


AUSTRALASIAN
MARINE PILOTS INSTITUTE

# GUIDELINE

**Title:** Guidelines for Marine Pilotage Safety Systems in Australia

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# Guidelines for Marine Pilotage Safety Systems in Australia

## Chapter 1 - GENERAL

## 1. SCOPE AND APPLICATION

1.1. This document provides guidelines for conducting a review of a pilot organisation's Safety Management System. It is based on the National Marine Safety Council (NMSC) Guidelines for Marine Pilotage Standards In Australia and therefore concentrates review investigations on the following areas:

- the licensing and operation of pilots and certification of pilot exempt masters to carry out pilotage movements in ports, local pilotage areas and other pilotage jurisdictions,
- related organisational management systems,
- fatigue management and
- pilot vessels.

1.2. This document does not apply to pilotage operations outside the seaward limits of pilotage jurisdictions.

## 2. OBJECTIVE

2.1. The objective of this document is to provide an instrument for reviewing Pilot Safety Management Systems (PSMS) against the NMSC Guidelines for Marine Pilotage Standards. These guidelines will assist in facilitating a national approach in the development of pilotage standards appropriate for individual ports and pilotage areas within the jurisdiction of Federal, State and Territory authorities.

2.2. In providing these guidelines, it is recognised that the characteristics of the ports and pilotage areas around Australia vary significantly, and therefore so will their pilotage requirements.

2.3. While these guidelines are intended to be comprehensive, it is also recognised that, due to such variations between ports and pilotage areas, there may be additional factors not covered within this document that require consideration when determining pilotage requirements for certain ports or pilotage areas.

# 3. REFERENCED DOCUMENTS

3.1. The following documents are referred to in these guidelines:

- National Marine Safety Council Guidelines for Marine Pilotage Standards In Australia
- International Maritime Organisation IMO Resolution A960
- International Convention on Standards of Training, Certification and Watchkeeping of Seafarers, 1995
- Australian Maritime Safety Authority Marine Orders Part 9: Health-Michael Fitness (Issue 4)
- AS/NZS ISO 9001 Quality Management Systems – Requirements
- AS/NZS 4360 Risk Management
- AS/NZS 1269.1 Occupational Noise Management Part: Measurement of assessment of noise emission and exposure.

# 4. DEFINITIONS

For this document, the following definitions apply:

**Authority**

The organisation responsible under Federal, State or Territory legislation for licensing, appointing or approving pilots, and for granting pilotage exemption certificates, to enable pilotage operations to be carried out in a particular port or pilotage area.

**Pilot**

Any person not belonging to the ship who has the conduct thereof.

Note: The definition is composed of two elements:

- the person must not belong to the ship[1],
- the person must have the conduct of the ship.

If either of these elements is absent, the ship is not under pilotage.

**Pilot Organisation**

The organisation responsible for delivering the day-to-day pilotage service in a particular port, pilotage area or jurisdiction.

[1] Floating Production, Storage and Offloading (FPSO) vessels and Floating Storage and Offloading (FSO) units, operating offshore, may fit within this definition by virtue of being under the control of persons not belonging to the vessel's crew. Comment is invited about whether these guidelines should encompass such operations.

**Port Administration**

the Port Authority or Port Corporation responsible for the day-to- day operations of a particular port.

**Control (of a risk)**

An existing process, policy, device, practice or other action that acts to minimize negative risk or enhance positive opportunities.

Note: The word 'control' may also be applied to a process designed to provide reasonable assurance regarding the achievement of objectives in a risk management system.

**Fatigue**

A physical condition manifest as impaired physiological performance (e.g. reaction time, hand-eye co-ordination) and psychological functioning (e.g. morale, judgement, mood).

Note: Fatigue may be caused by work-related factors (e.g. hours-of-work, environmental conditions, workload) or non-work-related factors (e.g. sleep disorders, disrupted social commitments).

**Fatigue Risk Management System (FRMS)**

An approved system which is developed to identify, assess and manage the work-related risks associated with fatigue. The FRMS will be developed in conjunction with pilots and other associated employees.

**Risk Event Reporting**

An internal reporting system whereby a pilot submits information when he/she has been involved in an event which increased the likelihood of an accident, but which did not constitute a reportable 'incident' under relevant requirements.

Note: Examples of risk events would include giving a wrong helm order or having a close quarter's situation.

# Chapter 2 – ORGANISATION MANAGEMENT

## 5. SAFETY MANAGEMENT SYSTEMS

5.1. Pilot organisations should maintain a documented safety management system (SMS) which addresses each of the matters in these guidelines and any legislation governing the area of the pilot organisation's operation.

**5.2. Written Safety Policy**

*i. Does the organisation have a written safety policy?*

*ii. Are the personnel aware of the policy?*

*iii. Top management commitment to the safety policy*

*iv. Has organisation's top management (pilot manager, managing director) committed itself to the goals of the policy?*

*v. Is the commitment visible in management's everyday activities?*

**5.3. Contents of the policy**

*i. Does the policy have the following elements?*

- *The role and importance of safety to the organisation*
- *A description of the organisation's safety goals*
- *The main safety activities and procedures*
- *A description of the organization and administration of the safety activities*
- *Description of the safety tasks and responsibilities*

**5.4. Assignment of tasks and responsibilities**

*i. Are the tasks and responsibilities assigned to:*

- *The top management?*
- *The pilot management and the pilots?*
- *The pilots?*
- *The safety and health managers*

**5.5. Participation in the preparation of the safety policy.**

*i. Have the following personnel groups participated in the preparation of the safety policy?*

- *the top management*
- *the middle management*
- *the employees*
- *the safety and health personnel*

**5.6. Initial status review**

*i. Were the following aspects reviewed before the policy was prepared?*

- *What is the current health and safety level in the company?*
- *What are the typical and potential hazards in the company?*
- *Is the current safety management system operating effectively?*

5.7. Safety documents:

*i. Does the policy list the following documents?*

- *risk register or hazard register*
- *instructions for safety or competency training*
- *induction program*
- *instructions for training of new employees*
- *instructions for pilot managers' and safety review pilot duties*
- *organization's safety activity program*
- *health service personnel's activity program*

5.8. Revising the safety policy

*i. Has the company defined?*

- *how often the policy is revised?*
- *who are responsible for revising the policy*

5.9. Dissemination of the policy

*i. Has the company defined?*

- *how is the policy made available to the personnel?*
- *How new employees can access the policy?*
- *how the revised versions of the policy are distributed*

5.10. Informing external bodies about the company's safety policy.

*i. Has the company defined?*

- *how the safety system links to the port system*
- *how temporary workers, sub-contractors, clients, authorities, and other external bodies can have access to the company's safety policy?*
- *who inform these external bodies about the policy*

5.11. Safety policy's connections to company's other activities

*i. Has the company considered how the safety policy is linked to?*

- *the company's quality policy*
- *the company's environmental policy*

5.12. A safety management system should include an element of continuous improvement. Certification for the organisation's management system is intended to ensure that the system is maintained at an appropriate level and regularly reviewed.

**5.13. Is the top management aware of:**

i. *How well the company's safety system and equipment meet the health, safety and usability standards?*
ii. *How is health and safety considered in the design of new procedures or manoeuvres?*
iii. *What the satisfaction, motivation, mental well-being and social relationships are among the personnel?*
iv. *What is the safety performance of the pilot management and the pilots?*
v. *What are the costs of occupational accidents and illnesses?*
vi. *What is the trend in the company's insurance costs?*
vii. *What is the cost-effectiveness of the safety activities*

**5.14. Is the pilot management aware of:**

i. *What is the housekeeping standard of the SMS?*
ii. *Whether the safety training procedures are adequate in the company?*
iii. *What is the safety standard of equipment and navigational tools?*
iv. *What is the quality of the personal protective equipment?*
v. *How employees use and take care of their personal protective equipment?*
vi. *What is the employees' risk behaviour (conscious risk taking)?*
vii. *How to find safety expertise from inside or outside the company?*
viii. *How are safety and health aspects taken into account in the design of new manoeuvres and procedures?*
ix. *How health and safety aspects are taken into account when new equipment is purchased?*

**5.15. Are the pilots aware of:**

i. *what is the housekeeping standard of the SMS?*
ii. *What are the safety training procedures in the company?*
iii. *What is the safety standard of the machines, equipment and tools?*
iv. *What is the quality of the personal protective equipment?*
v. *How employees use and take care of their personal protective equipment?*
vi. *What is the employees' risk behaviour (conscious risk taking)?*
vii. *How to find safety expertise from inside or outside the company?*

viii. *How are health and safety aspects taken into account in the design of new manoeuvres and procedures?*

ix. *How health and safety aspects are taken into account when new machines or equipment are purchased?*

x. *What are actions to be taken in an emergency situation (serious injury, fire, etc.)?*

# 6. RISK MANAGEMENT

6.1. The primary objective of a pilotage organisation is to manage the risk to life, vessels, the environment and the port or pilotage area, during pilotage. A pilotage organisation's SMS should address all significant risks identified using a recognized methodology, such as that set out in AS/NZ 4360 (or similar). Risks can be identified by using many sources including the organisation's pilots and other employees, the port community, consultants, other port pilotage organisations and regulator/investigators.

**6.2. Safety committee and/or other cooperative safety team(s)**

i. *Does the company have a safety committee or some other cooperative safety teams?*

ii. *Does the committee/team have both employer and employee members?*

iii. *Does the committee/team prepare an annual working program for itself?*

**6.3. Safety manager**

i. *Does the company have a safety manager?*

ii. *Has the safety manager received adequate safety training?*

iii. *Does the safety manager have adequate time and other resources for the safety activities?*

**6.4. Pilot Audits**

i. *Does the company conduct regular pilot audits?*

ii. *Does the company prepare a report on the outcomes of the pilot audits?*

iii. *Has the company established minimum audit scores?*

iv. *Does the company have a program to train pilots who attain low scores in an audit?*

**6.5. Safety representative and/or other personnel representative(s)**

i. *Have the employees elected a safety representative (when required by law)?*

ii. *Has the representative received adequate safety training?*

iii. *Does the representative have adequate time and other resources for the safety activities?*

**6.6. Occupational health services**

*i. Does the company provide occupational health (OHS) services for all its personnel?*

*ii. Are the OHS personnel well acquainted with the company's organization and functions?*

*iii. Are the OHS personnel aware of the health and safety hazards typical to the company?*

**6.7. Resources**

*i. Does the company assign special resources to health and safety activities on an annual basis?*

*ii. Does the company seek advice from health and safety personnel when determining the resources?*

6.8. A pilotage organisation should have a process to ensure it complies with all applicable legislative requirements relating to workplace health and safety for all its employees.

6.9. The SMS should require systematic identification and recording of hazards, as well as assessment and prioritisation of the associated risks, actions to control risks and regular reviews of the recorded risks and the implementation of controls.

6.10. Investigations of both incidents and risk events should be used to identify the root causes of these events and the resulting information should be used to regularly reassess risks and the effectiveness of controls, at least on an annual basis.

# 7. RISK EVENT REPORTING

7.1. A Risk Event Reporting system should be established to require a report form to be completed by a pilot when he/she has been involved in an event which increased the likelihood of an accident. The system should require the pilot to submit a report. The reports should be reviewed and where appropriate corrective actions initiated. Summaries of reports and corrective actions should be promulgated to heighten awareness of common risk situations.

7.2. A risk event reporting system requires a very high degree of trust among pilots, their organisations and the Authority. A prime objective of risk event reporting is to identify systemic weaknesses. It is appropriate that organisations should follow the James Reason philosophy of the "just culture" where the line between acceptable and unacceptable conduct is clearly delineated.

7.3. Risk reporting may be kept internal to the pilotage organisation but ideally it should be supported by the authority. It is up to individual pilotage organisations to develop their own specific reporting systems, but they should regard such systems as vital to an effective SMS.

## 8. RISK ASSESSMENT OF CHANGES

8.1. Proposed changes to the port environment or operation should be analysed to identify potential risk that may be associated with the changes. Such risks should be recorded, assessed and prioritised. Actions to control the risks should be developed prior to implementation. Such actions should be monitored for effectiveness.

## 9. SAFETY MANAGEMENT RESOURCES

9.1. Maintaining and operating an effective SMS requires effective resource allocation by a pilotage organisation. Notwithstanding administrative support, it will be necessary to allocate further resources, including pilot time, to the system to ensure its on-going relevance to pilotage issues.

9.2. Improvement in safety performance should not be used as an indicator to reduce safety management resources

# Chapter 3 - PILOTS

## 10. PILOT LICENCES

10.1. Pilots should hold a current licence, issued by the Authority. The licence should specify the port or pilotage area for which it is valid and any exclusion that may apply to its use, including limitations on:

b) the type of vessel (including length, tonnage and raft limitations),

c) the type of cargo and,

d) berths to or from which pilotage may be undertaken

**10.2. Statutory Requirements**

*i. What are the statutory prerequisite requirements for issue of a pilot's licence?*

*ii. What is the statutory examination process for pilot licences?*

*iii. Who conducts statutory exams and how are they selected?*

**10.3. Medical Fitness**

10.4. An applicant for a pilot's licence should be certified as medically fit to perform the duties of a pilot.

*i. What medical standard are pilots tested to?*

*ii. What ongoing medical standard are pilots tested to?*

10.5. Pilots should be informed that failure to comply with the relevant standards established for a port or pilotage area may result in the suspension or cancellation of their licence. Should a licence be suspended or cancelled, an appeals process should be available to the pilot.

10.6. Where a pilot is lacking recent experience in a pilotage area, procedures should be established to ensure that the pilot regains familiarity with the area prior to being permitted to resume pilotage duties. Where this lack of recent experience is due to an extended absence through illness, there should also be a re- evaluation of the pilot's medical fitness in accordance with Annex A.

**10.7. Expired Licenses**

*i. What is the maximum lapse time your organisation allows its pilots from piloting before they are required to undertake further training?*

*ii. What further training do you require after lapse?*

*iii. What are the statutory requirements for maintaining a pilot's licence?*

# 11. PILOTAGE

11.1. Pilots require a high level of technical and management skills to control the high-risk environment in which they operate. In practice this requires the pilot to:

a) communicate, operate and make decisions in a time-critical environment while having an acute awareness of the consequences of an accident,

b) elicit close and active cooperation from the ship's bridge team,

c) coordinate the use of other port services such as tugs and lines services,

d) have detailed local knowledge and

e) have detailed ship-handling knowledge, theory and skills,

for the purpose of safely directing the movement of a ship during the phase of the voyage with the narrowest operating margins, severe limits on manoeuvrability and greatest vulnerability to weather and tidal conditions – during its transit of pilotage waters.

# 12. PILOT COMPETENCIES

12.1. Pilots should have formal training in aspects of pilotage and participate in a system that ensures on-going competency as set out in Annex B.

*i. What process do you use for pilots on observer trips?*

*ii. How do you prepare new pilots for the pilot examination process?*

*iii. What process do you use for mentor pilot trips?*

*iv. What process do you use for check pilot trips?*

*v. How do you conduct induction of new pilots into your organisation?*

12.2. In addition to formal training, pilots should have local knowledge of:

a) the physical geography of the relevant port or pilotage area and its effect on the manoeuvring of vessels,

b) local weather conditions and their effect on the manoeuvring of vessels,

c) navigation aids, including vessel traffic services,

d) port customs and protocols, including maritime security,

e) port infrastructure,

f) capabilities and limitations of tugs, including standard maritime vocabulary,

g) capabilities and limitations of other port services, including those of personnel.

12.3. Pilots should have at least basic human factors knowledge. This is required to properly manage the variety of ships, competencies, cultures and languages.

*Note: This can be acquired through Bridge Resource Management (BRM) training*

12.4. Pilots should have the ability to integrate Human Factors knowledge with the skills, experience and knowledge described above, in order to properly manage the high-risk operation and to respond competently in emergency situations.

*Note: This ability can be demonstrated during periodic competency audit.*

12.5. Pilots should pursue Continual Professional Education (CPE). This is required to formally keep abreast of changes in technology, laws, shipping practices, community needs etc, and to ensure that this knowledge is properly integrated with the knowledge and skills described above.

*Note: This can be achieved by periodically attending an approved training course which provides both Human Factors and Precision Navigation training. This course should integrate BRM and precision navigation training with an emphasis on updates on new technology, passage planning and effective communication between pilot and master using a safety management approach.*

# 13. TRAINING

## Initial Induction

13.1. Each pilotage organisation should have a procedure for formally inducting pilots into their organisation.

13.2. Induction training should include, but not be limited to:

a) an overview of the training program
b) a description of the organisation's structure,
c) a description of the political, environmental and legislative structure within which the organisation operates,
d) a description of the organisation's policies,
e) an overview of the organisation's procedures,
f) a description of the organisation culture,
g) an explanation of expectations of the organisation's employees,
h) an overview of port operations,
i) a description of the equipment to be used, and its care and maintenance,
j) the provision of material that will be required to be read and understood before submitting for examination for a pilot's licence.

## Ship handling

13.3. Pilotage organisations should ensure that a trainee pilot does not submit for an examination or appraisal for a pilot's licence until a satisfactory level of ship handing proficiency can be demonstrated. Ship handling proficiency includes, but is not limited to, the ability to demonstrate:

a) skill and competency in handling ships in all weathers and all states of visibility in the areas for which the licence is valid,

b) theoretical ship handling knowledge including hydrostatics and hydrodynamics,

c) communications skills,

d) competent use of tugs, lines persons and lines launch.

13.4. Ship handling training should take account a trainee pilot's previous experience and should include adequate exposure to on-the-job training with experienced licensed pilots.

13.5. Ship handling training can be enhanced using manned models and ship simulators.

13.6. Licensed pilots will be expected to make every effort to maintain their ship handling proficiency and to be fully aware of their won limitations in terms of skill and ability. These limitations should be periodically tested on manned models and ship simulators.

## Local Knowledge

13.7. Pilotage organisations should ensure that a trainee pilot does not submit for an examination or appraisal for a pilot's license until a satisfactory level of local knowledge can be demonstrated.

13.8. Local knowledge is knowledge of the local environment and includes, but is not limited to, knowledge of:

a) the ports or pilotage area's physical geography and its effect on the manoeuvring of vessels,

b) local weather conditions and their effect on the manoeuvring of vessels,

c) navigation aids, including vessel traffic services,

d) port customs, protocols and security measures,

e) port infrastructure – including depths and high-risk areas,

f) capabilities and limitations of tugs, including legal aspects of towage, towing methods and hazards during towage operation and,

g) capabilities and limitations of other port services, including those of personnel.

13.9. Pilotage organisations should be a standard procedure for keeping pilots and pilot exempt masters informed of changes in the local environment that may have an impact on pilotage.

13.10. Licensed pilots should make every effort to keep themselves fully informed of changes in the local environment that may have an impact on pilotage.

## 14. CHECK PILOTS AND MENTOR PILOTS

14.1. The performance of every pilot should be checked during a normal pilotage, in the area for which the pilot is licensed, at regular intervals.

14.2. The person checking the pilot's performance in accordance with the above, should be a pilot holding an unrestricted licence for the area in which the check is being conducted and should submit a written report, in an approved form, on the pilot being checked.

14.3. A system may include a self-assessment for the trainee pilot to be undertaken after each supervised pilotage audit to gauge his or her performance against that of the check pilots report.

14.4. A check pilot is a pilot who is qualified to at least the assessment component of the Workplace Training Course, Certificate IV level[2].

14.5. The role of the check pilot is to conduct periodic audits of pilots while they are executing an actual pilotage. The purpose of such audits is to ensure that competency levels are being maintained or that a pilot is fit to be issued with a licence at a higher level.

14.6. Each pilotage organisation should have an appropriate number of mentor pilots. A mentor pilot is a pilot responsible for supporting a new and progressing pilots.

14.7. A mentor pilot may be selected by his or her peers, or selected so that he or she suits the individual needs of the pilot under training and should have the following qualities:

a) the respect of his or her peers as a competent pilot,

b) an 'above average' interest in training,

c) a good communicator.

14.8. Where possible, depending on the shift work system, pilotage organisations should assign a mentor pilot to each pilot recruit for the entire period of training.

14.9. The mentor pilot's role is to facilitate a two-way confidential communication link with the trainee pilot for all matters that arise during the training phase. These may include, but not be limited to, matters relating to training, social and private issues.

[2] Comment is invited on whether holding a Workplace Training Course, Certificate IV level as well as an unrestricted licence for the area where the check is being conducted would be practicable in all pilotage areas.

# 15. PILOT EXEMPT MASTERS

15.1. Pilot exempt masters should hold a current exemption certificate, issued by the Authority. The certificate should specify the port or pilotage area for which it is valid and any exclusion that may apply to its use, including limitations on:

a) the type of vessel (including length, tonnage and draft limitations),

b) the type of cargo, and

c) berths to or from which exemption applies.

15.2. Pilot exempt masters should have knowledge of the local environment that includes, but is not limited to, knowledge of:

a) the port of pilotage area's physical geography and its effect on the manoeuvring of vessels,

b) local weather conditions and their effect on the manoeuvring of vessels,

c) navigation aids, including vessel traffic services,

d) port customs, protocols and security measures,

e) port infrastructure – including depths and high-risk areas,

f) capabilities and limitations of tugs, including legal aspects of towage, towing methods and hazards during towage operation, and

g) capabilities and limitations of other port services, including those of personnel.

15.3. Pilot exempt masters should make every effort to keep themselves fully informed of changes in the local environment that may have an impact on pilotage.

15.4. In order to maintain current knowledge, pilot exempt masters should have regular meetings with:

a) the relevant Authority,

b) the local port administration or harbour master as appropriate,

c) the local pilotage organisation.

15.5. As far as practicable, pilot exempt masters should participate in risk event reporting and should receive summaries of risk event reports and corrective actions to heighten awareness of common risk situations.

# Chapter 4 – FATIGUE MANAGEMENT

## 16. PURPOSE

16.1. These guidelines recognise shiftwork as an identifiable workplace risk factor. These guidelines set out methods by which the increased risk due to shiftwork can be quantified, consequent risk assessment can be performed, control procedures can be put in place, and the ability of managers and employees to minimise fatigue in the workplace can be enhanced. In addition, these guidelines outline the responsibilities of the employer and employees from an Occupational Health and Safety (OH&S) perspective in minimising the risk associated with shiftwork.

**16.2. Tasks of the occupational health services (OHS)**

i. *Are the goals of the OHS activities discussed with the top management?*
ii. *Do the OHS personnel prepare an activity plan on an annual basis?*
iii. *Do the OHS personnel have skills and methods for analysing hazards at workplace?*
iv. *Do the OHS personnel follow the effects of their activities?*
v. *Do the OHS personnel report their activities to the organisation management?*
vi. *Do the OHS personnel participate in pilot training?*

## 17. SHIFTWORK

17.1. Night work, extended shifts, numerous consecutive work periods, restricted recovery time between subsequent shifts, the necessity to sleep during the daytime, and unpredictable work schedules and all factors that disrupt the body's internal timing mechanism (circadian rhythms) and typically lead to impaired performance. The scientific literature indicates that fatigue issues associated with the above increase the likelihood of incidents, accidents, and injury at work.

**17.2. Physical Fatigue**

i. *Does the organisation measure physical Fatigue on a regular basis?*
ii. *Is the individual person's Fatigue compared to the person's proposed workload?*
iii. *Has the organisation a system for rescheduling the work of a person who has moderate fatigue levels?*

## 18. FATIGUE LEVELS

18.1. The fatigue levels associated with any actual or proposed roster should be objectively quantified using the FRMS. Documented records of the occupation of the FRMS are to be maintained and should be used to review the system on a regular basis to reflect changes in work and improvements in the methods of fatigue management.

*i. How do you assess the risk of fatigue for any given pilot task?*

*ii. Have there been any marine incidents in the past 5 years where fatigue has been identified as a possible causal factor?*

*iii. Have there been any motor vehicle accidents in the past 5 years where fatigue has been identified as a possible causal factor?*

18.2. Pilots will be responsible for minimising the risks associated with non-work-related sources of fatigue while management will ensure that there is adequate training in the application of the FRMS and an appropriate assessment and reporting process to ensure that it is observed. The results of this ongoing assessment and analysis should be compared to other FRMS in similar industries and with the results of any laboratory-based studies of fatigue. This will indicate whether fatigue levels are problematic (relatively high).

*i. What type of pilot fatigue management plan/system do you have?*

*ii. If a pilot claims they are fatigued what measures are taken to ensure they are rested prior to work?*

## 19. RISK ASSESSMENT

19.1. Assessment of risk associated with high fatigue levels (as indicated by FRMS scores) should be determined collectively by the employer and employees by judging the probability consequences, and likelihood of a fatigue-related incident.

*i. What fatigue risk assessment issues have you identified as needing improvement?*

## 20. MITIGATION STRATEGIES

20.1. Where the level of risk due to work-related fatigue is determined to be high, the roster should be examined and appropriate mitigation strategies put in place.

*i. Is the pilot fatigue management plan/system linked to your pilot allocation system?*

*ii. What fatigue issues have you identified as needing improvement?*

*iii. What action plans do you have in place to address them?*

# 21. EDUCATION

21.1. To assist them to manage non-work-related fatigue, employers and employees should be provided with information on shiftwork and fatigue through a formal training/induction program. This should include reference to:

a) duties and responsibilities of employers and employees under the relevant OH&S Act,

b) circadian rhythms and their relationship to work scheduling,

c) shiftwork schedules and design principles,

d) identifying an recognising the problems associated with fatigue and lack of sleep,

e) impact of shiftwork on health, safety, family and social time,

f) individual coping strategies for managing the adverse impacts of shiftwork.

*i. What formal training has been provided to pilots and managers on the impacts of shiftwork and fatigue?*

# 22. RESPONSIBILITY

22.1. From an OH&S perspective, fatigue can arise from a range of work (e.g. extended hours) or non-work (e.g. sleep disruptions at home) factors. Under OH&S legislation, both the employer and employees have responsibilities to ensure a safe workplace.

*i. How is travel to and from jobs considered in the assessment of fatigue?*

*ii. Do you record non-piloting tasks and if so are these work hours included in your fatigue measurements?*

# 23. AUDIT RECORDS

23.1. Records of the following should be kept for audit purposes:

a) output of FRMS analysis,

b) training and education programs and record of participants,

c) OH&S meeting minutes

*i. What records do you keep identifying fatigue levels in pilots?*

# Chapter 5 – PILOT VESSELS

## 24. PURPOSE

24.1. Pilot vessels are used to transfer pilots to and from the ships that are being piloted and also provide a stable platform for the embarkation and disembarkation of pilots once the pilot vessel is alongside the ship. Guidance on specific factors to be taken into account in the design of pilot vessels is given in Annex C.

i. *What procedures/instructions do you have for pilot boarding/disembarking to and from ships?*

ii. *What procedure do you have for man overboard exercises?*

iii. *Do you have documented refuelling procedures for pilot launch crews? Where is the document?*

iv. *What contingency plan do have for business continuity if one or more pilot launches are inoperable?*

v. *What pilot transfer issues have you identified as needing improvement?*

vi. *What action plans do you have in place to address them?*

24.2. Pilot vessels should be constructed in such a way so as to:

a) adequately cope with the sea conditions which can reasonably be expected to exist in the pilotage area,

b) be capable of effecting the transfer, embarkation and disembarkation of pilots in safety, reasonable comfort and without exposing either the pilots or the boats' crew to undue stress or fatigue.

i. *Do the boats employed in the port provide safe and comfortable pilotage transport in most states of weather found in the port?*

## 25. SURVEY

25.1. A vessel required to be used as a pilot vessel should be built, surveyed and licensed specifically as a pilot vessel by the appropriate state Authority.

i. *What are the licencing and survey specifications to which your boat/boats is/are built?*

## 26. MANNING

26.1. A pilot vessel should:

a) be manned in accordance with its survey and operational requirements,

b) have a crew trained and competent in all aspects of pilot transport, transfer and safety.

i. *Are the qualifications of boat crew in accordance with the regulations?*

ii. *What initial and on-going training is provided to boat crews?*

iii. *Are your boat crew trained to provide safety induction to pilots and passengers using the pilot launches?*

# Annex A – MEDICAL FITNESS

Medical standards should have regard to the inherent requirements of the work of marine pilots and the safety critical nature of that work as part of risk management of pilotage operations. The issue of medical standards for mariners, and specifically pilots, is currently under review. The following guidance may assist in developing standards for medical fitness of pilots.

1. An applicant for a position as a marine pilot should obtain a certificate of medical fitness from an independent medical practitioner,
2. Licensed pilots should obtain a certificate of medical fitness from an independent medical practitioner at intervals not exceeding two years,
3. Medical fitness includes physical fitness and mental fitness and should also include minimum standards for eyesight and hearing,
4. An independent medical practitioner is one approved by the licensing authority or, in the absence of such approval, one approved by the Australian Marine Safety Authority (AMSA),
5. The medical practitioner should be fully aware of both the physical and mental demands placed on a pilot during a pilotage operation and the criteria essential for the safe conduct of pilotage operations,
6. The standard of medical fitness should be the standard as specified in Appendix 1 of Marine Orders, Part 9,
7. Pilot organisations should satisfy themselves of an applicant's psychological aptitude for a career in marine pilotage. This may require the psychometric testing of applicants during selection.

**Notes:**

1. AMSA is currently undertaking a review of Marine Orders Part 9 (2007)
2. Maritime NSW is currently considering the special nature of the work undertaken by marine pilots and the implications for medical requirements standards.

# Annex B - GUIDANCE ON CONTENT OF PILOT COMPETENCY TRAINING AND ASSESSMENT

## 1. GENERAL

1.1. To completely conduct the vessel, the pilot will need to possess the following knowledge, skill and ability:

1.2. Be of sound physical and mental fitness. This can be determined by an appropriate medical examination,

1.3. Have specialised knowledge related to pilotage which includes knowledge of:

a) Navigation,
b) Naval Architecture,
c) Radio & Electronic Navaids,
d) Marine Engineering,
e) Meteorology,
f) Seamanship,
g) Hydrostatics,
h) Ship Handling and Manoeuvring,
i) Hydrodynamics,
j) Shipboard Management Systems

**Note:**

The standard of knowledge and the experience required in these subjects is evidenced by the possession of a Certificate of Competency as Master Unlimited or valid Certificate of Competency for the size of vessel being piloted.

1.4. In addition to, and built upon, the knowledge and experience of 2.3 above, appropriate ship-handling skills. These are acquired by a combination of:

a) experience,
b) on-the-job training by experienced pilots,
c) manned model training, and
d) simulator training.

## 2. HUMAN FACTORS TRAINING

2.1. Human factors training is training which:

a) heightens awareness of the factors that influence human performance and decision-making in a time-critical environment, and

b) provides the tools with which to manage the variety of ships, competencies, cultures and languages normally encountered in pilotage,

c) should form part of a marine pilots training curriculum.

2.2. A human factors-based Bridge Resource Management (BRM) course provides the basis of the necessary training.

2.3. An applicant for a position as a marine pilot who has not completed an appropriate human factor training program should do so within one year of obtaining a pilot's license.

## 3. COMPETENCY AUDITS

3.1. In the case of marine pilots, there is now an increased focus on the safety of the ship, port infrastructure and the protection of the marine environment, coupled with a greater accountability on behalf of the pilot and the pilotage service. It is necessary for marine pilots to practice and demonstrate performance to a required level on a regular basis under unusual situations and increased workload in a maritime simulator to ensure a high standard of competency.

3.2. An approved Competency Audit gives assurance to all stakeholders that pilots are subject to regular assessment and at the same time are updated on the latest in pilotage techniques. The Competency Audit encourages marine pilots to adopt the risk management approach as required under the International Ships Management (ISM) code.

3.3. The performance of every pilot should therefore be checked under an approved Competency Audit in a ship simulator at intervals not exceeding three years. This check should include the simulation of emergency situations.

3.4. The Competency Audit should be conducted by a panel of suitability qualified persons including licensed pilots. The audit should include a verbal debriefing of the simulated exercise. The pilots conducting the Audit may not necessarily be licensed for the same area as the pilot being audited.

## 4. CONTINUING PROFESSIONAL DEVELOPMENT

4.1. Licensed pilots should undertake an appropriate program of continuing professional development (CPD).

4.2. The purpose of a CPD program is to keep pilots informed of, and trained in, changes which have taken place in the professional environment which have, or are likely to have, an impact on pilotage.

4.3. The matters which a CPD program will address include, but are not limited to, changes in:

a) Technology,

b) Risk Management,

c) Laws and Regulations,

d) Practices and Procedures,

e) Community needs and communication.

4.4. The CPD program will also include, where appropriate, refresher training in any aspect of marine pilotage.

4.5. CPD should be undertaken at intervals not exceeding three years and may be done concurrently with the competency audit referred to in paragraph 3 above.

# Annex C – PILOT VESSEL DESIGN

## 1. MANOEUVRABILITY

1.1. A pilot vessel should:

a) be highly manoeuvrable with adequate reserve power to safely manoeuvre alongside vessels under way,

b) have sea-keeping qualities suitable for operating in the maximum sea, swell and wind conditions which can reasonably be expected in the pilotage area during continuous pilotage operations.

**Note:**

The operator should establish the wave and weather data for the locality and assess the minimum speed required for service at the maximum sea height. The operator should also specify the maximum allowable percentage of time that the vessel either cannot operate due to sea conditions or has to operate at below minimum operational speed.

## 2. CONSTRUCTION

2.1. A pilot vessel should:

a) be built with adequate strengthening to absorb heavy impacts when coming alongside ships whilst they are underway,

b) have a continuous deck, clear and free of obstructions with a minimum of 750mm and ideally 900mm between the gunwale and superstructure,

c) have the pilot transfer position forward of the wheelhouse. C2.2 A pilot vessel should be constructed so as to provide:

d) seating for the coxswain,

e) good all round visibility from the coxswain's operating seated position,

f) adequate visibility from the coxswain's operating seated position so that a watch can be kept on the pilot from the time of leaving the deck of the pilot boat or the ship being piloted to arriving on deck of the ship to be piloted or the deck of the pilot boat respectively.

## 3. EQUIPMENT

3.1. A pilot vessel should be fitted with:

a) adequate fendering to allow the vessel to come alongside ships underway in all weathers without sustaining damage (See note 1),

b) the standard equipment for a vessel of this class including echo sounder, GPS plotter for navigation and event marking, compass, external broadcast system, horn and VHF radio,

c) noise suppression in new vessels such that when measured in accordance with AS/NZS 1269.1 the average noise exposure ($L_{Aeq,8h}$) does not exceed 78 dB(A) in the wheelhouse,

d) high quality impact-absorbing seating for all crew and pilots with seating to be situated to allow comfortable access to all necessary controls and operational equipment required to be used by both crew and pilots,

e) sufficient on-board lighting to enable safe pilot transfer at night, including searchlight and recessed deck lighting,

f) on-board safety measures including adequate safety handrails on deck and inside accommodation and a continuous track fitted with travellers and safety lines to allow crew and pilots to remain secured to the vessel while outside the accommodation,

g) rescue and associated equipment to enable a person to be recovered from the water in a horizontal position including:

- a power or winch operated stern platform designed and installed so as to prevent a person overboard from being submerged between the vessel and propellers, (see Note 2)
- flood/spotlights suitability positioned to assist the search for a person in the water and to illuminate the recovery area,
- a long aluminium body hook, and
- vessel operating controls adjacent to the recovery position if the position is not visible from the normal operating position,

h) windscreen wipers with freshwater washer supply suitable for use in rough weather at the steering position, and

i) air-conditioning (heating and/or cooling) which can also be used for demisting.

**Notes:**

1. Such fendering should not interfere, obstruct or hinder pilot transfer. Fendering should be continuous along gunwales. If using tyres for fendering they should be configured and mounted to reduce the likelihood of becoming fouled on the ladder and/or ladder recovery line.
2. A quick release side ladder complete with mechanical means to hoist a person from the sea, may be used where a stern platform cannot be fitted.