compliance with company procedures and documentation. The assessment should be followed by a report, where identified corrective actions are assigned, verified and closed out within a specified period. The static assessment asks questions that prompt a yes/no response, with any additional reporting by exception.

Stress A combination of mental state and physical issues leading to the impairment of an individual's performance level.

Toolbox talk The safety briefing that takes place before an activity commences that informs all participants of expectations and possible hazards.

Abbreviations

AIO	Admiralty Information Overlay
AIS	Automatic Identification System
ARPA	Automatic Radar Plotting Aid
AVCS	Admiralty Vector Chart Service
BBS	Behaviour-Based Safety
BNWAS	Bridge Navigational Watch Alarm System
CATZOC	Category of Zone of Confidence
CDI	Chemical Distribution Institute
COG	Course Over Ground
COLREGS	International Regulations for Preventing Collisions at Sea
CPA	Closest Point of Approach
DOP	Dilution of Position
DR	Dead Reckoning
ECDIS	Electronic Chart Display Information System
ENC	Electronic Navigational Chart
ePNM	Electronic Preliminary Notice to Mariners
GMDSS	Global Maritime Distress and Safety System
GPS	Global Positioning System
GRT	Gross Register Tonnage
HDOP	Horizontal Dilution of Position
ICS	International Chamber of Shipping
IHO	International Hydrographic Organization
ILO	International Labour Organization
IMO	International Maritime Organization
ISGOTT	International Safety Guide for Oil Tankers and Terminals
ISM Code	International Safety Management Code
LOP	Line of Position
LRIT	Long Range Identification and Tracking
NAVTEX	Navigational Telex
OOW	Officer of the Watch
OVID	Offshore Vessel Inspection Database
RCDS	Raster Chart Display System
RNC	Raster Navigational Chart
SIRE	Ship Inspection Report Programme
SMPEP	Shipboard Marine Pollution Emergency Plan
SMS	Safety Management System
SOG	Speed Over Ground
SOLAS	International Convention for the Safety of Life at Sea
SOPEP	Shipboard Oil Pollution Emergency Plan
SSAS	Ship Security Alert System
STCW	International Convention on Standards of Training, Certification and Watchkeeping for Seafarers
S-VDR	Simplified Voyage Data Recorder
TCPA	Time to Closest Point of Approach
TMSA	Tanker Management and Self Assessment
T&P	Temporary and Preliminary

UAA	Unsafe Act Awareness
UKC	Under Keel Clearance
UMS	Unmanned Machinery Space
USCG	United States Coast Guard
VDR	Voyage Data Recorder
VHF	Very High Frequency
VIQ	Vessel Inspection Questionnaire
VRP	Vessel Response Plan

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International Regulations for Preventing Collisions at Sea (COLREGS) (IMO)

International Safety Guide for Oil Tankers and Terminals (ISGOTT) (OCIMF)

Paper Chart Maintenance Record (NP133A) (Admiralty, UK Hydrographic Office)

Recommendations on the Proactive Use of Voyage Data Recorder Information (OCIMF)

Resolution A.601(15) Provision and Display of Manoeuvring Information On Board Ships (IMO)

Resolution A.817(19) Performance Standards for Electronic Chart Display and Information Systems (ECDIS) (IMO)

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

Ship Inspection Report Programme (SIRE) Vessel Inspection Questionnaire (VIQ) (OCIMF)

Ship to Ship Transfer Guide for Petroleum, Chemicals and Liquefied Gases (OCIMF)

Tanker Management and Self Assessment (TMSA) (OCIMF)

The Mariner's Handbook (NP100) (Admiralty, UK Hydrographic Office)

1 Introduction

High standards of navigation are fundamental for the safety of vessels, crews, cargoes and for the protection of the environment. While the Master is ultimately responsible for the safety of navigation, the International Safety Management (ISM) Code requires that companies set and maintain standards. Navigational assessments and audits have become more widely used and can be useful in identifying improvements for navigational practices on board vessels. However, with a lack of guidance available, audits and assessments can vary in quality and their value to the end user can be questionable.

There are subtle differences between the terms audit and assessment:

- An audit will verify on board compliance with the Safety Management System (SMS) and industry regulations.
- An assessment will additionally observe and evaluate the practices and skill-sets of the individuals and bridge team to provide assurance of standards of navigation.

However, for ease, in this paper the term assessment is used to mean both audit and assessment.

1.1 Scope

This information paper is aimed at owners, operators and Masters. It provides them with best practice guidance on how to conduct a navigational assessment.

As well as being used to give assurance to shore-based personnel that company procedures and best practices are being followed, this paper may also be a useful tool for ship-based personnel.

1.2 Principles

This information paper provides guidance on:

- Designing and conducting navigational assessments.
- Addressing human factors by encouraging assessment of behavioural standards.
- Assessing the level of assurance in safety of navigation and suggesting measures to raise that level.
- Current industry best practice.

To achieve this, the paper will address the following:

- How assessments should be designed.
- Why assessments are carried out.
- Who should carry out the assessment.
- How an assessor should conduct assessments.
- How the results of assessments can be used to identify trends and training requirements.

1.3 Background

A wide range of navigational assessments are in use throughout the industry, but there is no common standard. The International Maritime Organization (IMO) has the ISM Code, which demands navigational procedures are in place, but there is no requirement for navigational assessments. Tanker Management and Self Assessment (TMSA) made the first reference to navigational assessments and was based on best practice.

Experience gained during TMSA reviews and discussions with companies/ship operators has shown that some navigational assessments are conducted on an inbound pilotage from 'End of Passage' to the 'Berth'. This is considered insufficient to fully assess the navigational safety culture and skills of individuals and the effectiveness of the bridge team during all stages of the vessel's navigational passage.

Navigational assessments are needed to supplement the navigational chapter from the Ship Inspection Report Programme (SIRE) to verify bridge team culture and best practices. These should be undertaken to cover all aspects of the voyage: berth to pilot, at sea and pilot to berth.

Best practices taught during training at bridge resource management centres are not always used on board vessels. A good navigational assessment can identify any gaps in best practice, which can then be addressed.

Navigational assessments should be used to:

- Identify and test essential controls within navigational procedures.
- Determine if there are gaps in these procedures which might lead to hazardous navigational situations or incidents that are identified and tested.

Current navigational assessments do not always provide a sufficient level of navigational assurance to an operator and therefore fail to meet their basic objective.

Against this backdrop, this information paper provides guidance on how to address compliance issues and assess the safety culture of individuals and the bridge team during the navigation of the vessel.

2 Purpose of a navigational assessment

The purpose of a navigational assessment should be to identify poor practices, to continuously improve navigational standards to ensure safe and effective voyages and to assure companies that high standards of navigation and watchkeeping are being maintained.

The purpose of closely observing the interaction and effectiveness of the bridge team during pilotage and standby is to evaluate:

- Key behaviours of members of the bridge team.
- Skills of the bridge team.
- Interactions between the Master and Pilot.

2.1 Technical and non-technical skills

To fully meet the objectives of a navigational assessment, both the technical and non-technical skills of bridge team members need to be evaluated.

Technical (hard) skills are knowledge of regulatory and company requirements and are competency based. They are assessed against the level of compliance with regulations and company procedures and the application and use of equipment in aspects of navigation, including company policies and procedures.

Non-technical (soft) skills are related to human factors and can be evaluated by observing the bridge team at work, measuring their ability to work and communicate as a team and their reaction to evolving navigational situations and challenges. All aspects of human factors as described below need to be taken into account.

2.2 Human factors

The effective interaction of people with procedures, equipment and each other (human factors) is essential for safe navigation. Navigational assessments have traditionally focussed on legislative and compliance issues (i.e. equipment and record keeping) and the qualifications and technical competency of a bridge team.

The modern navigational assessment needs to evaluate how well both individual members and the team cope with challenging and complex situations.

Companies should develop systems to ensure that a ship's staff are trained, mentored, encouraged and measured in non-technical skills. Non-technical skills should include:

- **Situational awareness**
Situational awareness means being aware of what is happening around you and understanding how information, events and one's own actions will impact goals and objectives. Poor situational awareness is one of the primary factors in accidents attributed to human error.
- **Decision-making**
This involves defining a problem, considering options, selecting an option, implementing it and reviewing the outcome. Decision-making skills can be improved by regular training, e.g. using ship handling simulators, bridge resource management and one-to-one mentoring.
- **Communication**
The clear and concise exchange of information between parties resulting in a common understanding of the subject. It should be clear to all involved why information is being exchanged. Barriers to clear communication should be identified and addressed. Operators should encourage open communication in all areas of operations.
- **Teamwork**
An effective team works together to solve problems and resolve conflicts. They communicate well and make good use of every individual team member's skills. Teamwork can be improved by regular training, e.g. using ship handling simulators, bridge resource management and mentoring in the workplace.
- **Leadership**
Good leadership involves the correct use of authority, maintaining standards, motivation, planning and prioritising and effective management of resources. Leadership skills can be improved through regular training, e.g. using ship handling simulators and bridge resource management training.
- **Coping with stress**
Stress is a combination of mental state and physical issues leading to the impairment of an individual's performance level. It can also arise due to real or perceived demands on personnel. It is important to recognise the symptoms and effects of stress and to implement strategies to cope with it.
- **Coping with fatigue**
Fatigue is the reduction in physical or mental capability due to physical, mental or emotional exertion resulting in the reduction of an individual's performance level. It is important to recognise the symptoms and effects of fatigue and to implement strategies to cope with it.

The navigational assessment template in the appendix addresses the non-technical skills listed above.

2.3 Coaching and mentoring

As well as measuring the standards of navigation and bridge resource management on vessels, the data collected during the navigational assessment can be put to use both during the assessment (through immediate coaching and mentoring) and later to improve simulator scenarios and training.

2.4 Analysis and continuous improvement

Company navigational assessments should be used to drive a continuous improvement programme. Completed assessments should be analysed and any trends identified. Trends may be used to identify areas for improvement, such as embedding and reinforcing a safety culture, or for updating specific company requirements. The results of the analysis can be used to update a company's policies, procedures and training through the SMS.

3 Designing a navigational assessment programme

3.1 Contents, sources and objectives

Guidelines and requirements for developing and conducting navigational assessments exist at different levels:

1. Government level
 - Regulation and guidance from the IMO.
 - Statutory requirements.
 - Port State Control Inspections.
2. Industry level
 - *ICS Bridge Procedures Guide* (International Chamber of Shipping (ICS)).
 - TMSA (OCIMF).
 - SIRE, Offshore Vessel Inspection Database (OVID) and other external inspections, e.g. Chemical Distribution Institute (CDI) inspection questionnaires.
3. Company and vessel level
 - Master's navigational assessment.
 - Company reviews of bridge teams.
 - Company internal assessments/assurance.
 - Navigational assessments conducted by third-party contractors for a company.
 - Navigational assessments based on review of data stored in the Voyage Data Recorder (VDR) and/or Electronic Chart Display and Information System (ECDIS).

Based on the guidelines and regulatory requirements above, the following principles and objectives should be considered when developing a company navigational assessment programme:

- Review and assess the technical and non-technical skills and proficiency levels of the bridge team members.
- Review and evaluate how well the bridge team interacts and functions during sections of a voyage.
- Confirm onboard personnel understand established procedures and are implementing them effectively.
- Assess officers' understanding and operation of the bridge equipment and alarms, and confirm they understand the equipment's limitations.
- Confirm that all equipment is in good working order.
- Identify gaps in the company SMS and drive improvements.
- Identify and share best practices from observing the bridge team.
- Promote robust navigational practices.
- Identify any additional training needs, whether specific to an individual, to a vessel or to a fleet.
- Confirm adequate supervision of junior officers and training of cadets during critical passages.
- Verify that accurate logs and records are kept.

3.2 Static and dynamic assessments

Best practice suggests that navigational assessments can be divided into two parts: static and dynamic. For full navigational assurance, both the static and dynamic parts of the navigational assessment should be used.

3.2.1 Static assessment

A static assessment, which may be conducted in port, should include as a minimum a review of passage plans, chart corrections, navigational records, navigational equipment, compliance with company procedures and documentation.

The assessment should be followed by a report, where identified corrective actions are assigned, verified and closed out within a specified period.

The static assessment part of the template navigational assessment in the appendix asks questions that prompt a yes/no response, with any additional reporting by exception.

3.2.2 Dynamic assessment

A dynamic assessment consists of a comprehensive review through observation of navigational practices during a voyage. In addition to the static assessment, the dynamic assessment draws on all aspects, as discussed in section 3.1 above.

The assessment should be followed by a report where identified corrective actions are assigned, verified and closed out within a specified period.

The dynamic assessment part of the template assessment consists of a series of statements. A yes/no/satisfactory response does not meet the requirements for reporting in this section of the assessment. The assessor is obliged to write comments in order to deliver a comprehensive assessment.

3.3 Navigational assessment template

The template in the appendix draws together all identified aspects of navigational assurance and can be used as a basis for companies to develop their own navigational assessments.

The template is comprised of three elements:

1. Navigational assessment report: includes a front sheet advising the reader as to when and where the assessment was carried out, who participated in the assessment and navigational operations assessed. The assessor's written report should include a summary of new non-conformances detected and any outstanding items from the previous assessment requiring revalidation.
2. Part A: Static assessment template.
3. Part B: Dynamic assessment template.

The template does not have any scoring, but OCIMF recognises that companies may wish to incorporate a scoring system to evaluate or analyse results.

Companies should design their templates to include space for assessor comments and their own company-specific navigational requirements.

4 Delivery and conduct of navigational assessments

4.1 Ownership and responsibility

A suitable management representative should be given responsibility for maintaining navigational standards and for making sure navigational assessments are conducted, recorded and closed out in a timely manner. Responsibilities should include:

- Delivering the navigational assessment programme.
- Escalating any difficulties experienced in progressing the assessment plan to senior management for resolution.
- Ensuring that assessments are promptly reviewed by relevant shore-based personnel.
- Ensuring that identified gaps and improvement programmes are processed through the company's SMS to enable a timely closeout.
- Ensuring that unfavourable trends are identified, communicated and addressed.
- Identifying best practices and sharing these across the fleet to feed into the continuous improvement process.
- Escalating overdue action items from assessment reports to senior management for resolution.
- Allocating resources for additional internal or external training as required to close out gaps identified during the navigational assessments.
- Ensuring that records and databases are maintained and updated.
- Ensuring that the navigational assessment system and records are subjected to the company's internal assessment process.
- Ensuring the safety of the assessment team when working on board a vessel and travelling.

One of the components of navigational assurance is the implementation of risk reduction measures to prevent navigational incidents. Companies may also consider using process safety as a tool to assist with this assurance. Process safety can be defined as a blend of engineering and management skills focussed on preventing catastrophic incidents. Although normally associated with upstream activities such as manufacturing and pressurised pipelines, the prevention of groundings and collisions may also be considered as an overall component of a process safety system. In this respect navigational assessments form a part of the defence, and it is strongly recommended that operators include this aspect in their process safety systems.

4.2 Selection of assessors

Navigational assessments should be conducted by an experienced senior deck officer (preferably a Master mariner with command experience), who is fully up to date with company navigational practices, the International Regulations for Preventing Collisions at Sea (COLREGS), the *ICS Bridge Procedures Guide* and industry best practices.

4.2.1 Internal assessors

Navigational assessors should be trained in assessment skills and methodology and be able to demonstrate their experience and competence. An effective navigational assessor will be able to:

- Assess, mentor and coach the bridge team, including senior navigators.
- Identify scope for improvement in the skills and behaviours of officers.
- Identify undesired and best practices.
- Recognise hazards and situations while on the bridge.
- Understand the use and limitations of bridge equipment.
- Identify effective use of bridge equipment by the bridge team, including all electronic navigation aids.
- Provide constructive feedback to both senior management and the bridge team.
- Drive improvements to the SMS, modular training and the assessment programme.

The skills of the navigational assessor can be kept current and effective by refresher bridge resource management and simulator training, where they will be required to personally handle navigation and command a bridge team. Companies are encouraged to get feedback from the training institute on performance of attendees, as well as feedback from the attendees on the effectiveness of the training module.

4.2.2 External assessors

Companies should exercise due diligence when selecting external contractors to conduct navigational assessments. The abilities listed in 4.2.1 are also relevant for external assessors. The external assessor should be given the company's navigational procedures, forms and checklist so they can verify understanding and compliance on board. Companies can use the knowledge and experience of an external navigational assessor to drive improvements in company assessment processes and techniques, as well as improvements to their SMS.

4.3 Scheduling and frequency

Companies should decide what percentage of the fleet needs to be assessed within a given time frame in order to provide fleet-wide navigational assurance. The size and diversity of the fleet should be taken into consideration. See TMSA Element 5 for additional guidance.

Assessments should be scheduled with the following in mind:

- Navigational assessments should be conducted in open-ocean and coastal voyages, and where possible also include navigationally critical voyages such as straits, channels, high density traffic, multiple port calls, pilotage waters, etc. Navigation in restricted visibility would further enhance the value of the assessment.
- Where applicable, assessments should attempt to equally include the different nationalities and nationality mixes of the bridge teams found within a company's fleet.
- Assessments should last as long as is necessary for an in-depth assessment of the navigational practices and skill-sets of the bridge team to take place.
- A process should be in place to record when vessels did not receive a planned navigational assessment. The process should define the requirements for a future assessment of that vessel.
- An administrative process should be used to identify and record which Masters and Officers have not been assessed during a navigational assessment programme, and these records should be consulted when scheduling future assessments to maximise the range of officers, especially the Masters who are assessed.
- The company navigational assessment plan should be reviewed periodically with progress discussed and documented.

4.4 Approach and conduct of assessments

The safety culture of the company will determine how an assessment is conducted and received.

The Master and the bridge team should be encouraged to treat an assessment in a positive manner, giving the assessor any assistance necessary to complete it. Everyone involved should recognise that the safe navigation of the vessel is crucial and that the assessment forms an important part of the company's assurance and improvement process. The bridge team should carefully review the assessment after it is completed and agree corrective actions.

The assessor should:

- Make sure that the bridge team does not feel threatened or targeted. The opening meeting could involve the whole team and follow a structure similar to that outlined in SIRE Vessel Inspection Questionnaire (VIQ) guidance.
- Explain to the bridge team what the role of the assessor is and make it clear that the assessor is there to observe, not to interfere.
- Reassure personnel that the aim of the assessment is to drive continuous improvement, including the effective interaction of bridge team members.
- Conduct the navigational assessment without interfering with the safe navigation of the vessel. If the assessor believes that an intervention is required to prevent a dangerous situation developing, those concerns must be immediately made known to the Master and the Officer of the Watch (OOW).
- Fill in the assessment report with remarks where necessary, especially on questions relating to skills, teamwork, Pilot interface, communications, etc. This will provide management with an impression of the navigational culture on board the vessel. It will also provide the reviewer with a meaningful understanding of any gaps. A simple yes or no response is not considered adequate feedback on questions in the dynamic section of the assessment (see appendix).
- Observe and give feedback to all officers during the assessment process. Interaction with bridge personnel must not distract them from their job. Interaction with personnel during off-duty periods should not compromise hours of rest regulations.
- Follow the company's internal procedures when completing performance reports of individuals. Performance reports should not be left on board. Any scope for improvement in individual performance identified during the assessment should be addressed through company training procedures.
- Follow up and verify closeouts of previously identified gaps and observations. The closure of such gaps should be documented within the report.
- Close out action items from navigational bulletins and lessons learnt from the fleet. The closure of such gaps should be documented within the report.
- On completion of an assessment, discuss the findings with the Master in full. The Master should provide feedback on the report. The processes and timeline for closeout of the assessment should be clearly understood.
- Sign off the assessment with the Master.

A copy of the report should be kept on board for the Master to be able to produce when required, e.g. for a Port State Control or SIRE inspection.

A copy of the report, and the process used to record both corrective actions and verification of action item closeouts, should also be kept by the company.

4.5 Feedback, coaching and mentoring

A navigational assessment should not be a one-way process: that of the assessor observing and recording what they see and hear. Instead, the assessment can also be an opportunity to coach the bridge team.

A feedback session after the assessment is vital and it should involve the entire bridge team. Both good and weaker behaviours observed should be communicated to the team. Any gaps or weak behaviours should be discussed in an open manner. The emphasis should be on coaching, rather than on embarrassing or criticising any bridge team members. For this to be successful, both the company and the onboard management need to encourage a safety culture that allows for coaching and mentoring.

One-to-one feedback, coaching or mentoring sessions should take place with the Master or any other member of the team if considered necessary, beneficial or if requested.

With respect to coaching and mentoring, the objective of the assessor should be to leave the vessel having improved the standards of bridge resource management and having enhanced the confidence of the individual members of the team.

5 Further considerations

5.1 External or internal assessments

Senior management should evaluate the pros and cons of using external or internal assessors.

An external assessor can provide an independent assessment of the navigational standards observed, and can give an objective view of any identified gaps.

An internal assessor should be more familiar with the company's procedures and can provide feedback on compliance issues and the effectiveness of the company's training process.

5.2 Remote navigational assessments using Voyage Data Recorders

Companies may consider using Voyage Data Recorders (VDRs) to conduct remote assessments of navigational practices. This may be supplemented by downloading data from ECDIS and other electronic navigation aids.

Remote navigational assessments may be useful when:

- The trading pattern of a vessel makes it difficult to conduct a traditional assessment.
- Following up to verify the correction of non-conformances noted during a traditional assessment.
- Companies want to assess the bridge team in a more natural environment, without them being influenced by the presence of an assessor. Although everyday practices may be more accurately observed through remote assessment, subtler interactions within the bridge team may not be picked up.
- Highlighting where to focus their resources in terms of either assessment or mentoring specific subject matter with traditional assessors.

Using the VDR for remote navigation assessments should be seen as an additional assessment tool, not as a replacement for traditional navigational assessments. Both types of assessment have advantages and limitations and should not be considered mutually exclusive.

5.2.1 Conducting remote navigational assessments

The assessment should be conducted by a professional, such as an independent navigation consultant, and/or a suitable management representative. The assessment should be conducted over a fixed time frame and should involve a critical passage, e.g. a straits transit, port approach or pilotage situation.

A typical process involves:

1. Downloading and extracting data from a VDR.
2. Calibrating the data with supplementary information provided by the vessel, e.g. logs and scans of charts used during the assessment.
3. Assessing the data, including:
 - Communications.
 - Interaction of bridge team with Pilot.
 - Position fixing technique and frequency.
 - Under Keel Clearance (UKC), routing, collision avoidance, etc.

5.3 Proactive use of Voyage Data Recorders

VDRs are primarily used as a tool to investigate incidents on board. However, improvements in technology mean that VDRs are now able to store data for longer periods, and can download/transmit regularly if required. Associated software can also be used to analyse specific data from a VDR.

A VDR could be used to assess:

- Whether essential equipment checks are properly carried out.
- Whether UKC requirements are being adhered to.
- Correct use of parallel indexing techniques.
- Correct and timely conduct of collision avoidance.
- Correct use of and response to navigational equipment alarms.
- The pilot's integration with the bridge team.

Any gaps identified can be shared with the fleet and included in coaching and mentoring processes.

If VDR can be replayed on board it may be used by the team to review and discuss their recent performance as a team. In this way action can be paused and discussed in a way that would be impossible in real time. The use of a VDR as a proactive tool is further explained in the OCIMF information paper *Recommendations on the Proactive Use of Voyage Data Recorder Information*.

5.4 Master's navigational assessment

Training and equipping Masters to conduct their own navigational assessment on board encourages them to adopt a coaching and mentoring role. This reinforces best practices and behaviours among the bridge team. Masters may also use the opportunity to verify that their standing orders and individual responsibilities are understood by shipboard personnel, and that any relevant company or industry literature is reviewed and discussed.

It is recommended that companies decide how frequently this type of assessment should be conducted and monitor compliance. The frequency of assessment may vary, depending on factors such as tour length and back-to-back contracts, but in general companies should make sure a Master completes an assessment within a 12-month period. In order to achieve this, an assessment could be required when the Master joins the vessel and/or at intervals not exceeding three months.

The assessment should include a meeting of the bridge team, during which they discuss in full the practices currently being employed on board and verify that company requirements are being complied with. Helmsmen and lookouts could be included in this meeting, as requirements also apply to them and they should not feel excluded.

Any gaps or non-conformances should be reported back to the company and addressed within a given time frame. The assessment programme should be fully documented.

5.5 Closing out observations from previous assessments

The navigational assessment can be used to make sure that corrective measures based on lessons learned from relevant incident investigations have been implemented effectively across the fleet. Recent incidents and near misses may be discussed as part of the assessment as a learning experience, and to ensure that appropriate follow-up actions have been implemented. The incidents, investigations and near misses discussed may be from experience within the fleet or industry. Coaching, training and mentoring may be used to make sure lessons are learnt in full.

Fleet-wide verification in this manner can be used to measure the effectiveness of a company's communication of incidents and associated learnings and recommendations.

5.6 Trending of assessment results

Significant additional value can be gained from the analysis and trending of the data contained in multiple assessments carried out across a fleet.

Analysis can be used to guide the content of the following:

- Current training courses, including company-specific simulator training.
- Onboard training and mentoring.
- Training strategies.
- Procedures.
- New initiatives.
- Specifications for the design of bridges and equipment.

Appendix Navigational assessment template

This appendix consists of a navigational assessment template in two parts: a static assessment and a dynamic assessment. Companies may use this template as a guide when developing their own navigational assessment template, adapted to their fleet and trading patterns. Guidance for the assessor is provided for each question in blue text. The template is comprised of three elements:

1. Navigational assessment report. This includes a covering sheet advising the reader when and where the assessment was carried out, who participated in the assessment and the navigational operations assessed. The assessor's written report includes a summary of new non-conformances detected and any outstanding items from the previous assessment requiring revalidation.
2. Part A: Static assessment template. This may be conducted in port, and should include as a minimum a review of passage plans, chart corrections, navigational records, navigational equipment, compliance with company procedures and documentation. The assessment should be followed by a report, where identified corrective actions are assigned, verified and closed out within a specified period.

The static assessment part of the template navigational assessment asks questions that prompt a yes/no response, and any additional reporting is done by exception.
3. Part B: Dynamic assessment template. A dynamic assessment consists of a comprehensive review through observation of navigational practices during a voyage. In addition to the static assessment, the dynamic assessment draws on all aspects, as discussed in section 3.1. The assessment should be followed by a report where identified corrective actions are assigned, verified and closed out within a specified period.

The dynamic assessment part of the template consists of a series of statements with sample criteria in blue. (Note that these example statements should not be treated as OCIMF guidance). A yes/no/satisfactory response does not meet the requirements for reporting in this section of the assessment. The assessor should write full comments in order to deliver a comprehensive assessment.

Navigational assessment report

Vessel		Voyage number	
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Dates of assessment	
From:	To:

Trading pattern	
From:	To:

Staff on board during assessment					
Rank	Name	Nationality	Time in Rank	Time with Company	Time on Board
Master					
Chief Officer					
2nd Officer					
3rd Officer					
Extra					
Chief Engineer					
2nd Engineer					

Operations assessed <i>(Check all boxes that apply)</i>						
Channel/straits		Pilotage		Coastal		Deep sea
Berthing		Unberthing		Anchoring		STS operations
In port		Restricted visibility				

Assessment conducted by	
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Company Superintendent	
Date of assessment review in office	
Date of action items agreed	
Date of assessment closeout	

Assessment summary

(cont.)

Part A: Static assessment template

Section 1 – Company Policy				
ID	Question	Y	N	Assessor's Comments
1.01	<p>Does the company have robust and detailed navigational policies and procedures?</p> <p><i>The company should have a set of detailed navigational policies and procedures.</i></p> <p><i>The procedures should include references to appropriate industry standards, including the ICS Bridge Procedures Guide.</i></p> <p><i>If the navigational policies and procedures are provided in electronic format only, then a back-up, independent power supply to the computer is to be provided.</i></p> <p><i>An up-to-date copy of the company's navigation policy and procedures should be available on the bridge and the bridge team should be familiar with the contents.</i></p>			
1.02	<p>Have all non-conformances from previous assessments been closed out effectively?</p> <p><i>Previous assessments should be reviewed and any outstanding non-conformances should be checked during the assessment. Any items from previous assessments that require revalidation should be checked. Previous assessments may include company assessments, the Master's assessment and third-party inspections such as SIRE.</i></p>			

ID	Question	Y	N	Assessor's Comments
1.03	<p>Does the company have thorough procedures for using ECDIS and does the bridge team fully understand their application?</p> <p><i>In addition to Part A, section 1.01, the company should have detailed procedures for the use of ECDIS.</i></p> <p><i>Procedures should provide guidance on:</i></p> <ul style="list-style-type: none"> • <i>Total ECDIS failure, and for sensor input failure.</i> • <i>ECDIS software performance checks.</i> • <i>Updating ECDIS, including guidance on cyber security.</i> • <i>Minimum Electronic Navigational Charts (ENC) carriage requirements.</i> • <i>ENC coverage and areas that lack full ENC coverage.</i> • <i>Instructions for permit applications for ENCs, particularly missing ENCs.</i> • <i>Specific requirements of passage planning with ECDIS.</i> • <i>Setting and using critical alarms on ECDIS.</i> • <i>Backing-up ECDIS software.</i> • <i>Route monitoring/validation.</i> • <i>The use and interpretation of the Category of Zone of Confidence (CATZOC), particularly setting up safety margins.</i> • <i>Processing navigation warnings, Navigational Telex (NAVTEX), and Electronic Preliminary Notices to Mariners (ePNMs) (Temporary and Preliminary (T&Ps)) for ENCs.</i> <p><i>The Master should notify the company as soon as possible if the ENC coverage availability is in doubt, so that a suitable risk assessment can be carried out for an alternative.</i></p> <p><i>ENCs should be kept up to date by using the Admiralty Information Overlay (AIO), or by manually applying ePNMs (T&Ps), navigational warnings and NAVTEX updates.</i></p> <p><i>Where the software allows, the ECDIS Notes folder (manual update list) containing all the Mariner's Notes, including ePNMs (T&Ps) if applicable, Navigation Area warnings, NAVTEX and other notes should be backed up weekly to a dedicated USB drive, CD or external drive.</i></p> <p><i>All ENC anomalies should be reported to the managing office, relevant ECDIS manufacturer and the UK Hydrographic Office. The report should include as much information as possible regarding the anomalies.</i></p>			

ID	Question	Y	N	Assessor's Comments
1.04	<p>Are the arrangements for standby conditions discussed and documented as per company requirements?</p> <p><i>Arrangements for standby conditions should be discussed and documented at the work-planning meeting or pre-port meeting and shared as needed.</i></p>			
1.05	<p>Does the bridge team fully understand the company UKC and air draft policy, its requirements and application?</p> <p><i>The company should have specific requirements relating to UKC when in open waters, confined waters, channels and fairways and when alongside. All bridge team members should be aware of this policy. The company should provide a template for UKC calculations to be carried out (see Part A, section 4.03).</i></p> <p><i>The minimum air draft clearance should be determined by the company and form a part of the policy.</i></p> <p><i>Procedures should provide guidance on actions to be taken if unable to comply with the UKC policy.</i></p>			
1.06	<p>Are all the deck officers aware of the requirements of the company restricted visibility policy?</p> <p><i>The company should have specific requirements within their navigational policies and procedures regarding restricted visibility. Restricted visibility should be considered visibility that is restricted to the distance specified by company policy and procedures, and the Master's standing orders.</i></p>			

ID	Question	Y	N	Assessor's Comments
1.07	<p>Are essential/critical systems tests being carried out as per company requirements?</p> <p><i>Prior to the anticipated departure standby condition and within a timeframe specified by the company (12 hours for US arrival) of the anticipated arrival standby condition, all ships should follow a formal set of test procedures to prove the operation of essential systems.</i></p> <p><i>Essential systems tests should be carried out in a location where a loss of power, steering or engine control will not endanger the vessel.</i></p> <p><i>Main engine(s): The main engine(s) should be operated to demonstrate full manoeuvrability, both ahead and astern while maintaining plant stability. Note the main engine(s) will need to be ready to be manoeuvred sometime before the standby condition position since the essential system test should be completed before standby condition.</i></p> <p><i>Steering gear: The steering gear should be fully tested to company requirements and recorded in the deck log/bell book. Pre-departure steering tests should be carried out as per SOLAS Chapter V, Regulation 26 and recorded in the logbook/bell book. In addition, some national and local authorities have specific requirements for testing steering gear and engines.</i></p>			
1.08	<p>Are the requirements of the company anchoring procedures understood?</p> <p><i>The company should have specific requirements for approaches to anchorage, and procedures for an anchoring operation, including personnel involved. Swing circles should be marked on charts/ECDIS, and the position of dropping the anchor should be marked on the chart/ECDIS. Procedures in the event of dragging anchor should be in place. The bridge team should be fully aware of their responsibilities with the anchoring policy.</i></p>			

ID	Question	Y	N	Assessor's Comments
1.09	<p>Do the Master's standing orders incorporate and comply with the minimum company requirements, and are they appropriate?</p> <p><i>As soon as possible after taking over command, the Master should issue a typed copy of their standing orders. In these standing orders, the Master makes known their general requirements over and above the company requirements, regarding bridge watchkeeping, navigation and navigational discipline, shipboard discipline and other individual duties as necessary. The Orders should be ship-specific and relevant to the trading pattern and the experience of the bridge team. Using company guidance, the Master should detail the minimum requirements to be included in the standing orders including visibility criteria, calling the Master and minimum Closest Point of Approach (CPA)/Time to CPA (TCPA) requirements. Standing orders should be signed by all officers and reviewed periodically.</i></p>			
1.10	<p>Are the company requirements regarding bridge orders being complied with?</p> <p><i>Additional bridge orders should be written when the Master plans to be absent from the bridge for an extended period (i.e. overnight) while the vessel is at sea to highlight any specific requirements. These orders should be hand-written as a formal record book and signed for receipt and understanding by the Officers of the Watch (OOW).</i></p>			
1.11	<p>Is the working language used on board as per company requirements?</p> <p><i>A statement to this effect should be recorded in the ship's official logbook.</i></p>			
1.12	<p>Are bridge manning levels being maintained as per company requirements?</p> <p><i>The company should detail the bridge watch minimum manning level requirements for all stages of the voyage to ensure safe navigation. Requirements should cover day and night conditions in open sea, coastal/confined water navigation and standby/pilotage conditions.</i></p> <p><i>Additional factors to consider are highlighted in the ICS Bridge Procedures Guide, section 1.2 (Bridge resource management and the bridge team).</i></p>			

ID	Question	Y	N	Assessor's Comments
1.13	<p data-bbox="496 241 1083 309">Is the deck logbook/bell book being maintained as per company requirements?</p> <p data-bbox="496 327 1066 566"><i>Records should be maintained in accordance with company and Flag State requirements for all vessel voyages from "berth to berth" (IMO Resolution A.893(21)). They should include navigational activities and incidents that are important for safety of navigation and should contain enough detail to restore a complete record of the voyage.</i></p> <p data-bbox="496 584 1086 716"><i>An ECDIS with a Global Positioning System (GPS) input (provided the equipment is in good order and the data used in each case is the same) provides a good record of the navigational activities.</i></p>			
1.14	<p data-bbox="496 732 1058 799">Are familiarisation and training records available and is training actively promoted on board?</p> <p data-bbox="496 817 1054 1021"><i>The company should have procedures regarding onboard familiarisation, with specific sections relating to bridge operations. Officers should be provided with training on Automatic Radar Plotting Aid (ARPA), ECDIS and Global Maritime Distress and Safety System (GMDSS).</i></p> <p data-bbox="496 1039 1062 1137"><i>Additional training related to responses to any navigational incident and emergency contingencies should be provided.</i></p>			
1.15	<p data-bbox="496 1153 1062 1254">Do officers and the Master write formal handover notes and is the status of bridge equipment sufficiently detailed?</p> <p data-bbox="496 1272 1078 1433"><i>Handover notes that include navigational equipment should be available for joining personnel. The notes may include specific operational procedures for navigational equipment and should be kept up to date.</i></p>			

Section 2 – Passage Planning				
ID	Question	Y	N	Assessor's Comments
2.01	<p>Has a robust passage plan for the current voyage been prepared?</p> <p><i>The company's SMS should contain comprehensive guidance on passage planning. Passage plans should be completed in detail from berth to berth and signed by the bridge team.</i></p> <p><i>Reference should be made to the best practices as detailed in the ICS Bridge Procedures Guide and OCIMF's SIRE VIQ, chapter 4.</i></p>			

ID	Question	Y	N	Assessor's Comments
2.02	<p>Has a robust passage plan been prepared on ECDIS and have safety contours and safety depths been correctly set?</p> <p><i>ECDIS is a useful tool for increasing the efficiency of passage planning. Effective use of route planning tools, voyage notes and action points should be part of a comprehensive passage plan.</i></p> <p><i>The three stages of a passage plan (Departure, Sea passage, arrival) may be completed separately or as a single route for the complete voyage. The method used should be clearly stated in the passage plan and on ECDIS printouts of courses and distances. Where separate routes are used they should overlap and the changeover of any route should not occur in confined or congested waters.</i></p> <p><i>In line with company requirements, the following should be considered when using safety margins.</i></p> <p>Safety depth and safety contours <i>These should be calculated and alarms should be set for all stages of the voyage. The only exception is where the safety cross track distance of a route crosses the safety contour while maintaining the UKC. In this case the safety contour should be set to next lowest contour and manual contours drawn to mark the no-go zones. Extreme caution needs to be taken in this circumstance, requiring the Master's authorisation, and completed as a two-person critical task. If the safety contour is not set, ECDIS will default to the next deepest contour. This may show that there are areas that the vessel cannot navigate through, even though there is sufficient water. Contours are normally set at 10, 15, 20, 30, 50, 100m, etc. This depends on the scale of ENC. The safety depth should be set to a value required to maintain the calculated UKC. Where the CATZOC (survey reliability) is classed as 'C' 'D' or 'U', navigators may consider increasing the safety depth. Depth soundings lower than the set safety depth are shown in bold on the screen.</i></p> <p>Safety cross track distance <i>A maximum distance should be set for each leg of the route. This should be appropriate for the area of navigation. Current and tidal data, if integrated with ECDIS and up to date, should be applied to the route. The safety cross track distance should be set as wide as possible to allow sufficient reaction time, but as narrow as necessary to avoid unnecessary danger alarms when navigating in confined waters.</i></p> <p><i>Information relating to the vessel's characteristics should be checked and confirmed as correct. This includes information about draught, turn radius and vessel dimensions.</i></p>			

ID	Question	Y	N	Assessor's Comments
2.03	<p>Are all charts properly corrected and up to date?</p> <p><i>The appointed navigator should be responsible to the Master for completing chart and nautical publication corrections.</i></p> <p><i>Procedures for dealing with the contents of the weekly notices are covered in The Mariner's Handbook (NP100); however, references to NP133a may be substituted by vessels with a digital correction system.</i></p> <p><i>Charts should be corrected as per guidance in the booklet How to Keep Your Admiralty Products Up-to-Date (NP294), which should be available on board.</i></p> <p><i>A log of all corrections that have been made to the charts on board the vessel should be maintained, and the six-monthly cumulative List of Admiralty Notices to Mariners (NP234) should be used to check this log to ensure that all applicable corrections have been made.</i></p> <p><i>The latest updated ENC's of the recommended scale for safe navigation should be loaded onto ECDIS and available for the voyage.</i></p>			
2.04	<p>Is the chart management system being maintained as per company requirements?</p> <p><i>The chart management system should accurately reflect the actual chart folios and their contents.</i></p> <p><i>Chart folios should be recorded in the computer-based chart management system to ensure that chart corrections are correctly managed and recorded. There is no requirement to keep a hard copy where an electronic version is available.</i></p> <p><i>Masters should ensure that the Navigating Officer is fully familiar with the chart management system (computer-based or otherwise), and that they understand the chart correction procedures. Training should be arranged if necessary.</i></p> <p><i>For ECDIS, the company should ensure that ENC's are supplied by an approved chart management software or using digital information provided by the hydrographic offices. The Master should ensure that ENC's are kept up to date, that ENC permits and updated cells are available for the voyage and that permits are obtained if required for the voyage ENC's as soon as possible.</i></p> <p><i>ECDIS should not be updated when navigating in confined or congested waters.</i></p> <p><i>The Master should be advised of all unresolved update errors, especially any affecting the current voyage.</i></p>			

ID	Question	Y	N	Assessor's Comments
2.05	<p data-bbox="496 244 1038 309">Are all relevant nautical publications up to date and readily available to the bridge team?</p> <p data-bbox="496 331 1031 427"><i>The following publications for the current voyage (either digital or in hard copy) should be readily available and kept up to date:</i></p> <ul data-bbox="496 450 1062 732" style="list-style-type: none"> <li data-bbox="496 450 735 479">• <i>List of radio signals.</i> <li data-bbox="496 495 655 524">• <i>List of lights.</i> <li data-bbox="496 539 815 568">• <i>Relevant sailing directions.</i> <li data-bbox="496 584 719 613">• <i>Nautical almanac.</i> <li data-bbox="496 629 1062 658">• <i>Tide tables and tidal stream atlases, if applicable.</i> <li data-bbox="496 674 703 703">• <i>Port information.</i> <li data-bbox="496 719 991 748">• <i>Reference charts, including routeing charts.</i> 			

ID	Question	Y	N	Assessor's Comments
2.06	<p>Have navigation warnings and T&Ps been applied to the charts for the current voyage?</p> <p><i>For vessels with paper charts, the following should be in place:</i></p> <ul style="list-style-type: none"> • <i>The latest navigation area warnings should be cross-referenced when planning the voyage and charts annotated with warnings and dangers where appropriate.</i> • <i>The identification number and brief description of every new T&P notice received should be written in pencil on the back of each chart that it affects. For voyage charts the actual T&P notice should be marked chart in pencil.</i> • <i>T&P notices printed in section II of the weekly editions of Admiralty Notices to Mariners, which are applicable to the vessel's chart folios, should be filed in a separate binder and sorted by area. This file should be corrected and kept up to date with new notices received and obsolete notices cancelled.</i> <p><i>For vessels with ECDIS, the following should be in place:</i></p> <ul style="list-style-type: none"> • <i>Voyage ENC's should be updated manually, as a note folder (manual update list) in ECDIS, for all navigational warnings and NAVTEX information that pose a hazard to navigation or provide useful information.</i> • <i>T&P corrections: voyage ENC's should be updated for ePNMs (T&Ps). This can be done by AIO or applied manually as a note folder (manual update list). Some hydrographic offices have now included T&Ps in their ENC's. Where this is the case, the ENC's are up to date, and therefore no additional information layer, such as AIO or note folder, is necessary. A list of ENC producer countries that include T&Ps can be found on the UKHO website (www.ukho.gov.uk) and in the weekly Admiralty Vector Chart Service (AVCS) update DVD.</i> • <i>A route validation check of the current route should be conducted and documented after applying the ePNM corrections, navigational warnings and NAVTEX messages to ensure that the updates do not affect safe navigation.</i> • <i>If any back up paper charts are on board (unless required for navigation) the company should have a procedure to process the T&Ps.</i> • <i>Navigation area warnings: in-force warnings should be cross-checked with the 'in force' list from the respective NAVAREA coordinator on the Internet and against navigation area warnings received by Inmarsat-C.</i> 			

ID	Question	Y	N	Assessor's Comments
2.07	<p>Is the passage plan reviewed prior to departure by the Master and the bridge team?</p> <p><i>Prior to departure, the Master and the bridge team should review the plan, whether it is paper or ECDIS-based, and each member should sign the plan to demonstrate their agreement and understanding.</i></p> <p><i>Where operational constraints prevent the review from taking place before the start of the voyage, then it should be conducted at the first opportunity after departure. Records of reviews should be made in the deck logbook/bell book.</i></p>			
2.08	<p>Is the passage debriefed on completion of a voyage?</p> <p><i>A debrief exercise should be conducted on completion of the passage to identify and circulate any learnings and proposed improvements to future passage plans. Records of exercises should be made in the deck logbook/bell book.</i></p>			
2.09	<p>Is a toolbox talk held prior to entering confined waters or a standby condition?</p> <p><i>Prior to entering confined waters or a standby condition, the bridge team should conduct a toolbox talk to identify hazards and specific duties and to agree on safety precautions and actions required. A record of the meeting should be made in the deck logbook/bell book.</i></p>			
2.10	<p>Is there evidence of position fixing being carried out as per company requirements for the entire voyage?</p> <p><i>The passage plan should indicate the minimum frequency and type(s) of position fixing in line with the company's SMS. The guidance should be practical and ensure that the vessel cannot run into danger between fixes.</i></p>			

Section 3 – Bridge Equipment				
ID	Question	Y	N	Assessor's Comments
3.01	<p>Is all navigational and communication equipment fully operational?</p> <p><i>All equipment fitted to a vessel, whether required by legislation or specific to the company, should be maintained in an operational condition.</i></p> <p><i>The company should have a procedure that identifies all critical bridge equipment and alarms and actions to take should any critical item become defective. This should include informing the Master and recording the defect.</i></p> <p><i>The manufacturer's instructions/manual should be available on board and the equipment maintained accordingly.</i></p>			
3.02	<p>Has the emergency steering gear been tested as per Flag State and company requirements?</p> <p><i>The emergency steering gear should be tested in line with SOLAS and Flag State requirements. Results should be recorded in both the ship's deck logbook/bell book and the official logbook.</i></p> <p><i>The test using emergency control should be conducted in the steering gear compartment. All means of communication with the navigation bridge and any alternative power supplies should also be tested.</i></p> <p><i>A procedure with clear and simple instructions, including a block diagram, for changing over to emergency steering and back again should be on display at both the emergency steering gear location and the bridge.</i></p> <p><i>The United States Coast Guard (USCG) requires that emergency steering gear be tested within 48 hours prior to arrival at a US port. A record of testing the engines and steering gear completed in accordance with USCG regulations should be entered in the official logbook and include a reference to USCG title 33 CFR Part 164 equipment tests.</i></p>			

ID	Question	Y	N	Assessor's Comments
3.03	<p>Is manual steering used as per company requirements?</p> <p><i>The company should have a set of procedures detailing the use of manual steering and this should include the following:</i></p> <ul style="list-style-type: none"> • <i>Daily tests while at sea when in autopilot.</i> • <i>Test prior to starting stand-by conditions.</i> • <i>For large alterations of course.</i> • <i>Manual steering should be engaged when navigating in restricted waters, in areas of high traffic density and in all other hazardous navigational situations.</i> • <i>Changeover from automatic to manual steering and vice versa should be supervised by a responsible officer and recorded in the deck logbook/bell book.</i> 			
3.04	<p>Are gyro compass(es) and repeaters aligned and properly maintained?</p> <p><i>Company procedures should include guidance on the following:</i></p> <ul style="list-style-type: none"> • <i>Routine maintenance.</i> • <i>Annual service.</i> • <i>Onboard spares requirements.</i> • <i>Actions to take in event of failure/malfunction.</i> <p><i>All gyro repeaters, including the repeater located at the emergency steering gear, should be checked for correct alignment. Where applicable, the master gyro should be checked against the slave gyro. The repeater checks should include all navigational equipment that takes input from the gyro. The speed/latitude corrections should be checked and adjusted as required. The foregoing should be logged either on the appropriate checklist or in the deck logbook/bell book.</i></p> <p><i>Where applicable, the procedure for changing over from master gyro to slave gyro and vice versa should be clearly posted beside the unit(s).</i></p> <p><i>Azimuth mirrors or other equipment for taking bearings from repeaters and the magnetic compass should all be in a good condition, as should covers for bridge wing repeaters.</i></p> <p><i>Compass error observations should be taken and recorded at each watch when at sea, at anchor and after broad alterations of course. Transit bearings should be taken whenever the opportunity arises. Where it is impractical to take an observation during the watch, this should be recorded. Consistently high gyro errors should be investigated and corrective action taken.</i></p>			

ID	Question	Y	N	Assessor's Comments
3.05	<p data-bbox="496 241 1062 338">Is the magnetic compass in good condition and are deviations broadly aligned with the deviation card?</p> <p data-bbox="496 365 1046 528"><i>The magnetic compass should be maintained with binnacle lights operational to ensure the ship's heading is clearly readable at the main steering position. The compass should be provided with a means to take bearings.</i></p> <p data-bbox="496 555 1062 786"><i>The magnetic compass should be properly adjusted and a copy of the deviation card should be available on the bridge. A record of the position of the compensation magnets, the position of the soft iron spheres and the amount and position of soft iron in the Flinders bar should be kept with the deviation card.</i></p> <p data-bbox="496 813 1062 1010"><i>If deviations obtained by compass error calculations do not broadly align with the deviation card, or following major structural alterations, ship repairs or after a long period of lay-up, then the magnetic compass should be adjusted by a qualified compass adjustor.</i></p> <p data-bbox="496 1037 1078 1267"><i>Unless a steering compass or gyro compass is fitted, a spare magnetic compass, interchangeable with the standard magnetic compass, should be carried. Spare magnetic compasses should be stored upside down to avoid wear of the needle bearing. If the vessel carries spare rods or a spare Flinders bar, they should not be stored next to the spare compass.</i></p>			
3.06	<p data-bbox="496 1281 1078 1346">Are radars and ARPA fully operational and properly maintained?</p> <p data-bbox="496 1373 1078 1536"><i>The company should have specific procedures as to the use and maintenance of the radars and ARPA, which should include requirements for operational set up, use of speed input through the water for ARPA, maintenance and training requirements.</i></p> <p data-bbox="496 1563 1078 1650"><i>The bridge team should be proficient in the full use of radars and ARPA, including setting alarms, shadow sectors, use of radar maps and limitations.</i></p>			

ID	Question	Y	N	Assessor's Comments
3.07	<p>Is the Automatic Identification System operational and properly set up?</p> <p><i>As per SOLAS, ships fitted with an Automatic Identification System (AIS) must keep the unit in operation at all times, except where international agreements, rules or standards provide for the protection of navigational information.</i></p> <p><i>The International Safety Guide for Oil Tankers and Terminals (ISGOTT) provides guidance on the use of this equipment for vessels underway, at anchor or when alongside terminals or port areas with or without the presence of hydrocarbon gases.</i></p> <p><i>Ship to Ship Transfer Guide for Petroleum, Chemicals and Liquefied Gases provides additional guidance for vessels involved in ship to ship transfers.</i></p>			
3.08	<p>Is the GPS properly set up, fully operational and being used as per company requirements?</p> <p><i>It should be noted that if the Dilution of Position (DOP) value is set too high, the unit may only accept a very accurate position, and if such an accuracy cannot be validated, the unit will change over to a Dead Reckoning (DR) mode. Consequently, the correct manufacturer's recommended Horizontal Dilution of Position (HDOP) value should be posted next to the GPS and the correct setting should be regularly checked. When a position fix is taken from a GPS unit, positive confirmation should always be sought to verify that the unit is not giving a DR position.</i></p> <p><i>The interface between GPS and other navigational equipment should be regularly checked during a watch.</i></p> <p><i>Where a passage plan has been set up within GPS and linked to radar, the coordinates entered should be double-checked by another officer for accuracy prior to use.</i></p> <p><i>Alarm settings should be regularly checked and adjusted as required, including cross track error and waypoint approach alarms.</i></p>			

ID	Question	Y	N	Assessor's Comments
3.09	<p data-bbox="496 241 1059 304">Is the echo sounder fully operational and used as per company requirements?</p> <p data-bbox="496 327 1027 423"><i>All vessels over 300 Gross Register Tonnage (GRT) must be fitted with an echo sounder (SOLAS V/19.2.3.1).</i></p> <p data-bbox="496 445 1038 474"><i>Company procedures should reflect the following:</i></p> <ul data-bbox="496 497 1066 936" style="list-style-type: none"> <li data-bbox="496 497 1066 622">• <i>A performance test of the echo sounder is completed prior to use, on all ranges and scales to verify recordings against depths shown on the chart.</i> <li data-bbox="496 645 1066 707">• <i>Alarm settings are set to reflect the current draft and UKC requirements.</i> <li data-bbox="496 730 1066 936">• <i>The minimum requirements for use of equipment:</i> <ul style="list-style-type: none"> <li data-bbox="549 759 1066 822">- <i>Prior to approaching coastal, restricted or shallow waters, and for port entry/departure.</i> <li data-bbox="549 844 1066 871">- <i>Marking of date, time and scale in use.</i> <li data-bbox="549 893 1066 920">- <i>Cross-referencing requirements.</i> <li data-bbox="549 943 1066 969">- <i>Downloading memory in event of incident.</i> 			
3.10	<p data-bbox="496 954 970 1016">Is NAVTEX correctly programmed and are messages being managed correctly?</p> <p data-bbox="496 1039 1078 1200"><i>Every ship should be provided with a receiver capable of receiving international NAVTEX service broadcasts if the ship is engaged on voyages in any area in which an international NAVTEX service is provided (SOLAS IV/7.1.4).</i></p> <p data-bbox="496 1223 1027 1323"><i>The company's navigational procedures should include guidance on the management of NAVTEX messages.</i></p> <p data-bbox="496 1346 1075 1442"><i>The NAVTEX should be correctly set up for the voyage, to the appropriate stations and to the type of messages that need to be received.</i></p>			

ID	Question	Y	N	Assessor's Comments
3.11	<p>Is the ECDIS type-approved, are ENC's fully up to date and is the ECDIS set up as per company requirements?</p> <p><i>An ECDIS should be type-approved, meeting chart carriage requirements as per SOLAS V/19.2.1.4, and the backup arrangement as per SOLAS V/19.2.1.5.</i></p> <p><i>Where an ECDIS is being used to meet the chart carriage requirements of SOLAS, it must meet the following criteria:</i></p> <ul style="list-style-type: none"> <i>• Type-approved.</i> <i>• Use up-to-date ENC's.</i> <i>• Maintained so as to be compatible with the latest applicable International Hydrographic Organization (IHO) standards.</i> <i>• Have adequate, independent back-up arrangements in place.</i> <p><i>Only approved ENC's produced by a hydrographic office should be used. Paper charts may be carried if this is a company or trade-specific requirement. If so, they should be kept fully up to date.</i></p> <p><i>Vessels that operate solely using ECDIS, as per IMO Resolution A.817 (19) as amended, must be provided with a secondary means of navigation, which may comprise:</i></p> <ul style="list-style-type: none"> <i>• A second 'type approved' ECDIS capable of being powered from the main and emergency supplies. It must operate independently of the main ECDIS and have an independent GPS input. The secondary ECDIS should have the ENC chart database and voyage plan loaded before the start of the voyage. It should be operational at all times.</i> <i>• A full folio of paper charts that satisfies SOLAS carriage requirements, corrected to the latest available Notices to Mariners, covering the intended voyage and showing the intended voyage plan.</i> <p><i>The company's procedures should identify critical ECDIS alarms and contain guidance on actions to be taken in case of such alarms. All navigating officers must demonstrate a proper understanding of these procedures.</i></p> <p><i>The company's instructions on setting safety contour and safety depth alarms should be properly complied with. Deviations should be recorded in the logbook and passage plan.</i></p>			

ID	Question	Y	N	Assessor's Comments
3.12	<p data-bbox="496 241 1083 304">Is ECDIS software maintained and updated to the relevant IHO standards?</p> <p data-bbox="496 327 1083 528"><i>An operational ECDIS comprises hardware, software and data. It is important for the safety of navigation that the application software within the ECDIS works fully in accordance with the performance standards and is capable of displaying all the relevant digital information contained in the ENC.</i></p> <p data-bbox="496 551 1083 651"><i>ECDIS that is not updated to the latest version of the IHO standards may not meet the chart carriage requirements as set out in SOLAS V/19.2.1.4.</i></p> <p data-bbox="496 674 1083 864"><i>Manufacturers should provide a mechanism to ensure software maintenance arrangements are adequate. This can be done by providing software version information on a website. Such information should include the IHO standards that have been implemented.</i></p>			
3.13	<p data-bbox="496 887 1083 976">Are Very High Frequency radios fully operable and is communications protocol thoroughly understood?</p> <p data-bbox="496 999 1083 1200"><i>Very High Frequency (VHF) radios should be switched to low power in port and have a list of port channels being monitored readily available. Channel 16 should be monitored on at least one of the units. Where applicable and required by the company, the VHF log should be in use and up to date.</i></p> <p data-bbox="496 1223 1083 1285"><i>All OOWs should be thoroughly familiar with the correct use of communications protocol.</i></p>			
3.14	<p data-bbox="496 1308 1083 1370">Is the daylight signalling lamp able to operate on a secondary source of power?</p> <p data-bbox="496 1393 1083 1554"><i>The Aldis lamp should not be solely dependent on the ship's main source of electrical power. If the secondary source of power is battery, then there should be a maintenance programme to ensure that the batteries are regularly charged.</i></p>			
3.15	<p data-bbox="496 1576 1083 1603">Is the off-course alarm properly set up and in use?</p> <p data-bbox="496 1626 1083 1787"><i>The off-course alarm should be used when the vessel is being steered by the automatic pilot or when hand steering for long periods. The off-course limit settings should be checked every time the off-course alarm is put into operation and at hand over of watches.</i></p>			
3.16	<p data-bbox="496 1805 1083 1895">Are rudder angle, RPM, variable pitch, rate of turn and bow/stern thruster indicators all in good working order?</p> <p data-bbox="496 1917 1083 2051"><i>All indicators should be readable from the conning position. Where the indicators are replicated on bridge wings or consoles, then these too should be fully operational, including lighting.</i></p>			

ID	Question	Y	N	Assessor's Comments
3.17	<p>Are the vessel's shapes, whistle, bell and gong in good order?</p> <p><i>The following equipment must be on board as a minimum to comply with the COLREGS:</i></p> <ul style="list-style-type: none"> • <i>A whistle and bell for vessels of 12 metres or longer.</i> • <i>A gong for vessels of 100 metres or longer.</i> • <i>Three balls, one cylinder and one diamond shape should be carried.</i> <p><i>Where applicable, electronic sound signalling systems should be fully operational.</i></p>			
3.18	<p>Is the autopilot in good order?</p> <p><i>All alarms and controls should be fully operational, particularly where interfaced in an integrated system.</i></p> <p><i>Where there are specific settings, such as yaw and fine tuning, there should be evidence that these settings are adjusted as required and recorded.</i></p> <p><i>The procedure for switching between autopilot to all modes of manual steering should be readily available and all of the bridge team should be fully familiar with it.</i></p>			
3.19	<p>Are all internal communication systems in good order?</p> <p><i>The ship's telephone system should be fully operational on both main and emergency power. Sound powered communication systems, especially between bridge and emergency steering gear, should be regularly tested and in good working condition.</i></p>			
3.20	<p>Is the speed and distance measuring device fully operational?</p> <p><i>Ships constructed on or after 1 July 2002 are to be equipped with the following:</i></p> <ul style="list-style-type: none"> • <i>Ships > 300 GRT: a speed and distance measuring device, or other means to indicate speed and distance through the water (SOLAS V/19 2 2.3.4).</i> • <i>Ships > 50,000 GRT: a device to indicate speed and distance over the ground in the forward and athwartships direction (SOLAS V/19 2 2.9.2).</i> 			

ID	Question	Y	N	Assessor's Comments
3.21	<p>Is the VDR fully operational and used as per company requirements?</p> <p><i>The VDR or Simplified VDR (S-VDR) should be fully operational. The company should have specific procedures, which may include the following:</i></p> <ul style="list-style-type: none"> • <i>An operational function check should be conducted daily and be recorded either on a checklist or in the deck operations logbook/bell book.</i> • <i>Instructions for saving and downloading data should be displayed next to the VDR control panel. All deck officers should be thoroughly familiar with this process.</i> 			
3.22	<p>Is the course recorder being maintained as per company requirements?</p> <p><i>The unit should be synchronised to GMT and checked every watch. Prior to each standby and on a daily basis, the date and time should be verified and recorded on the chart. Adequate spare printer rolls and styluses should be available.</i></p>			
3.23	<p>Are navigation lights in good order?</p> <p><i>All navigation lights should operational, including the lamp test function. There should be full redundancy available through the secondary lights. Sufficient spares should be available as determined by the company. A procedure should be in place to investigate any navigation light failure alarm.</i></p>			
3.24	<p>Is the weather fax or an equivalent digital programme fully operational?</p> <p><i>Officers should be proficient in use of the equipment/programme, which should be monitored regularly.</i></p>			
3.25	<p>Are the vessel's manoeuvring characteristics displayed on the bridge?</p> <p><i>As per IMO Res. A.601(15), for all ships 100 metres in length and over and all chemical tankers and gas carriers regardless of size, a Pilot card, wheelhouse poster and manoeuvring booklet should be provided.</i></p>			
3.26	<p>Is the engine data logger maintained as per company requirements?</p> <p><i>The engine order printer (if fitted) should always be in operation. If it fails and is inoperable, manual recordings should be made. On vessels where the engine order printer is linked to the master clock system, the printer should be maintained on the ship's time. Otherwise, the engine order printer should be maintained on UTC.</i></p>			

ID	Question	Y	N	Assessor's Comments
3.27	<p>Is the Long Range Identification and Tracking system being maintained as per company requirements?</p> <p><i>Ships should automatically transmit the following Long Range Identification and Tracking (LRIT) information:</i></p> <ul style="list-style-type: none"> • <i>The identity of the ship.</i> • <i>The position of the ship (latitude and longitude).</i> • <i>The date and time of the position provided.</i> <p><i>It should be possible to switch off the LRIT equipment or cease the transmission of LRIT information. Procedures should include guidance on circumstances when the equipment can be switched off.</i></p> <p><i>The LRIT should undergo a conformance test and be certified by a recognised service provider appointed by a Flag State.</i></p>			
3.28	<p>Is the GMDSS equipment kept in good working order and are officers fully familiar with its use?</p> <p><i>The company should have procedures detailing responsibilities for the GMDSS station, logging of GMDSS activity, maintenance and training requirements.</i></p> <p><i>The Master should ensure that there are equipment-specific instructions in place, adjacent to the relevant pieces of equipment, to help an unskilled operator to send an emergency GMDSS communication.</i></p> <p><i>There should be a tanker-specific procedure for earthing or isolating the main transmitting antennas while the vessel is alongside the berth. Where it is not possible to earth or isolate the main transmitting antenna in port, the GMDSS station should be powered down.</i></p> <p><i>Emergency pro-forma messages, including piracy alert/attack, should be compiled ready for transmission via VHF and satellite communications.</i></p>			
3.29	<p>Is the Bridge Navigational Watch Alarm System fully operational at all times when the vessel is not alongside?</p> <p><i>All ships of 150 GRT and upwards should be fitted with a Bridge Navigational Watch Alarm System (BNWAS). The company should have a procedure that the BNWAS is always on when underway at sea or at anchor, and the vessel should have documentary evidence to show that the BNWAS was always switched on. In addition, regular tests should be made and recorded, with evidence available to prove full functionality.</i></p>			

Section 4 – Forms and Checklists				
ID	Question	Y	N	Assessor's Comments
4.01	<p>Has a pre-arrival exchange of information between the ship and port authority been conducted?</p> <p><i>Masters should exchange pre-arrival information with the port authorities well in advance of the vessel's arrival, in line with the local authority requirements. The Master should request information in return regarding:</i></p> <ul style="list-style-type: none"> • <i>Pilot boarding point.</i> • <i>Boarding speed.</i> • <i>Pilot boarding arrangements.</i> • <i>Reporting and communications procedures.</i> • <i>Details of the prospective berth, anchorage and routeing information.</i> <p><i>The information should be sufficient to allow any revision to the passage plan to be discussed and produced.</i></p>			
4.02	<p>Has the Master/Pilot information exchange form been fully completed?</p> <p><i>A Master/Pilot information exchange form should be prepared in advance of every Pilot boarding.</i></p> <p><i>The information on the exchange form should include:</i></p> <ul style="list-style-type: none"> • <i>Vessel characteristics and current sailing condition.</i> • <i>Manoeuvring characteristics, astern power and number of stop/starts.</i> • <i>Any defects in navigational equipment.</i> • <i>Roles and responsibilities of Master, Pilot and remaining bridge team members.</i> • <i>Intended routeing.</i> • <i>UKC, squat and air draft.</i> • <i>Local conditions including navigational constraints.</i> • <i>Tidal and current information.</i> • <i>Anticipated berthing plan.</i> • <i>Expected weather conditions.</i> 			
4.03	<p>Is the UKC being calculated correctly?</p> <p><i>The company should provide a form or alternative method for completion of UKC calculations in line with their requirements.</i></p>			
4.04	<p>Are checklists for pre-arrival, pre-departure, watch handover, steering gear tests, Master/Pilot exchange and Pilot card effectively completed?</p> <p><i>All checklists should be completed as per company requirements and signed.</i></p> <p><i>Checklists should be completed by hand rather than electronically 'ticking boxes' or entering 'Y'. This helps to ensure that equipment is properly checked.</i></p>			

ID	Question	Y	N	Assessor's Comments
4.05	<p>Are periodic checks on navigational equipment being conducted as per company requirements?</p> <p><i>Officers should be familiar with the vessel's equipment and testing requirements, and evidence of completed tests should be cited.</i></p>			
4.06	<p>Are all other navigational checklists completed and signed off correctly?</p> <p><i>Any additional checklists or logs required by the company such as restricted visibility or heavy weather precautions should be completed correctly.</i></p>			
4.07	<p>Are bridge checklists, logbooks and the printouts from digital equipment being retained as per company requirements?</p> <p><i>All navigational checklists should be filed and archived as per company requirements. Where applicable this should include printouts produced by digital equipment.</i></p>			

Part B: Dynamic assessment template

Section 1 – Company Policy				
ID	Question	Y	N	Assessor's Comments
1.01	<p>The Master applies overriding authority and responsibility effectively.</p> <p><i>The Master has overriding authority and responsibility to make decisions about safety, security and pollution prevention. The Master should not be constrained in any way or by any party from taking any decision which, in their professional judgement, is necessary for safe navigation.</i></p> <p><i>The decision-making process should be based on human factors, including:</i></p> <ul style="list-style-type: none"> • <i>Communications with the bridge team. The Master should ensure that all communications are clearly understood and should be open to dialogue and challenge.</i> • <i>Situational awareness. The Master should have complete awareness of all bridge team activities and be able to distinguish the finer points from the overall picture. Input from all should be welcomed.</i> • <i>Ensuring that the team is neither over-pressurised, nor complacent – both lead to mistakes. In addition, the team should not be fatigued or distracted.</i> • <i>Ensuring that best practice is followed at all times. The Master should lead by example. This includes understanding the team's various experience levels and training, coaching and mentoring members as applicable. Cutting corners is strongly discouraged.</i> • <i>Promoting teamwork and a strong safety culture.</i> 			

ID	Question	Y	N	Assessor's Comments
1.02	<p>The requirements of the company's navigation policies and procedures are fully satisfied.</p> <p><i>On joining a vessel and as soon as practicable, each member of the bridge team should familiarise themselves with company's SMS requirements that relate to navigational practices and procedures. On completion they should confirm to the Master that they understand these requirements.</i></p> <p><i>On joining and at intervals in line with company requirements, the Master should complete a navigational assessment. The Master should convene a meeting with the bridge team to discuss the navigational practices currently in place and verify them against the company's requirements. A navigational assessment checklist should be used. Non-conformances identified should be reported to the managing office and a plan agreed for closeout within a specified time frame.</i></p> <p><i>The Master should brief all watchkeepers/lookouts regarding issues discussed at the meeting and be satisfied that the company requirements for lookout duties are fully understood by the personnel undertaking them.</i></p> <p><i>The Master should also use this opportunity to explain their standing orders to the bridge team.</i></p> <p><i>A record of the Master's assessment should be made.</i></p> <p><i>It is critical that every individual reviews and understands the requirements for navigation and their responsibilities. Any areas of uncertainty should be brought to the attention of the Master and addressed.</i></p>			
1.03	<p>The bridge team is familiar and always compliant with the company restricted visibility policy.</p> <p><i>In addition to the requirements of Part A, section 1.06:</i></p> <p><i>The OOW should regularly check the level of visibility by comparing the range of visual and radar targets and discussing visibility with the lookout, particularly if it is patchy or closing in. The definition of restricted visibility and the company's requirements for navigation when in or near such areas should be clearly stated in the company's SMS and the Master's standing orders. Restricted visibility may include heavy rain, mist, fog, snow, sandstorms, glare (from background lights) or other similar causes.</i></p> <p><i>The Master and officers should demonstrate full knowledge of and compliance with the rules of the road as they apply to restricted visibility.</i></p>			

ID	Question	Y	N	Assessor's Comments
1.04	<p>Standby conditions are discussed and documented well before the event, and all company requirements for standby are being met in full.</p> <p><i>In addition to the requirements of Part A, sections 1.04 and 2.08:</i></p> <p><i>Plans for standby conditions should be discussed, documented and shared with all personnel on board as necessary. The discussion should cover all aspects of the operation, be open with all views considered and take account of learnings from previous visits. The experience of personnel involved should be considered.</i></p> <p><i>If any deviation/departure from the standby plan is required, the Master should immediately be informed and the plan re-assessed. The Master should ensure that all personnel involved in the operations are fully informed of any changes.</i></p> <p><i>The vessel should be placed on standby if the Master considers that the safety, security or manoeuvrability of the vessel may be compromised. The standby position should be clearly noted on all relevant navigational charts, the engine room should inform the bridge verbally that the vessel is ready for standby, and the time of standby should be recorded in the deck and engine room logbooks. The vessel should not proceed beyond the pre-defined standby position as defined in the passage plan until all requirements for standby conditions are met. The bridge and engine control room should establish and maintain a clear means of communication and exchange of information.</i></p> <p><i>Reasons for standby conditions may include but are not limited to:</i></p> <ul style="list-style-type: none"> <i>• Deteriorating visibility.</i> <i>• Operational status of main or standby machinery.</i> <i>• Traffic density changes.</i> <i>• Any other development that might impact the safe operation of the vessel.</i> <p><i>Subject to any specific company requirements, the Master and Chief Engineer should discuss and agree when the propulsion plant can be operated in Unmanned Machinery Space (UMS) mode.</i></p> <p><i>Records of starting and ending standby conditions should be recorded in the bridge and engine room logbooks.</i></p>			

ID	Question	Y	N	Assessor's Comments
1.05	<p>Company anchoring procedures are understood and complied with.</p> <p><i>In addition to the requirements of Part A, section 1.08:</i></p> <p><i>When entering, manoeuvring inside or leaving harbour limits, the anchors should be cleared and ready for use, unless local regulations require otherwise. The windlass(es) should be fully operational and the required personnel at stations. A responsible officer or duly trained and experienced crew member should be in charge of the operation. On long river or estuarial passages, primarily conducted at full speed, or whenever considered necessary, Masters should assess the necessity of keeping the forecandle manned, bearing in mind local regulations.</i></p> <p><i>The Master is responsible for determining the anchoring procedure for the vessel and establishing a plan which takes account of the following:</i></p> <ul style="list-style-type: none"> <i>• Traffic density.</i> <i>• Weather conditions (both current and predicted weather forecast).</i> <i>• Current and/or tide.</i> <i>• Depth of water.</i> <i>• Vessel displacement.</i> <i>• Amount of cable to be used.</i> <i>• Characteristics and condition of the vessel's equipment.</i> <p><i>Hydraulic brakes, if fitted, should be tested with the anchor secure prior to letting go. Communications with all parties and full situational awareness are key to a successful operation.</i></p> <p><i>On completion of anchoring, the cable stopper should be locked in position across the cable. The cable should be adjusted to rest close to, but not touching, the cable stopper and then the brake hardened up and the windlass taken out of gear.</i></p> <p><i>The vessel's position should be fixed, recorded in the logbook and marked on the chart/ECDIS. The swinging circle should be checked against other vessels in the vicinity.</i></p> <p><i>The OOW should follow the guidance in the ICS Bridge Procedures Guide on maintaining an anchor watch.</i></p> <p><i>Any decision to immobilise the main engines, steering gear or other critical machinery should be subject to a risk assessment and in consultation with shore management.</i></p>			

Section 2 – Bridge team organisation				
ID	Question	Y	N	Assessor's Comments
2.01	<p>The manning level of the bridge is adequate at all times.</p> <p><i>In addition to the requirements of Part A, section 1.12:</i></p> <p><i>The manning level of the bridge should always be in line with company requirements and enhanced for critical sections of the voyage. Personnel should be called in good time to meet the manning level requirements. The management of officers and crew hours of rest in line with STCW/ILO should be considered when planning manning levels. Tired people make mistakes – fatigue should be recognised and effectively managed both by the company and on board.</i></p> <p><i>The company should have a policy for preventing distraction of personnel on the bridge and this should include the following:</i></p> <ul style="list-style-type: none"> • <i>Prohibition of media and social entertainment equipment, including personal computers.</i> • <i>Restriction of personal mobile phones and clear guidelines as to when use is permitted.</i> • <i>Restriction of non-essential personnel and clear guidelines as to when visitors are permitted on the bridge.</i> • <i>A statement that the OOW should not be or allow themselves to become distracted.</i> <p><i>The policy should be seen to be implemented in full by the bridge team.</i></p>			

ID	Question	Y	N	Assessor's Comments
2.02	<p>A proper lookout is maintained.</p> <p><i>A lookout should be maintained in compliance with COLREGS Rule 5, which is essential to ensure safe navigation.</i></p> <p><i>The BNWAS dead man alarm should be switched on when the OOW is the sole person on watch.</i></p> <p><i>Duties other than lookout may be assigned to the watchkeeper when all of the following criteria can be met:</i></p> <ul style="list-style-type: none"> • <i>During daylight hours, i.e. from sunrise to sunset.</i> • <i>The vessel is further from the nearest grounding line or navigational hazard than the company's defined distance.</i> • <i>The vessel is not under standby conditions.</i> • <i>The vessel is not transiting an area of heightened security.</i> • <i>The vessel is not experiencing adverse weather, visibility or other conditions that may affect the ability of the OOW to maintain a proper lookout.</i> • <i>The traffic density is low and vessel is not navigating in or near a traffic separation scheme.</i> • <i>There is no significant defect in navigational equipment.</i> • <i>The OOW is not undertaking other duties that may distract them from keeping a sole lookout.</i> • <i>The watchkeeper is available when required.</i> <p><i>If there is any doubt, then the watchkeeper should be called.</i></p> <p><i>The OOW should maintain a two-way flow of information with the watchkeeper, including changes in navigational circumstances, planned collision avoidance manoeuvres, alteration of course, changes of main engine status and expected changes in traffic density.</i></p>			

ID	Question	Y	N	Assessor's Comments
2.03	<p>Fatigue is monitored and managed effectively at all times.</p> <p><i>Fatigue is a major risk to safe navigation. The company (through the Master) should ensure that any watchkeeping officer or rating is sufficiently rested, in line with STCW and ILO requirements, when assuming bridge watchkeeping duties. Watchkeeping schedules may be altered to achieve this objective. The Master should not hesitate to safely anchor or stop the vessel to rest bridge team members. Where necessary the Master should be prepared to do a watch, break watches or suspend operations when fatigue needs to be rectified.</i></p> <p><i>The six on/six off watchkeeping rota for extended periods does not comply with the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW) and the International Labour Organization (ILO) regulations and should be avoided.</i></p>			
2.04	<p>The bridge team is neither over-pressurised nor complacent.</p> <p><i>A good bridge team is busy without being over-pressurised, but not complacent either.</i></p> <p><i>Being over-pressurised leads to stress. Complacency or lack of attention can lead to mistakes or shortcuts. This can be avoided by sharing decision-making, calling for assistance, using competency, knowledge and experience, exercising sound judgement, maintaining situational awareness and effective communication.</i></p>			

ID	Question	Y	N	Assessor's Comments
2.05	<p>The bridge team members maintain a high level of situational awareness at all times.</p> <p><i>Bridge team members can maintain a high level of situational awareness by recognising what information is important and not getting distracted or bogged down in minor details. Some key factors to consider should include, but are not limited to, the ability to:</i></p> <ul style="list-style-type: none"> • <i>Assimilate and deal with a high flow of information.</i> • <i>Identify developing hazards and close quarter situations.</i> • <i>Continuously assess sea room and UKC.</i> • <i>Continuously assess developing traffic situations.</i> • <i>Prioritise developing situations and not lose track of other hazards.</i> • <i>Delegate workload when required to maintain focus, particularly when conning the vessel.</i> • <i>Account for the varying influence of speed, set and drift, particularly when increasing and reducing speed.</i> • <i>Maintain situational awareness during periods of twilight and darkness.</i> 			
2.06	<p>Communications within the bridge team are effective.</p> <p><i>Effective communication should be maintained between the Master, officers, lookout, helmsman, Pilots and the engine room. To be effective, communications need to be:</i></p> <ul style="list-style-type: none"> • <i>Clear and concise.</i> • <i>Understood by all.</i> • <i>Used with the closed loop process.</i> • <i>Open to questioning and challenge across all ranks where doubts exist. Positive intervention and feedback should be encouraged. Regular briefings and debriefings can assist in this respect.</i> <p><i>The use of arm gestures or other body language, e.g. to indicate helm direction, can enhance understanding and avoid errors.</i></p>			
2.07	<p>Activities are planned in good time and workload is delegated efficiently.</p> <p><i>All the activities of the bridge team should be planned in good time. Where teamwork is required activities should not rely on one person and no part of the team should be working in isolation. The workload should be shared as applicable using the right personnel for the right job.</i></p>			

ID	Question	Y	N	Assessor's Comments
2.08	<p>The bridge team works well as a unit.</p> <p><i>The relationship between the Master and the bridge team or the OOW and watchkeepers should be such that all are comfortable within the team and work well together. This involves:</i></p> <ul style="list-style-type: none"> • <i>Not being constrained by hierarchal barriers and actively promoting challenge/questioning/intervention.</i> • <i>Calling for assistance when in any doubt.</i> • <i>Everyone supporting the team as a whole.</i> • <i>Coaching, training and mentoring.</i> • <i>Effective decision-making.</i> • <i>Proper planning and distribution of workload.</i> 			
2.09	<p>Decision-making is effective.</p> <p><i>All decision-making should be clear, unambiguous, positive and justified. Decisions should be communicated in good time and any doubts should be addressed. It should be fully appreciated that while the Master has overall responsibility and authority, mistakes can be made – the Master should emphasise this and request intervention.</i></p> <p><i>Under no circumstances should decisions contravene the company SMS or COLREGS. The only exception to this is where the Master must exercise their overriding authority to ensure the safety of the vessel and its crew.</i></p>			
2.10	<p>Bridge team members have a good understanding of their responsibilities and demonstrate confidence in their execution.</p> <p><i>The individual members of the bridge team complete their duties effectively. This includes knowing when to ask questions.</i></p> <p><i>Whenever a bridge team member has the con, they should demonstrate confidence in being able to do the following:</i></p> <ul style="list-style-type: none"> • <i>Bridge resource management.</i> • <i>Decision-making.</i> • <i>Giving orders.</i> • <i>Handling of the bridge team.</i> • <i>Assessing developing situations.</i> • <i>Taking early action to avoid a developing situation.</i> • <i>Handling external communications.</i> • <i>Interactions with engine room.</i> • <i>Interaction with the Pilot.</i> • <i>Knowledge of the vessel's characteristics and manoeuvring, including any ship-specific quirks.</i> • <i>Calling the Master when required.</i> 			

ID	Question	Y	N	Assessor's Comments
2.11	<p>Coaching, training and mentoring are actively promoted on board.</p> <p><i>In addition to the requirements of Part A, section 1.14:</i></p> <p><i>All officers should understudy (learn another's role in order to be able to act at short notice in their absence) and gain experience of the next rank whenever possible and this should actively be promoted on board. For instance, if the navigator is the Second Officer, then the Third Officer should actively understudy them.</i></p> <p><i>The Master should be proactive and provide hands-on training, where appropriate, to all bridge officers in manoeuvring, navigation, company procedures, navigation equipment familiarisation and ship handling. This might be as simple as coaching helmsmen and junior officers to repeat back helm orders.</i></p> <p><i>When allowing an officer to manoeuvre the vessel in restricted waters, the Master should carefully choose the situation and monitor the officer's actions to ensure the safety of the vessel.</i></p>			

Section 3 – Duties				
ID	Question	Y	N	Assessor's comments
3.01	<p>The Designated Navigating Officer is thoroughly familiar with their responsibilities, including industry, company and the Master's requirements for passage planning.</p> <p><i>Although several officers onboard act as OOW, the company should appoint one to be the designated navigator. Apart from watchkeeping duties, the navigator's responsibilities should include:</i></p> <ul style="list-style-type: none"> • <i>The care of all navigational equipment in close consultation with the vessel's maintenance team.</i> • <i>Maintenance of the vessel's outfit of nautical charts/ENCs/Raster Navigational Charts (RNCs) and publications.</i> • <i>Passage planning.</i> <p><i>The Navigator may delegate some of their workload to other officers but they remain responsible to the Master for the above.</i></p>			
3.02	<p>The OOW complies with responsibilities, authority and primary duties as defined by the company.</p> <p><i>When an OOW has the con, they should have the authority to take whatever action they deem necessary with regards to navigation and the safety of the ship by using the rudder, engine, whistle, signalling and bridge communications equipment as required.</i></p> <p><i>The presence of the Master or other officers on the bridge does not relieve the OOW of their duties and responsibilities unless they are clearly informed that another officer has taken the con. When the Master has taken over the conning of the vessel in coastal or pilotage waters, the OOW should remain responsible for the navigation of the vessel and should keep themselves informed, and the Master apprised, of the vessel's position at all times.</i></p> <p><i>The OOW should not leave the bridge unless duly relieved of their duties by the Master or a person appointed by the Master.</i></p>			
3.03	<p>The OOW is fully aware of when to call the Master as per standing orders.</p> <p><i>The Master should be called to the bridge immediately in accordance with the requirements of their standing orders or company procedures.</i></p>			

ID	Question	Y	N	Assessor's Comments
3.04	<p>The bridge team fosters a two-way flow of information, encourages intervention and challenge, and involves all in the decision-making process, irrespective of who has the con.</p> <p><i>A free flow of information between members of the bridge is key to avoiding the one-man error. The Master may allocate each team member-specific navigational duties but they all should cross-check each other. Positive reporting, closed loop communication protocols and challenging decisions when uncertain of the outcome should be encouraged by all team members.</i></p> <p><i>The OOW should remain in charge of the bridge and bridge team until relieved or until the Master takes the con. Any change of con should be recorded in the deck logbook/bell book.</i></p> <p><i>Intervention is a difficult skill to master for some – where necessary, the Master should mentor personnel in this respect.</i></p>			
3.05	<p>The watchkeeper is fully integrated into the bridge team.</p> <p><i>The watchkeeper should be properly instructed and fully integrated into the bridge team. They should be continually apprised of ongoing and expected navigational situation including traffic, alterations, landfall, buoyage, pilot requirements, etc.</i></p> <p><i>Duties of the watchkeeper should include:</i></p> <ul style="list-style-type: none"> <i>• Reporting of lights, vessels, navigational marks, floating objects, changes in environmental conditions or any other event that may affect safe navigation.</i> <i>• Reporting any fog signals that are heard.</i> <i>• Reporting any events on board that may relate to safety of personnel or the vessel.</i> <i>• Occasionally looking at the radar screen to relate visual targets to radar targets.</i> <p><i>A watchkeeper engaged in hand steering the vessel should not be considered a lookout and another watchkeeper should act as the lookout.</i></p>			

ID	Question	Y	N	Assessor's Comments
3.06	<p>The experience of new watchkeeping officers and ratings are assessed.</p> <p><i>Prior to departure, the company (through the Master) should assess the experience of new watchkeeping personnel and satisfy themselves that they can safely navigate the vessel. The Master should raise any concerns with the managing office and should not hesitate to postpone the repatriation of the off-signing officer.</i></p> <p><i>All watchkeeping personnel new to the vessel should undergo a familiarisation process before undertaking watchkeeping duties – in addition to safety familiarisation, deck officers should have a ship-specific familiarisation for bridge equipment.</i></p>			
3.07	<p>The OOW displays a high level of awareness regarding the daily operation of the vessel.</p> <p><i>The OOW should maintain general awareness of ongoing deck and shipboard activities.</i></p> <p><i>Whenever the OOW is advised of or observes activities taking place that contradict the company's policy or procedures, or are unsafe, intervention is required and activities should be suspended until corrective action has been taken. This requires the OOW to be:</i></p> <ul style="list-style-type: none"> <i>• Familiar with the daily work planning for the period of duty.</i> <i>• Proactive with the company Behaviour-Based Safety (BBS) or Unsafe Act Awareness (UAA) programmes where applicable.</i> <i>• Familiar with the company permit to work system.</i> <p><i>Vigilance and care of personnel needs to be exercised during periods of inclement weather. If navigation conditions permit, consideration should be given to the use of the deck floodlights during the hours of darkness to inspect the main deck, forecastle and poop decks and making PA announcements to advise the ship's staff of anticipated excessive rolling/pitching during alterations of course. If weather and sea conditions are such that exposed areas are no longer safe, the OOW should notify the Master and ensure that access to those areas is restricted.</i></p>			

ID	Question	Y	N	Assessor's Comments
3.08	<p>The requirements for safety rounds are being complied with.</p> <p><i>Safety rounds of areas and spaces as determined by the Master and the company should be completed after every watch at sea and in port. Completion of the safety rounds should be reported to the OOW and any observations or concerns communicated.</i></p> <p><i>Safety rounds should not be conducted by the lookout while on duty, since leaving the bridge contravenes SOLAS requirements.</i></p>			
3.09	<p>The watch handover is effective, with all relevant information handed over.</p> <p><i>Bridge watch handover provides the opportunity for a thorough cross-check on the vessel's situation. The relieving officer and rating should be on the bridge well before the change of watch to ensure familiarisation with the current situation. More time should be allowed for watch officers of lesser experience, new situations and high workload situations, i.e. standby.</i></p> <p><i>The OOW or watchkeeper should delay completing the watch handover in the event of:</i></p> <ul style="list-style-type: none"> <i>• An ongoing navigational manoeuvre involving a course alteration or collision avoidance measure until it is completed.</i> <i>• The incoming OOW or rating appearing to be impaired in any way that would restrict them carrying out their duties. (Where there is doubt, the OOW should immediately inform the Master.)</i> <p><i>Ratings should exchange all relevant information in the form of an effective verbal handover.</i></p>			

ID	Question	Y	N	Assessor's Comments
3.10	<p>The bridge team are fully familiar with the initial actions in response to an emergency.</p> <p><i>The bridge team should be familiar and trained in their duties with respect to the following:</i></p> <ul style="list-style-type: none"> • <i>Company and ship-specific procedures and checklists for emergencies.</i> • <i>Actions to be taken on hearing the general alarm signal.</i> • <i>Actions to be taken on activation of the fire detection alarm.</i> • <i>The location and procedure for activation of the Ship Security Alert System (SSAS) in a security situation.</i> • <i>Procedures as laid down in the Shipboard Oil Pollution Emergency Plan (SOPEP), Shipboard Marine Pollution Emergency Plan (SMPEP), and Vessel Response Plan (VRP) as applicable.</i> • <i>Procedures as laid down in the ship's security plan.</i> <p><i>Upon receiving a distress message from a position where the vessel could provide assistance, the OOW should immediately inform the Master.</i></p>			
3.11	<p>The OOW has a good appreciation of the current and forecast environmental conditions.</p> <p><i>The OOW should continually monitor the current and forecast meteorological conditions to obtain early warning of deteriorating conditions. Weather forecasts should be reviewed on receipt, signed by the OOW and handed over at change of watch. The Master should be informed of any perceived serious deterioration of conditions. An amendment to the current passage plan should be considered to avoid adverse weather.</i></p> <p><i>Prior to encountering adverse weather involving rough sea state and/or heavy swell, appropriate heavy weather precautions should be implemented to avoid personal injury and damage to the vessel and its cargo. Course and speed alteration to reduce the load on the vessel should also be considered.</i></p>			
3.12	<p>Checklists are completed correctly, with all checks and tests comprehensively carried out.</p> <p><i>The bridge team should complete checklists diligently and only check off completion once all requirements, tests or procedures have been completed. There is no room for complacency or short-cuts.</i></p> <p><i>All defects in navigation equipment should be recorded and promptly reported to the Master. The defects should be rectified as soon as possible.</i></p>			

Section 4 – General Navigation				
ID	Question	Y	N	Assessor's Comments
4.01	<p>Celestial navigation is regularly practised by the bridge team members.</p> <p><i>Vessels should be supplied with at least one sextant as a part of the navigational equipment. Sextants should be maintained in line with the maker's instructions and safely stowed when not in use.</i></p> <p><i>Navigational officers should demonstrate they are familiar with the use of the sextant and have regularly taken celestial observations (i.e. star sights), daily runs to meridian passage and sun sights, where permitted. These observations should be recorded on board in an appropriate format.</i></p>			
4.02	<p>The COLREGS are thoroughly understood and diligently applied by the bridge team.</p> <p><i>All members of the bridge team must be seen to fully comply with the COLREGS. Additionally:</i></p> <ul style="list-style-type: none"> • <i>The requirements of the Master must be fully understood and complied with.</i> • <i>There should be no hesitation in deviating from the charted track for collision avoidance, providing the safety of such a deviation is first assessed and does not create another collision risk or lead to a close quarters situation developing.</i> • <i>The VHF or AIS text facility should not be used for collision avoidance purposes.</i> 			
4.03	<p>The vessel is navigated at a safe speed</p> <p><i>The vessel should be navigated in compliance with COLREGS Rule 6 – Safe Speed.</i></p> <p><i>Bridge team members should look ahead and speed should be adjusted in good time to deal with developing situations.</i></p> <p><i>In addition to complying with Rule 6, the following factors should be clearly understood and evident:</i></p> <ul style="list-style-type: none"> • <i>Slowing down gives more time to think and to assess a situation.</i> • <i>Commercial considerations should not override safety.</i> • <i>Any team members in doubt as to the speed should voice their concerns immediately.</i> • <i>Speed is a variable and should be always under consideration.</i> • <i>Squat should be considered for all stages of the voyage.</i> • <i>Bends in rivers, port approach and berthing approach require considerable attention.</i> • <i>Where applicable, speed should be reduced during heavy weather.</i> 			

ID	Question	Y	N	Assessor's Comments
4.04	<p>Traffic is monitored effectively, including at anchor.</p> <p><i>The bridge team should demonstrate awareness of traffic in the vicinity and be able to prioritise the traffic that is likely to pose a threat. Monitoring should be by all available means, i.e. visual, auditory and electronic. Attention should be given to anti-collision alarms (CPA and TCPA).</i></p> <p><i>Additional bridge manning should be requested if necessary to deal with high traffic density situations.</i></p>			
4.05	<p>Track management is actively practised</p> <p><i>Bridge team members should show a thorough awareness of whether the vessel is on track or how far off track it is. Effective use of cross track error and parallel indexing are valuable aids. They should appreciate that the charted course is simply a proposed track to follow on a chart and should not hesitate to leave the track when necessary.</i></p> <p><i>For collision avoidance, bridge team members should check for hazards and available sea room prior to altering course.</i></p> <p><i>Allowance for set should be applied as applicable. Annotations should be recorded in the deck logbook/ bell book after every alteration of course and after applying or removing set.</i></p>			
4.06	<p>VHF and external communications management are effective.</p> <p><i>The bridge team should be able to decipher the continuous stream of VHF information as deemed relevant to the vessel. This is particularly important when monitoring two or more VHF channels.</i></p> <p><i>Effective identification methods are employed to identify own vessel or other vessels when using VHF, using correct communications protocol. VHF is not used directly for collision avoidance, although monitoring of other communications can aid overall situational awareness.</i></p>			
4.07	<p>Bridge team members are familiar with the type and characteristics of all sensors and alarms fitted to navigational equipment.</p> <p><i>Bridge team members should be familiar with the alarm settings on all navigational equipment and sensor inputs into specific equipment. This is particularly important with an integrated bridge system and with ECDIS.</i></p>			

ID	Question	Y	N	Assessor's Comments
4.08	<p>ECDIS route monitoring is carried out effectively.</p> <p><i>To maintain navigational safety while on passage, the OOW should regularly ensure that:</i></p> <ul style="list-style-type: none"> • <i>The correct route is loaded for route monitoring.</i> • <i>Safety contour and safety depths are set correctly, with any changes made recorded.</i> • <i>The vessel's draft is correctly set on ECDIS.</i> • <i>Safety cross track distances (safety margin/channel width/ safety corridor) are set correctly and defined during passage planning stage.</i> • <i>The safety frame/anti-grounding cone (look ahead time, angle or width) is set correctly.</i> • <i>The ECDIS alarms are enabled.</i> • <i>All previous active alarms are regularly reviewed and no danger alarm is active.</i> • <i>The correct layers are set.</i> • <i>The appropriate chart is being used at an appropriate level of zoom (nominal/compilation scale set and correct ENC in use). Excessive zoom will give a false sense of security of the sea area safe for navigation and should be avoided.</i> • <i>The sensor inputs are correct (GPS, gyro, speed, etc.).</i> • <i>Course Over Ground (COG) and Speed Over Ground (SOG) are used in order to display the movement of own-ship in relation to charted geo-referenced objects.</i> • <i>The AIO is turned on (if applicable) and ePNM (T&P), navigational warnings and NAVTEX notes for the area are turned on (manual update list).</i> • <i>If radar overlay and/or AIS overlay is fitted on ECDIS, it should only be used to check for position monitoring. (Radar is for collision avoidance and ECDIS is for position monitoring.)</i> • <i>The own-ship vector length is set to a consistent and known value to provide a useful estimate of chart scale.</i> 			

Section 5 – Passage Planning				
ID	Question	Y	N	Assessor's Comments
5.01	<p>The passage plan is effectively monitored and executed.</p> <p><i>An overall assessment of the monitoring and execution of the passage should be carried out. Assessors should include comments relating to:</i></p> <ul style="list-style-type: none"> • <i>The execution of planned duties and responsibilities from berth-to-berth.</i> • <i>Whether there is any scope for improvement. Areas should be identified that will enhance bridge team functioning and individual performance.</i> • <i>All aspects of human factors: teamwork, communications, complacency, intervention, capability, situational awareness, fatigue, pressure, distractions and culture.</i> • <i>Any aspect where monitoring and execution was less than flawless.</i> 			
5.02	<p>The passage plan briefing prior to departure is effective.</p> <p><i>In addition to the requirements of Part A, section 2.06:</i></p> <p><i>An effective briefing involves the participation of all, and officers should feel free to make suggestions, share best practice and raise any concerns for discussion and potential modifications to the passage plan. The plan should be discussed in detail and be understood by all.</i></p> <p><i>If a plan is amended on passage due to changes in circumstances or conditions, the bridge team should review the revised plan and sign it again to demonstrate their agreement with the revisions.</i></p>			
5.03	<p>The passage plan debrief on completion of a voyage is effective, and learnings are shared.</p> <p><i>In addition to the requirements of Part A, section 2.07:</i></p> <p><i>An effective debrief should focus on aspects of the passage that were not effectively executed or monitored, the reasons for this, and actions to be taken to prevent reoccurrence. Any areas that went particularly well should also be identified. The discussion should be open, with all members of the bridge team being able to speak freely. The debriefing should lead to a list of actions to be included in future passage plans.</i></p>			

ID	Question	Y	N	Assessor's Comments
5.04	<p>Position fixing effectively monitors the vessel's progress.</p> <p><i>The vessel's progress along the passage plan should be monitored by regular position fixing, using all available means from a variety of methods. Where practical, two independent methods of position fixing should be used and regular cross-checks should be made to ensure accuracy. Parallel indexing technique should be practised whenever possible.</i></p> <p><i>The frequency of position fixing should increase in line with increased risk to safe navigation. However, excessive position fixing may reduce the OOW's ability to maintain full situational awareness.</i></p> <p><i>The largest scale charts published should be used for navigation. When changing charts, the last position on the previous chart should be immediately transferred as the first position on the next chart and cross-checked for accuracy.</i></p> <p><i>For ECDIS, the following should be in place and understood:</i></p> <p><i>Navigating under standby conditions</i> <i>When navigating under standby conditions, position integrity should be checked and verified by initiating radar overlay before and after every alteration of course and at frequent intervals. This should be documented as per company requirements. As radar overlay works on a 'north up' display, it is important in areas where Pilots prefer the radar to be set to 'ship head up' display that one radar is on north up and the ECDIS is set up to take the video feed input from that radar.</i></p> <p><i>During standby conditions, positions should be verified by a manual three-point fix (preferred), plotted on ECDIS using electronic lines of position (LOP) at frequent intervals and recorded as per company policy.</i></p> <p><i>Navigating in other conditions</i> <i>When navigating in conditions other than standby, positions should be verified by manual plotting using electronic LOP whenever suitable visual and/or radar bearing(s) and range(s) can be taken. The position should be verified using radar overlay if there are suitable radar targets. If it is not possible to use the radar overlay check or manual plotting due to lack of suitable radar targets, then the GPS position should be used.</i></p>			

ID	Question	Y	N	Assessor's Comments
5.05	<p>The squat calculation being used correctly, and the OOW is aware of how squat and bank effect will affect the vessel.</p> <p><i>In addition to the requirements of Part A, sections 1.05 and 4.03:</i></p> <p><i>In calculating the effects of squat for the passage plan, consider the maximum speed permissible to avoid contravening the minimum UKC required, rather than simply determining the UKC for a proposed transit speed.</i></p> <p><i>Squat should be calculated using speed through the water rather than speed over the ground. Squat depends on the relationship between speed, draft of vessel and the depth and width of a navigable channel. The amount of squat depends on speed. Any situation in which loss of UKC due to squat can be resolved by slowing down should do so, subject to the ship's manoeuvring limitations.</i></p> <p><i>Bank effect refers to the tendency of the stern of a ship to swing toward the near bank when operating in a river or constricted waterway. This is due to interaction effects with the adjacent banks and the sides of the moving vessel. The narrower the river or constricted waterway, the greater the ship squats. This phenomenon depends on many parameters, such as bank shape, water depth, ship-bank distance, ship properties, ship speed and propeller action.</i></p>			
5.06	<p>When required, mandatory routeing, ship reporting systems and vessel traffic services are complied with in full.</p> <p><i>These should be included in passage planning and bridge team briefings, and clearly understood by all. References to VHF and radio frequencies should be recorded in the passage plan and on the relevant chart.</i></p> <p><i>For vessels trading in the USA, 33 CFR 161 – Vessel Traffic Management gives full details of all vessel traffic service systems that are required by statute.</i></p>			

Section 6 – Use and Understanding of Bridge Equipment				
ID	Question	Y	N	Assessor's Comments
6.01	<p>The Master and deck officers are fully familiar with the operation and limitations of the navigation and communications equipment on board.</p> <p><i>Equipment should be set up correctly and monitored.</i></p> <p><i>Effective management of navigational alarms requires that:</i></p> <ul style="list-style-type: none"> <i>• Navigational alarms are appropriately set and not muted or set to zero/unsafe levels.</i> <i>• The vessel has ship-specific procedures for specific equipment with respect to alarm set points, especially where equipment switches to a default alarm setting after a set time.</i> <i>• Any alarm on any piece of equipment is investigated.</i> <p><i>The accuracy of an integrated bridge system may depend on the quality of the sensor data being received. It is essential that the bridge team is familiar with the type and characteristics of all sensors and electronic charts incorporated in the system. The OOW should check the navigational feed information being used for the integrated bridge system at the start of every watch.</i></p>			
6.02	<p>All deck officers are fully familiar with steering changeover procedures, including emergency steering, and the use of manual steering.</p> <p><i>In addition to the requirements of Part A, sections 3.02 and 3.03:</i></p> <p><i>Bridge team members should have a thorough understanding of the following procedures:</i></p> <ul style="list-style-type: none"> <i>• Changeover from automatic pilot to manual steering in all modes.</i> <i>• Starting and stopping steering motors.</i> <i>• Changeover to emergency steering control.</i> <p><i>The Master should arrange training sessions to ensure familiarity.</i></p> <p><i>The OOW should demonstrate the ability to make a timely decision as to when to use a helmsman and ensure hand steering is engaged before a potentially hazardous situation develops and/or in areas of dense traffic.</i></p> <p><i>When operating in hand steering for a prolonged period, consideration should be given to relieving the helmsmen.</i></p>			

ID	Question	Y	N	Assessor's Comments
6.03	<p>All deck officers are familiar with the actions to be taken in the event of a gyro compass failure.</p> <p><i>In addition to the requirements of Part A, section 3.04:</i></p> <p><i>Officers should be able to demonstrate an understanding of the actions to take if the gyro compass fails, which include:</i></p> <ul style="list-style-type: none"> • <i>Observe the magnetic compass heading, changeover to manual steering and steer by magnetic compass.</i> • <i>Switch radars to 'head up' display and commence manual radar plotting.</i> • <i>Notify the Master and the duty engineer.</i> • <i>Consider the effects of gyro compass failure on other navigational aids.</i> • <i>Verify the compass error.</i> • <i>Notify managing office of failure.</i> • <i>If determining positions by radar, use a cross-point of three or four ranges rather than bearings.</i> • <i>Endeavour to carry out a fault-finding operation on the gyro compass and undertake potential repairs using onboard spares.</i> • <i>Document appropriate entries in the logbook, detailing actions taken.</i> 			
6.04	<p>All deck officers are familiar with radar and ARPA, including the limitations of the equipment.</p> <p><i>In addition to the requirements of Part A, section 3.06:</i></p> <p><i>At the start of each watch and at regular intervals during the watch, the OOW should check the set-up of the radars. Settings to check include:</i></p> <ul style="list-style-type: none"> • <i>North up, course up, head up.</i> • <i>Relative motion or true motion.</i> • <i>Speed input (water track for ARPA).</i> • <i>Ground or sea stabilised.</i> • <i>True or relative vectors.</i> • <i>True or relative trails.</i> • <i>Vector and trail lengths.</i> • <i>Appropriate range scale.</i> • <i>Optimum settings of amplifier gain, sea and rain clutter.</i> • <i>Appropriate alarm setting for TCPA and CPA.</i> • <i>Heading marker alignment.</i> 			

ID	Question	Y	N	Assessor's Comments
6.05	<p>All deck officers are familiar with AIS, including the limitations of the equipment.</p> <p><i>In addition to the requirements of Part A, section 3.07:</i></p> <p><i>The AIS should be regularly checked to ensure that the operational settings are correct. AIS helps with overall situational awareness, but the text facility should not be used for collision avoidance.</i></p> <p><i>On some vessels the AIS can be fully integrated with the radars, with information from the AIS unit displayed as an overlay on the radar screen. Information displayed in this way should be treated with extreme caution and not used in isolation to determine if a risk of collision exists. In this mode, the target data may be provided by either the AIS or the ARPA, and the two may not be identical. Due to the difficulty in determining the source of the target information (AIS or ARPA) the AIS data should be overlaid intermittently to identify targets but should not be left on continuously. Target data from AIS is less reliable than that calculated by the ARPA since it is dependent on inputs from a third party that cannot be readily verified.</i></p>			
6.06	<p>All deck officers are familiar with GPS, including the limitations of the equipment.</p> <p><i>In addition to the requirements of Part A, section 3.08:</i></p> <p><i>When using GPS as the primary means of position fixing, the OOW should understand the capabilities and limitations of the equipment and regularly validate the information provided.</i></p> <p><i>The following checks should be completed on a regular basis:</i></p> <ul style="list-style-type: none"> <i>• Whether the GPS has dropped into DR mode.</i> <i>• Alarm settings.</i> <i>• The interface with other navigational equipment.</i> 			

ID	Question	Y	N	Assessor's Comments
6.07	<p>The bridge team is aware of ECDIS limitations and operational capabilities.</p> <p><i>The bridge team should avoid becoming over-reliant on ECDIS. Regular cross-checks should be carried out to verify the accuracy of the ECDIS position-fixing system (normally GPS) by other available means, including:</i></p> <ul style="list-style-type: none"> • <i>Parallel indexing and use of clearing bearings.</i> • <i>Radar range and bearings.</i> • <i>Visual cross bearings.</i> • <i>Regular checks on the signal-to-noise ratio of the GPS system in use.</i> • <i>Plotting positions on the ECDIS using electronic LOP from visual/radar bearings and ranges to compare the position from the GPS.</i> <p><i>The full functionality of ECDIS cannot be achieved when operating in the Raster Chart Display System (RCDS) mode, so the system should always be operated in ECDIS mode.</i></p> <p><i>Regular checks should be carried out on data inputs from the gyro compass, speed log, echo sounder, GPS and other electronic equipment to verify accuracy.</i></p> <p><i>Position integrity: One of the significant risks associated with an ECDIS system is inaccurate positioning of the vessel. This may occur either because the position input is inaccurate, or the chart itself is inaccurate. These risks should be mitigated in the following ways:</i></p> <p><i>Position input integrity</i></p> <ul style="list-style-type: none"> • <i>Use radar overlay to assess position accuracy.</i> • <i>Use a secondary position source input to assess position accuracy.</i> • <i>Set the primary/secondary position source differential alarm.</i> • <i>Regularly compare position input with other means like plotting visual/radar bearings and ranges on ECDIS to compare the position from the GPS.</i> <p><i>Chart accuracy</i></p> <ul style="list-style-type: none"> • <i>During passage planning, the quality of the survey should be consulted for each charted area when determining safety margins.</i> • <i>During passage planning and route monitoring, the applicability of navigational warnings and ePNM (T&Ps), especially the latest corrections applied, should be reviewed and acted on where necessary.</i> 			

ID	Question	Y	N	Assessor's Comments
6.07 cont.	<p><i>Chart scale: The zoom facility should be used with caution. Because the chart symbols are automatically rescaled when zooming in and out on an ENC, it can be difficult to ascertain whether the scale in use is appropriate.</i></p> <p><i>Chart symbols: Chart symbols on ENCs often differ substantially from paper charts and RNCs, and may be unfamiliar to the OOW. The OOW should regularly compare the chart symbols on the paper chart and the ENC to promote familiarisation. The chart symbols should also frequently be interrogated.</i></p> <p><i>Alarms: To avoid being overloaded by alarms, the OOW should set the alarm limit parameters to an appropriate value to provide the required level of warning. Alarms should not be initiated without good reason. (For example, a safety cross track alarm set point of 0.2nm while navigating deep sea is not appropriate and will result in excessive alarms).</i></p> <p><i>Although RCDS is a recognised mode of ECDIS operation when ENCs are not available (see Appendix 7 of the IMO ECDIS performance standards), current SOLAS regulations require that the vessel should be provided with an appropriate portfolio of up-to-date paper charts when using this mode.</i></p>			
6.08	<p>Bridge team members are familiar with the types and characteristics of ECDIS alarms.</p> <p><i>ECDIS should be set up to minimise alarms that are not relevant to safe navigation so that alarms provide the necessary warning, are treated as a priority and are acted on.</i></p> <p><i>The alarm function on ECDIS should not be disabled while underway. The following alarms (visual and audio) should never be disabled:</i></p> <ul style="list-style-type: none"> <i>• Grounding or danger.</i> <i>• Critical points (mariner derived note).</i> <i>• Safety cross track (deviation from route).</i> <i>• Mandatory sensor failure.</i> <i>• Different geodetic datum.</i> <p><i>The OOW should review outstanding alarms to ensure that they are not indicating a navigational risk on taking over a watch and at frequent intervals thereafter.</i></p> <p><i>The OOW should not become complacent about thinking that the alarm systems will alert an impending issue or problem. The OOW should always assess the situation by maintaining a visual lookout and checking all inputs to the ECDIS.</i></p>			

ID	Question	Y	N	Assessor's Comments
6.09	<p>All deck officers are familiar with the immediate response to ECDIS failure and associated sensor failures.</p> <p><i>The OOW should be familiar with the following procedures:</i></p> <p><i>ECDIS power failure</i> <i>Description of how ECDIS and associated input sensors are powered (emergency switchboard, UPS, etc.).</i></p> <p><i>GPS input failure</i> <i>Description of how the GPS feeds into ECDIS, including the changeover procedure. Description of how the failure is evident.</i></p> <p><i>GPS error</i> <i>Description of how the failure is evident (normally manifested by an overlay error or manual plot error).</i></p> <p><i>Gyro input failure</i> <i>Description of how the gyro feeds into ECDIS, including the changeover procedure. Description of how the failure is evident.</i></p> <p><i>Speed input failure</i> <i>Description of how the speed feeds into ECDIS, including the changeover procedure. Description of how the failure is evident.</i></p> <p><i>A schedule of ship-specific ECDIS emergency procedure drills should be conducted safely.</i></p>			
6.10	<p>Navigation, NAVTEX and weather warnings are processed and circulated efficiently.</p> <p><i>When taking over the watch, the OOW should ensure that NAVTEX and SAT-C telex for NAVAREA warning equipment is fully operational and receiving messages wherever applicable.</i></p> <p><i>On receipt of navigation area warnings and weather forecasts, the OOW should:</i></p> <ul style="list-style-type: none"> <i>• Determine if it applies to the ship's voyage(s).</i> <i>• Mark it on the chart and/or apply to ECDIS as necessary.</i> <p><i>Where information is of a critical nature, the Master should be advised.</i></p> <p><i>For ECDIS, specific advice on processing navigation and NAVTEX warnings is given in Part A, section 2.05.</i></p>			

Section 7 – Pilotage				
ID	Question	Y	N	Assessor's Comments
7.01	<p>The Pilot transfer procedure is effective.</p> <p><i>The rigging of the Pilot transfer arrangements and the embarkation and disembarkation of a Pilot should be supervised by a responsible officer having means of communication with the navigation bridge.</i></p> <p><i>The integrity of the bridge team should not be compromised during the embarkation or disembarkation of the Pilot. Both the OOW and lookout should remain on the bridge.</i></p> <p><i>When embarking or disembarking a Pilot, the bridge team should not lose their situational awareness. Changes in own ship speed and direction, other traffic in the vicinity and weather conditions should all be considered. In addition, other vessels may be conducting similar operations nearby.</i></p>			
7.02	<p>Pre-arrival information has been discussed effectively and the passage plan has been amended where required.</p> <p><i>The pre-arrival information (see Part A, section 4.01) should be thoroughly discussed with the bridge team and the intended passage plan should be reviewed in light of the information received. If necessary, the intended plan should be amended. Any changes should be documented.</i></p>			
7.03	<p>The Master/Pilot information exchange is effective and concise, and intentions are passed to the bridge team.</p> <p><i>The Pilot and the bridge team should be working together as one team to ensure safe navigation.</i></p> <p><i>Any doubts and concerns about the Pilot's intentions or actions should be communicated and discussed in good time.</i></p> <p><i>The engine room should be kept apprised of all information relevant to power, propulsion, machinery and steering requirements as advised by the Pilot.</i></p> <p><i>The Master should participate in handover discussions between Pilots.</i></p>			

ID	Question	Y	N	Assessor's Comments
7.04	<p>The bridge team maintains situational awareness throughout pilotage.</p> <p><i>The bridge team (including the Pilot) should:</i></p> <ul style="list-style-type: none"> • <i>Effectively process the volume of information flow.</i> • <i>Identify both developing and potential close quarter situations.</i> • <i>Prioritise the above but not lose track of latent hazards.</i> • <i>Effectively monitor the planned route, including abort position(s).</i> • <i>Communicate any concerns.</i> 			
7.05	<p>The intended passage under pilotage is effectively monitored.</p> <p><i>The presence of a Pilot on board does not relieve the bridge team of their obligations to effectively monitor the passage. The bridge team should continue to monitor the progress of the vessel by:</i></p> <ul style="list-style-type: none"> • <i>Plotting positions of a type and frequency in line with the passage plan.</i> • <i>Using parallel indexing, transits, clearing lines and leading lights as appropriate.</i> • <i>Monitoring dynamic factors such as weather conditions, tide, manoeuvring response.</i> • <i>Advising the Master and Pilot with information on speed, off track information and approaching alterations of course.</i> • <i>Monitoring instructions from the Pilot with any concerns being immediately brought to the Pilot's attention.</i> • <i>The bridge team should effectively stand in when a Pilot temporarily leaves the bridge during a pilotage.</i> • <i>The Master should override an instruction from a Pilot if the safety of the vessel is being compromised.</i> 			
7.06	<p>Communications under pilotage are effective.</p> <p><i>It is essential that communications between the Pilot and the bridge team are unambiguous, effective and that instructions are confirmed and repeated back using a closed loop to ensure understanding.</i></p> <p><i>Doubts and concerns, if any, with regards to the Pilot's intentions, actions or developing situations should be communicated and discussed in good time.</i></p>			

ID	Question	Y	N	Assessor's Comments
7.07	<p>Watchkeepers are used effectively throughout the pilotage.</p> <p><i>Watchkeepers should be in place during a pilotage:</i></p> <ul style="list-style-type: none"> • <i>The lookout should continue to feed information to the Pilot via the bridge team.</i> • <i>The helmsman's actions should be closely monitored to ensure that instructions are carried out correctly.</i> • <i>The helmsman should respond to helm instructions using the closed loop – repeating the instruction and then confirming once it has been carried out.</i> • <i>The helmsman should report any irregularities while steering such as sluggish response, or the vessel carrying helm in a certain direction. Any loss of helm should be immediately reported.</i> 			
7.08	<p>Berth approach and mooring operations are effective and conducted safely.</p> <p><i>An approach to a berth, mooring and unmooring operations are critical points of a voyage and require effective coordination, communication and execution. In particular:</i></p> <ul style="list-style-type: none"> • <i>Personnel should be mobilised in good time, in keeping with hours of rest legislation.</i> • <i>Tug pick-up points and configuration should be ascertained and communicated. Orders to tugs from the Pilot should be understood by the bridge team or translated by the Pilot so that the bridge team is aware of intentions.</i> • <i>The bridge team should continue to monitor traffic and advise the Pilot accordingly.</i> 			



A voice for safety

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