NATIONAL MARINE GUIDANCE MANUAL

GUIDELINES FOR MARINE PILOTAGE STANDARDS IN AUSTRALIA

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CHAPTER 1 - GENERAL

1 SCOPE AND APPLICATION

1.1 This document provides guidance to Authorities, pilot organisations and port administrations when specifying requirements for:

- the licensing and operation of pilots, and those with an exemption from compulsory pilotage, to carry out pilotage movements in ports, local pilotage areas and other pilotage jurisdictions;
- related safety management systems; and
- fatigue management.

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 Federal, State and Territory Authorities with a set of guidelines to facilitate a national approach in the development of pilotage standards appropriate for the individual ports and pilotage areas within their jurisdiction. Where such standards already exist, it is intended that this document will provide those Authorities with an opportunity to review their current requirements in accordance with the guidance herein.

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. As such, it is expected that Authorities will consult closely with relevant port administrations, pilots and pilotage service providers when determining the pilotage requirements for each port or pilotage area.

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

The following documents are referred to in these guidelines:

International Maritime Organisation

International Convention on Standards of Training, Certification and Watchkeeping of Seafarers, 1995

Australian Maritime Safety Authority

Marine Orders Part 9: *Health – Medical Fitness*

Marine Orders Part 54: *Coastal Pilotage*

Ship–Helicopter Transfers: Australian Code of Safe Practice

Standards Australia

AS/NZS ISO 9001 *Quality Management Systems – Requirements*

AS/NZS 4360 *Risk Management*

AS/NZS 1269.1 *Occupational Noise Management* Part 1: *Measurement of assessment of noise immission and exposure.*

4 DEFINITIONS

For the purpose of 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.

Marine pilot [pilot] –
any person not belonging to the ship who has the conduct thereof.

NOTE: The definition is composed of two elements:

a) the person does not belong to the ship;

b) the person has 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.

NOTE: The pilot organisation may be a part of the port administration.

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 coordination) 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, social commitments).

Fatigue Risk Management System (FRMS) –

a system which is developed in conjunction with pilots and other associated employees to identify, assess and manage the work related risks associated with fatigue.

Risk event reporting –

an internal reporting system whereby a pilot submits information when he/she has been involved in an event which increased risk or the potential for 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 quarters situation.

CHAPTER 2 – ORGANISATIONAL MANAGEMENT SYSTEM

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 scope of the pilot organisation's operation. The ultimate goal of the SMS is the development of a safety culture throughout the entire pilot organisation. This may form part of the organisation's quality management system. It is recommended that pilot organisations use AS/NZS ISO 9001 (or equivalent adopted version of ISO 9001), as the basis of their management systems and, as appropriate for the size of the operation, to be certified by a body accredited by JAS-ANZ (or accredited by an equivalent body recognized by the International Accreditation Forum, IAF).

5.2 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.

6 RISK MANAGEMENT

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

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

6.3 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.

6.4 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.

6.5 The SMS should include strategies for managing pilot fatigue and the associated risks.

NOTE: Guidance on fatigue management is given in annex C

6.6 The SMS should incorporate consideration of risks associated with pilot transfer to and from ships under pilotage. This includes risks associated with travel in pilot

boats, and if relevant helicopters; as well as embarkation and disembarkation of pilots once at the ship.

NOTES:

1. Requirements for pilot boats are specified in Marine Orders Part 54.
2. Helicopter operations are subject to the requirements of the Civil Aviation Safety Authority (CASA) and the AMSA publication “Ship – Helicopter Transfers Australian Code of Safe Practice”.

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 the completed report to the appropriate person within the pilot organisation. 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 event reporting may be kept internal to the pilot organisation and the harbour master; and ideally such reporting should be supported by the Authority.

8 RISK ASSESSMENT OF CHANGES

8.1 Proposed changes to the pilotage 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 pilot organisation. Not withstanding 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:

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

b) the type of cargo; and

c) berths to or from which pilotage may be undertaken.

10.2 A pilot's licence should not be issued unless the applicant is certified as medically fit to perform the duties of a pilot and possesses either:

a) a valid Certificate of Competency as an Australian Master Unlimited or a valid Australian Certificate of Competency for the size of vessel being piloted;

b) a Certificate of Recognition issued by AMSA in relation to an international qualification equivalent to a);

c) Royal Australian Navy qualifications and such additional competencies identified by AMSA as are required to achieve equivalence to an Australian Master Unlimited or an Australian Certificate of Competency for the size of vessel being piloted;

d) a pilots licence issued by the relevant Authority of a flag State that is a party to the *International Convention of Training, Certification and Watchkeeping of Seafarers,* 1995;

e) a valid pilots licence issued in another Australian jurisdiction; or

f) evidence of competencies equivalent to a) to e) and acceptable to the Authority and port administration.

NOTES:

1. It is anticipated that there may, in future, be nationally agreed equivalent competency solutions; however, these are currently still under development.
2. There may be variations to the competencies listed or additional competencies that might be considered at the local level by users of these guidelines.
3. Guidance on medical standards is given in annex a.

10.3 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.

10.4 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.

11 PILOT COMPETENCIES

11.1 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.

11.2 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; and

h) Risks particular to a specific pilotage area, eg concentrations of recreational craft.

NOTE: Apart from the information contained in charts and publications, this knowledge is passed on by word of mouth from experienced pilots to trainee pilots.

11.3 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 which ideally should be undertaken prior to licensing.

11.4 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.

11.5 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.

12 TRAINING

12.1 Initial Induction

12.1.1 Each pilot organisation should have a procedure for formally inducting pilots into their organisation.

12.1.2 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; and

j) the provision of material that will be required to be read and understood before submitting for examination for a pilots licence.

12.2 Ship handling

12.2.1 Pilot organisations should ensure that a trainee pilot does not submit for an examination or appraisal for a pilots 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; and

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

12.2.2 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.

12.2.3 Ship handling training can be enhanced by the use of manned models and ship simulators.

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

12.3 Local Knowledge

12.3.1 Pilot 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.

12.3.2 Local knowledge is knowledge of the local environment that 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;

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

h) Risks particular to a specific pilotage area, eg concentrations of recreational craft.

12.3.3 Pilot organisations should have a standard procedure for keeping pilots informed of changes in the local environment that may have an impact on pilotage.

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

13 CHECK PILOTS

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

13.2 The person checking the pilot's performance in accordance with the above, should be a licensed pilot approved by the Authority as a check pilot and be qualified to at least the assessment component of the Workplace Training Course, Certificate IV level.

13.3 The role of the check pilot is to conduct periodic audits of pilots while they are executing an actual pilotage and observe that established procedures are correctly followed. 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. The check pilot should submit a written report, in an approved form, on the pilot being checked.

13.4 The 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.

13.5 Each pilot organisation should consider implementing a mentoring program to support new and progressing pilots.

NOTE: A mentor 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; and

c) a good communicator.

14 EXEMPTIONS FROM COMPULSORY PILOTAGE

14.1 In order to be exempted from compulsory pilotage, a current exemption certificate issued by the Authority should be held. 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;

c) berths to or from which exemption applies; and

d) other conditions, such as in daylight hours only.

14.2 Masters with an exemption from compulsory pilotage 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;

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

h) risks particular to a specific pilotage area, eg concentrations of recreational craft.

14.3 Masters with an exemption from compulsory pilotage should make every effort to keep themselves fully informed of changes in the local environment that may have an impact on pilotage.

14.4 In order to maintain current knowledge, masters with an exemption from compulsory pilotage should have regular meetings with:

a) the relevant Authority;

b) the local port administration or harbour master as appropriate; and

c) the local pilot organisation.

14.5 As far as practicable, masters with an exemption from compulsory pilotage should participate in risk event reporting and should receive summaries of risk event reports and corrective actions to heighten awareness of common risk situations.

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. In particular, AMSA is undertaking a review of Marine Orders Part 9 and NSW Maritime is considering the special nature of the work undertaken by marine pilots and the implications for NSW medical requirements. Pending the implementation of these and any other reviews, the following guidance may assist in developing requirements for the medical fitness of pilots.

a) An applicant for a position as a marine pilot should obtain a certificate of medical fitness from an independent medical practitioner.
b) Licensed pilots should obtain a certificate of medical fitness from an independent medical practitioner at intervals not exceeding two years.
c) The standard of medical fitness should be the standard as specified in Appendix 1 of Marine Orders, Part 9.
d) Medical fitness includes physical fitness and mental fitness and should also include minimum standards for eyesight and hearing.
e) 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).
f) 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.
g) 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.

ANNEX B – GUIDANCE ON CONTENT OF PILOT COMPETENCY TRAINING AND ASSESSMENT

B.1 General

B1.1 In order to competently conduct the vessel, the pilot will need to possess the following knowledge, skill and ability:

a) To be of sound physical and mental fitness. This can be determined by an appropriate medical examination.

b) To have specialised knowledge related to pilotage which includes knowledge of:

(i) Navigation;

(ii) Naval Architecture;

(iii) Radio & Electronic Navaids;

(iv) Marine Engineering;

(v) Meteorology;

(vi) Seamanship;

(vii) Hydrostatics;

(viii) Ship Handling and Manoeuvring;

(ix) Hydrodynamics; and

(x) Shipboard Management Systems.

NOTE: The standard of knowledge and the experience required in these subjects is evidenced by the possession of a qualification in accordance with Clause 10.2.

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

(i) experience;

(ii) on-the-job training by experienced pilots;

(iii) manned model training; and

(iv) simulator training.

B.2 Human Factors Training

B2.1 Human factors training is training which:

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

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

c) should form part of a marine pilot's training curriculum.

B2.2 A human-factors-based Bridge Resource Management (BRM) course provides the basis of the necessary training.

B2.3 An applicant for a position as a marine pilot who has not completed an appropriate human factors training program should do so within one year of obtaining a pilot's license.

B.3 Internal Competency Audits

B3.1 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 practise and demonstrate performance to the required level, on a regular basis, under unusual situations and increased workload in a maritime simulator to ensure a high standard of competency.

B3.2 Internal competency audits give 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.

B3.3 The performance of every pilot should be checked under an appropriate competency audit in a suitable ships simulator at intervals not exceeding 4 years. This check should include the simulation of emergency situations.

B3.4 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 on the panel conducting the audit may not necessarily be licensed for the same area as the pilot being audited.

NOTE: Internal competency audits would be in addition to any external audits required by the Authority.

B.4 Continuing Professional Education

B4.1 Licensed pilots should undertake an appropriate program of continuing professional education (CPE).

B4.2 The purpose of a CPE 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.

B4.3 The matters which a CPE program will address include, but are not limited to, changes in relevant:

a) technology;

b) risk management;

c) laws and regulations;

d) practices and procedures; and

e) community needs and communication.

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

B4.4 CPE should be undertaken at intervals not exceeding three years and may be done concurrently with the internal competency audit referred to in Paragraph B3.

ANNEX C – FATIGUE MANAGEMENT

C.1 Purpose

C.1.1 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 take note of the responsibilities of the employer and employees from an Occupational Health and Safety (OH&S) perspective in minimising the risk associated with shiftwork.

C.2 Shiftwork

C.2.1 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.

C.3 Fatigue levels

C.3.1 The fatigue levels associated with any actual or proposed roster should be objectively quantified using the FRMS. Documented records of the FRMS should 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.

C.3.2 Pilots should be responsible for minimising the risks associated with non-work related sources of fatigue while management should 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.

C.4 Risk Assessment

C.4.1 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.

C.5 Mitigation Strategies

C.5.1 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 with respect to work design guidelines relating to such matters as start times, shift extensions, quantity of night work, breaks between, and within, shifts and opportunities for sleep.

C.6 Education

C.6.1 To assist in managing 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 fatigue and recognising the problems associated with fatigue and lack of sleep;

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

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

C.7 Responsibility

C.7.1 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. Employers and employees should recognise that, under OH&S legislation, both the have responsibilities to ensure a safe workplace.

C.8 Audit Records

C.8.1 Records of the following should be kept for audit purposes:

a) output of FRMS analysis;

b) training and education programs and record of participants; and

c) OH&S committee meeting minutes.

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