



Australian Government
Australian Maritime Safety Authority

STANDARDS

for the medical examination of
domestic seafarers

January 2023





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How to use these Standards

When a domestic seafarer (or applicant) presents for a medical assessment:

1. Refer to the relevant role (certificate of competency) in Annex 1 of these Standards to determine the type of duties and tasks they undertake on board a vessel.
2. The medical examination is to include the following:
 - a) Obesity
 - b) Eyes / vision
 - c) Hearing, ear, nose and throat conditions
 - d) Cardiovascular system
 - e) Respiratory system
 - f) Gastrointestinal system
 - g) Genitourinary
 - h) Neurological system
 - i) Psychiatric conditions
 - j) Prescribed medication, drugs and alcohol
 - k) Musculoskeletal, balance and coordination
 - l) Diabetes and other endocrine disorders
 - m) Skin disorders
 - n) Haemopoietic disease
 - o) Infectious diseases
 - p) Neoplasms
 - q) Assessment of older seafarer
3. Examine the applicant and note any abnormalities on either history or physical examination.
4. If any abnormalities are detected refer to the appropriate section in the Standards.
5. Complete the Certificate of medical fitness - domestic seafarers (AMSA 1850) and make appropriate follow-up and referral arrangements for applicants found to be temporarily or permanently unfit for duties.

Prior to the medical examination the seafarer (or applicant) is to provide photographic identity. This may be a driving licence, passport, certificate of competency, or similar). The Medical Practitioner is to confirm with the applicant the correct spelling of his/her family name and given name(s) as well as date of birth.



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1. Introduction

Marine Order 505 (Certificates of competency - national law) 2022) (MO 505) is administered by the Australian Maritime Safety Authority (AMSA) and provides for the issue of certificates of medical fitness for domestic seafarers and gives effect to Marine Safety (Domestic Commercial Vessel) National Law Act 2012, as amended.

These Standards are compiled for the use of medical practitioners who are assessing an individual's fitness to work at sea in Australian near-coastal waters (i.e. landward of the outer limits of the exclusive economic zone of Australia).

The medical fitness Standards are developed in relation to the roles as identified on the seafarer's certificate(s) of competency in Annex 1.

An employing company may require more stringent standards developed by its own occupational physician. Such standards will depend on the nature of the jobs and any specific equipment operated. If the employer has additional fitness requirements for particular duties or voyages (e.g. for specific employment roles or the handling of certain cargoes), the employer may advise the medical practitioner of those requirements and request a supplementary report against them; this will be in addition to the AMSA requirements.

While the final judgement on whether or not an applicant is fit to work in a particular job at sea rests with the medical practitioner, these Standards draw attention to those conditions that have the potential to present a high level of risk in some circumstances.

1.1 Requirements to hold a Certificate of medical fitness - domestic seafarers

1.1.1 At initial issue of certificate of competency

It is a requirement of MO 505 that domestic seafarers hold a valid Certificate of medical fitness - domestic seafarers (AMSA 1850) at the time of the initial issue of a near coastal certificate of competency. This applies to the following certificates of competency:

- General Purpose Hand NC
- Coxswain Grade 3 NC
- Coxswain Grade 2 NC
- Coxswain Grade 1 NC
- Sailing Master Coastal NC
- Sailing Master Offshore NC
- Master (Inland waters) NC
- Master <24 metres NC
- Master < 45 metres NC;
- Master <100 metres NC;
- Marine Engine Driver Grade 3 NC
- Marine Engine Driver Grade 2 NC
- Marine Engine Driver Grade 1, and
- Engineer Class 3.

1.1.2 At renewal of certificate of competency

1.1.2.1 Low complexity certificates of competency

At the time of renewal of the following low complexity certificates of competency AMSA will accept a self-declaration of medical fitness.

- General Purpose Hand NC
- Coxswain Grade 3 NC
- Coxswain Grade 2 NC
- Coxswain Grade 1 NC
- Sailing Master Coastal NC
- Sailing Master Offshore NC
- Master (Inland waters) NC
- Master <24 metres NC
- Marine Engine Driver Grade 3 NC
- Marine Engine Driver Grade 2 NC

1.1.2.2 High complexity certificates of competency

At the time of renewal of the following high complexity certificates of competency AMSA requires the seafarer to hold a valid Certificate of medical fitness - domestic seafarers (AMSA 1850):

- Master < 45 metres NC;
- Master <100 metres NC;
- Marine Engine Driver Grade 1
- Engineer Class 3.

Note: *A valid Certificate of Medical Fitness (AMSA 303) issued in accordance with Marine Order 76 (Health - medical fitness) 2017 is acceptable for issue and renewal purposes.*

1.2 Why is fitness important?

1.2.1 Employers have a duty of care to provide a safe work environment and protect the health, safety and welfare of employees. Employees similarly have a duty of care for their own safety and that of the people they work with and the community in general. Medical assessment of fitness is one aspect of meeting this duty of care.

1.2.2 The primary objectives of a medical assessment of fitness for duty at sea are:

- to ensure that individuals are fit to perform the essential tasks of their job at sea effectively; and
- to anticipate and, where possible, prevent the avoidable occurrence of ill-health offshore which could place individuals, their colleagues, passengers and emergency personnel at risk.

1.2.3 Medical conditions may impinge on work in the following areas:

- (a) the condition may limit, reduce or prevent an individual from performing the job effectively either for routine duties or emergency situations (e.g. loss of mobility and dexterity making engine room work and other maintenance tasks difficult);
- (b) the condition may be made worse by the job (e.g. an asthmatic exposed to allergens in the machinery space);
- (c) the condition may make it unsafe for the person to do the job (e.g. liability to sudden loss of consciousness whilst transferring from a smaller vessel to a larger vessel by climbing a rope ladder);
- (d) the condition is likely to make it unsafe both for the individual and other crew (e.g. a crane operator liable to sudden loss of consciousness; catering crew with infectious hepatitis or gastro- enteritis);
- (e) the condition is likely to make it unsafe for other shipping (e.g. a master who is at risk of sudden loss of consciousness due to a cardiac arrhythmia); and
- (f) the condition, if it worsens, is one which will require emergency evacuation for medical treatment (e.g. gastric ulcer haemorrhage).

1.3 The work environment of seafarers

1.3.1 Medical practitioners should take into account the aspects of seafaring life, listed below, when assessing fitness for duty at sea.

1.3.2 Near coastal seafarers work on vessels in Australian waters, which may extend 200 nautical miles off the coast and thereby be remote from full medical facilities. It may be difficult to evacuate and then replace individuals who become injured or ill. Many vessels have only the minimal number of persons on board necessary to operate the vessel; thus the incapacitation of even one seafarer may place a substantial additional burden on other crew members.

Whilst there may be seafarers on board with basic first-aid training and vessels are usually equipped with basic first aid supplies, evacuation of sick or injured seafarers to shore-based medical facilities may pose difficulties to the crew or an emergency response team.

1.3.3 It may be unsafe to allow persons with certain medical conditions to become seafarers or to return to seagoing employment.

1.3.4 Seafarers live close to each other at sea, which can be for long periods. Contagious diseases may be a serious threat, endangering the health of other seafarer's, passengers and the vessel. It is particularly important that seafarers concerned with the preparation of food do not suffer from conditions that may be transmitted to others through their work.

1.3.5 Seafarers must be medically fit to perform their normal duties correctly and to be able to respond to emergency situations (e.g. fighting fires, launching life rafts, assisting passengers, etc.).

1.3.6 Seafarers must be able to adjust to the often violent motions of the vessel, to be able to climb ladders, to access and work in small spaces, to lift heavy weights and to be able to withstand exposure to harsh weather conditions on deck or excessive heat in the machinery spaces.

Seafarers whose work requires travel to ports or workplaces by air must not suffer from conditions which are exacerbated by air travel.

- 1.3.7 Seafarers must be able to live and work closely with the same people for a month or more, sometimes under stressful conditions. They must be capable of dealing effectively with isolation from family and friends and, in some cases, from persons of their own cultural background.
- 1.3.8 Vessel operations and on board duties vary substantially. For a fuller understanding of physical demands of particular categories of work on board, the Medical Practitioner may need to consult the employer.

1.4 Medical examination and eye sight test

- 1.4.1 Medical examinations for the issue of a Certificate of medical fitness - domestic seafarers (AMSA 1850) must be conducted by a medical practitioner registered with the Australian Health Practitioner Regulation Agency (AHPRA).
- 1.4.2 Eyesight tests may be completed by an optometrist or medical practitioner registered with the Australian Health Practitioner Regulation Agency (AHPRA). If an optometrist completes the eyesight test the applicant is to provide the medical practitioner with a copy of the eyesight test report at the time of the medical examination.
- 1.4.3 A medical practitioner who is registered with the relevant authority in a country other than Australia may issue a certificate of medical fitness in accordance with subsection 1.4.1

2. Procedures

2.1 Frequency of health assessments

- 2.1.1 All domestic seafarers should be assessed as to medical fitness for duties at sea on the following occasions (at least):
 - prior to commencing such employment;
 - when the medical certificate expires and the person intends to return to a vessel to work in near-coastal waters;
 - if there is a significant change in the medical condition of the seafarer;
 - after prolonged sickness absence due to injury or illness.
- 2.1.2 A certificate of medical fitness may be issued for:
 - (a) up to 4 years if at the time of assessment the person is 19 to 50 years old
 - (b) up to 2 years if at the time of the assessment the person is 51 to 60 years old, and
 - (c) up to 1 year if at the date of assessment the person is:
 - (i) not more than 18 years old; or
 - (j) 61 years old or more.

- 2.1.3 A medical practitioner may issue a certificate of medical fitness for a lesser period if appropriate.

Note: *An example might be where a medical practitioner considers that a person, although fit at the time of the examination, needs to be re-examined to determine the continued efficacy of treatment for a condition.*

2.2 Confidentiality

- 2.2.1 The applicant must receive the original certificate of medical fitness.
- 2.2.2 The medical practitioner must keep copies of all the forms associated with the medical examination, including results of investigations in a confidential file, for a period of at least 30 years. This information is not to be released to any person, agency or employer without a signed consent form or as required by law.

2.3 Health assessment outcomes

- 2.3.1 An applicant is either fit for the intended duties at sea, fit for restricted duties or unfit.
- 2.3.2 If fit for duties with limitations or restrictions the medical practitioner must clearly outline the limitations on the certificate of medical fitness(i.e. not fit for lookout duties during the hours of darkness, must not operate lifting appliance, etc.).
- 2.3.3 Those declared unfit may be temporarily or permanently unfit.
- 2.3.4 If temporarily unfit, the medical practitioner should specify a minimum period after which the assessment should be reviewed.

3. Forms

Certificate of medical fitness - domestic seafarers (AMSA 1850) is available from the AMSA website at: www.amsa.gov.au.

Part B—Medical Standards

1. Overview

This section provides information and standards for medical conditions which may affect individuals in the safe performance of their duties at sea.

The Standards do not cover every clinical situation and the medical practitioner must exercise judgement in relation to the key objective - maintaining safety at sea.

Medical practitioners should consider what medical conditions could reduce performance of critical tasks when determining if the applicant is medically fit for duty at sea.

Medical conditions that may impair fitness and safety must be carefully considered and sufficient information recorded to form an adequate evidence base for the final decision on fitness.

The proximity of appropriate shore-based care should be considered when determining fitness and safety for service at sea.

2. Obesity

2.1 Body morphology

- 2.1.1 Obesity can hamper evacuation procedures. Persons with a Body Mass Index (BMI) of more than 30 kg/m² may need to demonstrate that they can climb ladders, climb over storm door sills, fit through hatches and not exceed safety limits for rescue equipment. Larger individuals face increased physical hazards and demands in a marine environment. Where there is doubt concerning physical abilities a Functional Assessment may be required either in a suitably equipped facility or on board a vessel. The testing should assess the main functions of lower limb agility, the ability to climb multiple steps, balance and upper limb and handgrip strength. The ability to negotiate doorways and hatches may also be assessed. Medical practitioners should be guided by the findings in their final determination of fitness for sea service
- 2.1.2 A BMI of more than 40 kg/m² presents increased risk of ill health and injury. The issue of concern in overweight seafarers is primarily safe mobility around a vessel, the ability to move quickly in an emergency and to be able to move through standard hatches. Applicants in this category may need to undertake weight reduction and be reassessed.
- 2.1.3 Obstructive sleep apnoea, diabetes and hypertension are more common in those with morbid obesity.

Note: *A figure of BMI greater than 40 kg/m² alone cannot be used as a predictor of safety, health or functional ability to work but should trigger greater scrutiny of functional capacity and ability to move safely on a vessel.*

3. Eyes / vision

3.1 Visual acuity

- 3.1.1 Far vision is required for:
- 3.1.1.1 lookout duties;
 - 3.1.1.2 control of vessels and vessels' small craft, and
 - 3.1.1.3 operation of cranes and lifting equipment.
- 3.1.2 Near vision is required to read charts, weather maps, computer screens, monitors, instruments and instructions.
- 3.1.3 Night and depth vision are required for lookout duties and control of the vessel. Depth vision is required for operating cranes or lifting equipment at close distances.

3.2 Colour vision

- 3.2.1 Good colour vision is required for navigational and lookout duties to distinguish red and green port and starboard channel markers, navigation beacons and vessels' navigation lights. The ability to identify red, green and white navigation lights is an essential part of the job for masters, coxswains and other seafarers required to perform lookout duties. These seafarers have requirements for safe red-green colour discrimination.
- 3.2.2 The primary screen is the Ishihara pseudoisochromatic plate testing. If this is passed the standards are met and an applicant is considered red-green colour vision safe for navigational and lookout duties.
- 3.2.3 Notwithstanding the above, new entrants for masters, coxswains or general purpose hands who fail the Ishihara pseudoisochromatic plate colour vision test may undertake a Holmes-Wright Type B lantern test.
- 3.2.4 If a master, coxswain or similar seafarer passes either an Ishihara pseudoisochromatic plate screen or a Holmes-Wright Lantern Type B test they are considered red-green colour safe for navigational and lookout duties (visual acuity requirements must also be met).
- 3.2.5 When testing colour vision, coloured lenses MUST NOT be worn by the seafarer.

Note: *The wearing of contact lenses or spectacles with chromagen lenses with red filters will increase the contrast of greens, yellows and browns, thus enabling a colour deficient seafarer to pass the Ishihara test. However, these lenses are not sufficient to enable safe lookout duties at sea.*

- 3.2.6 Information regarding colour vision impairment must be provided on the Certificate of medical fitness - domestic seafarers to assist the employer to make an appropriate decision regarding engagement or continued employment.

Note: *Guidance on appropriate screening for colour vision is contained in Annex 2 of these Standards.*

- 3.2.7 Any eye disease, disorder or defect which affects colour vision needs to be corrected.

- 3.2.8 In all cases, where visual aids (spectacles or contact lenses) are required for the efficient performance of duties, a spare pair must be carried when seafaring. When different visual aids are used for distance and near vision a spare pair of each must be carried.
- 3.2.9 An applicant with a history of glaucoma or uveitis should undergo ophthalmological assessment.
- 3.2.10 The applicant must meet the vision standards listed in Table 1 below.

3.3 Monocular vision

- 3.3.1 For an applicant who has vision in only one eye they do not have to meet the standard that applies to the other eye.
- 3.3.2 The applicant before presenting for a medical examination must obtain a written report from a specialist ophthalmologist that demonstrates that the specialist has assessed the applicants vision and determined that they are able to safely perform their intended duties.
- 3.3.3 The certificate of medical fitness must include a statement that the applicant meets the standard with monocular vision only.

Note: *A person with monocular vision and anyone employing or supervising the person should be aware of the dangers of operating a crane or other lifting appliances where monocular vision may limit depth perception and affect the safe operation.*

Table 1: Visual standards

	Distant vision			Near vision	Colour vision	Visual fields
	Better eye not less than	Other eye not less than	Both eyes not less than			
Deck department						
1. Seafarers required to undertake lookout and/ or watchkeeping duties: (aided vision if necessary)	6/6	6/9	6/6	N8 for charts, weather maps and N12 for other reading tasks with or without visual aids	Normal	Normal visual fields
2. Seafarers required to operate lifting plant e.g. vessels' cranes, hoists: (aided vision if necessary)	6/9	6/12	6/9	N12 with or without visual aids	Not required	Normal visual fields
3. Other seafarers not required to undertake duties in 1 or 2: (aided vision if necessary)	6/18	6/60	6/18	N12 with or without visual aids	N/A	Sufficient visual fields
Engine department						
Engine room (aided vision if necessary)	6/12	6/60	6/12	N12 to read instruments, gauges on control panels computer screens with or without visual aids	See Annex 2	Sufficient visual fields

4. Hearing, ear, nose and throat conditions

4.1 Hearing standard

- 4.1.1 Hearing is required for communication by radio, by telephone or person to person and therefore the critical frequencies are in the speech range 500 to 3,000 Hz. A functional hearing loss sufficient to interfere with communication or to impede safety (e.g. hearing audible warning devices) presents a high risk.
- 4.1.2 Hearing loss for new entrants should be checked by means of an audiogram. If the new entrant uses a hearing aid, the person should be referred to an audiology specialist unless evidence is produced of recent testing and hearing using the aid is apparently satisfactory.
- 4.1.3 For existing seafarers, an audiogram is only required if hearing is not apparently satisfactory in one to one conversation. Those seafarers wearing hearing aids who have unsatisfactory hearing in normal conversation should have their hearing aid checked by the supplier and may also require a practical test to assess functional hearing.
- 4.1.4 The speech should be reasonably clear and free of stutter and hesitation sufficient to use radios and communicate on deck. Those using cranes should be able to hear whistle signals where these are used.

Table 2: Recommended minimum standards of hearing

	Frequency Hz			
	500	1,000	2,000	3,000
dB loss in better ear without aids	40	40	40	40

- 4.1.5 If hearing loss is 40dB or more at the frequencies specified in Table 2 the applicant should undertake and pass a conversation test.

Note: *The applicant must be capable of effective use of a radio and other communication devices.*

4.2 The conduct of the conversation test

The following is a recommended procedure for conduct of a conversation test.

- 4.2.1 The test should be conducted in a quiet room with a stable background noise level. Hearing aids should be worn if normally used at work or if retesting following their fitting.
- 4.2.2 The examiner should face the subject and address him/her from a distance of 3 metres for normal speech.
- 4.2.3 The subject should be seated facing away from the examiner to preclude lip reading and the use of non-verbal clues.
- 4.2.4 A normal conversational vocal volume should be used.
- 4.2.5 The test material should be a mixture of alphabetical letters and numerals in any order, not to exceed a total of three in any one phrase, e.g. 6Y3, 2N4, S5G; 7BL, 9PS, 3AT, etc.

- 4.2.6 Ten combinations should be used, each preceded by the carrier phrase “PLEASE SAY”.
- 4.2.7 The subject should repeat what was thought to be heard. If uncertain, guessing is encouraged.
- 4.2.8 Six or more combinations should be repeated without error to be considered satisfactory. Ten combinations should be used, each preceded by the carrier phrase “PLEASE SAY”.

Applicants who do not pass this test must be referred for further assessment of functional hearing and speech discrimination by an audiologist.

4.3 Other ear, nose and throat conditions

- 4.3.1 Acute infections require treatment. Although chronic middle ear disease presents a high risk, recurrent or chronic sinus infection presents less of a risk if the Medical Practitioner is satisfied that the seafarer can manage the condition with appropriate medication at sea.
- 4.3.2 Vestibular malfunction can occur suddenly and with sufficient severity to make safe operations of vessels and cranes impossible. It may be accompanied by nystagmus which compounds the disability. Meniere’s disease therefore presents a high risk.
- 4.3.3 Hay fever which responds to therapy (without side effects) presents a lower level of risk.
- 4.3.4 Frequently recurring tonsillitis presents a high risk until corrected.

5. Cardiovascular system

Cardiovascular conditions can cause sudden loss of consciousness putting others at risk or interfere with exercise tolerance as in climbing or working in confined spaces. Some cardiovascular conditions, if they become acute, can require immediate emergency medical care or medical evacuation, neither of which may be available, particularly in remote locations and/or in bad weather.

Careful assessment is required to ensure applicants are free of any cardiovascular condition which puts themselves or others at risk. A stress ECG may be required if clinically indicated.

5.1 Ischaemic heart disease

- 5.1.1 Current angina presents a high risk. Any occurrence within the previous three months of confirmed myocardial infarction, coronary artery bypass grafting, coronary angioplasty or stent presents a high or increased risk.
- 5.1.2 A lower risk is presented if the applicant has had no symptoms of coronary artery disease for more than three months and there is good control of risk factors with no medication for angina control necessary. Review should be by a cardiologist using results of tests, (e.g. angiogram), stress ECG. Advances in coronary stenting now mean that individuals successfully treated with stenting and free of cardiac symptoms could be considered medically safe to return to sea within three weeks subject to specialist opinion from their cardiologist.
- 5.1.3 Any doubt about medical fitness to return to work at sea should be referred to a specialist cardiologist.

- 5.1.4 If the review finds that:
 - 5.1.4.1 three months or more has elapsed since the last symptom incident, and
 - 5.1.4.2 there are no signs of ischaemia on the exercise ECG (less than 2mm ST segment depression), and/or
 - 5.1.4.3 coronary angiography shows a lumen reduction of less than 70 per cent in a major coronary branch and less than 50 per cent in the left main coronary artery, and
 - 5.1.4.4 the ejection fraction is 50 per cent or more, the applicant may be declared fit for duty at sea but with annual or more frequent cardiological review highly recommended.

5.2 Dysrhythmia/pacemaker

- 5.2.1 A history of recurrent or persistent dysrhythmia which may result in syncope or incapacitating symptoms presents a high risk.
- 5.2.2 An applicant who has had surgery (e.g. for Wolf- Parkinson White syndrome), or successful treatment by medication for at least three months, may be declared fit subject to annual cardiological review.
- 5.2.3 If the applicant has had a pacemaker implanted and the Medical Practitioner has taken into account the nature of the person's underlying disease and is satisfied that the pacemaker function has been appropriately tested, the applicant may be declared fit subject to six-monthly testing at a pacemaker clinic and cardiological review.

Note: *Some vessels have strong electro-magnetic fields near communications equipment and aerials which may affect pacemaker function.*

5.3 Valvular heart disease

- 5.3.1 A history or evidence of valve disease, associated with symptoms or a history of, embolism, arrhythmia, cardiac enlargement (on chest X ray), abnormal ECG, or high blood pressure presents a high risk.
- 5.3.2 Taking anticoagulants is acceptable if the dosage has been stable over time and monitoring of the blood is compatible with swings.
- 5.3.3 An applicant may be considered fit for duty at sea if cardiological assessment shows mild or treated valvular disease of no haemodynamic significance, and it is not associated with any symptoms, and any monitoring of the condition can be done at frequencies compatible with leave periods.
- 5.3.4 Equivocal cases should be referred for an independent assessment.

5.4 Cardiomyopathy

- 5.4.1 Established cardiomyopathy presents a high risk.
- 5.4.2 A heart or heart/lung transplant presents a high risk.

5.5 Aneurysms

- 5.5.1 A history of an aortic aneurysm, thoracic or abdominal, either before or after surgery presents a high risk.

5.6 Hypertension

- 5.6.1 Blood pressure (taken whilst seated) of 160/100 or greater (treated or untreated) presents a high risk.
- 5.6.2 End organ damage (cardiac, cerebral, retinal or renal) which would impair safe operation of vessels, cranes or small craft presents a high risk.
- 5.6.3 Any medical condition that requires the use of medication which can result in marked hypotension or impaired alertness which would cause distraction of attention whilst operating a vessel, crane, or small craft presents a high risk.
- 5.6.4 A certificate of medical fitness for duty to sea may be issued:
- initially if the applicant is treated with anti-hypertensive drug therapy and effective control of hypertension is achieved (not greater than 150/95) without appreciable side effects over a four week period, subject to annual review;
 - where blood pressure control (not greater than 150/95) has been achieved and is stable for 2 years and well documented and is likely to continue, 2 yearly reviews are appropriate;
 - if there is no evidence of target organ damage, associated ischaemic or other forms of heart disease; and
 - if other causative risk factors have been addressed.

5.7 Congenital heart disease

- 5.7.1 Congenital heart disease (e.g. atrial septal defect, small ventricular septal defect) without symptoms and with no haemodynamic significance may be acceptable.

5.8 Peripheral circulation

- 5.8.1 Current or recent history of deep vein thrombosis with or without embolisation presents a high risk. Varicose veins associated with ulcers or other complications presents a high risk.
- 5.8.2 Peripheral vascular disease with intermittent claudication presents a high risk.

5.8 Pulmonary circulation

- 5.9.1 A history of more than one pulmonary embolus presents a high risk. A single episode requires careful assessment of the underlying cause and risk of recurrence.

6. Respiratory system

Disorders of the respiratory system should be considered in the context of the risk of an acute exacerbation requiring emergency medical treatment (e.g. asthma, pneumothorax) or symptomatic airway disease sufficient to reduce capacity for physical work or ability to wear a respirator.

6.1 Pneumothorax

- 6.1.1 A history of recurrent pneumothorax presents a high risk. A single episode without recurrence for a year, or after successful surgical correction is acceptable.

6.2 Asthma

- 6.2.1 Asthma, chronic obstructive or restrictive airways disease and emphysema affect the ability of an individual to use self-contained breathing apparatus, and to wear respirators. Persons with asthma or allergy may find working on vessels carrying grain affects their respiratory function.
- 6.2.2 Asthma requiring oral corticosteroids and/or frequent medication presents a high risk.
- 6.2.3 A history of childhood asthma subsequently resolved in adolescence is acceptable.
- 6.2.4 Well-controlled asthma on inhaled corticosteroids and intermittent need of bronchodilators may be acceptable. A report from the applicants' treating physician may be required.

Note: *There are persons with mild asthma whose symptoms may precipitated by causes such as a respiratory tract infection and there are persons who can suddenly develop life-threatening asthma requiring hospitalisation. The latter have an asthma which is often more difficult to control and an obvious precipitating factor may not be identified for each asthma attack. This sub-group of asthmatics presents a high risk.*

6.3 Reduced lung function

- 6.3.1 Severe respiratory disorders are associated with reduced physical effort tolerance. This can interfere with the safe operation of vessels and cranes and confined space work through inadequate oxygen and/ or increased carbon dioxide to the brain and heart, leading to poor judgement, agitation or drowsiness, reduced concentration and cardiac effects such as right heart failure or arrhythmia.
- 6.3.2 For work requiring the use of a respirator, (such as entry into confined spaces or work on vessels carrying dusty cargoes) an FEV below 65 per cent, FVC below 70 per cent and/or FEV /FVC less than 70 per cent are grounds for concern. A practical respirator assessment may be requested.
- 6.3.3 In some cases of reduced lung function, individuals who get dyspnoea on exertion may find climbing ladders on vessels too difficult. A person who is unable to keep pace with people of the same age and body build when walking on level ground or who has dyspnoea on one flight of 10-12 stairs will have difficulty climbing stairs and ladders, climbing over plant and equipment, and walking reasonable distances on board a vessel. If in doubt a practical/functional test may be requested.

6.4 Tuberculosis

- 6.4.1 Untreated tuberculosis or other serious infection presents a high risk. Where the applicant has suffered tuberculosis or other serious lung infection, a letter from the treating physician must be obtained to certify that the applicant is no longer infectious.

6.5 Chest X-rays

- 6.5.1 A chest X-ray may be required if clinically indicated. There is no requirement for routine chest X rays.

7. Gastrointestinal system

7.1 Teeth and gums

- 7.1.1 Seafarers must be dentally fit as, other than temporary pain relief, there is no dental treatment aboard a vessel. Dental abscesses or severe gingivitis presents a high risk. Applicants with impacted wisdom teeth may need dental review.
- 7.1.2 Medical practitioners should inspect and evaluate the general health of teeth and gums and advise if obvious major dental work is required. To avoid delays in fitness certification pending dental treatment a seafarer may be given a temporary certificate for no more than four months to allow time for dental work to be carried out.

7.2 Peptic ulcer

- 7.2.1 Acute peptic ulceration presents a high risk however treated peptic ulceration is acceptable provided that the medical practitioner is satisfied that the risk of recurrence, especially haemorrhage, is minimal. A letter from the treating physician, together with endoscopy report, may be required.

7.3 Liver and pancreas

- 7.3.1 A history of recurrent or chronic pancreatitis presents a high risk. Serious or progressive liver disease such as cirrhosis with complications of oesophageal varices presents a high risk.

7.4 Gall bladder disease

- 7.4.1 A person with a history of cholelithiasis and/or cholangitis should be carefully evaluated for the risk of recurrence before being accepted as fit for duty at sea.

7.5 Hernia

- 7.5.1 An inguinal hernia presents a high risk with physical effort and manual handling unless surgically corrected. An exception is an applicant who has a small inguinal hernia where there is no risk of strangulation and where there is surgical opinion to state that there is no clinical indication for surgery may be determined as fit for lifting tasks.
- 7.5.2 A rectus divarification or large umbilical hernia should be surgically corrected before applicants can be accepted as fit for lifting tasks.
- 7.5.3 A diaphragmatic hernia without disabling reflux oesophagitis or other symptoms is acceptable.

7.6 Colostomies

- 7.6.1 A person with an uncomplicated stoma is acceptable provided that the underlying cause is compatible with work at sea and there are adequate facilities for changing colostomy bags on board the vessel.

7.7 Enteric diseases

- 7.7.1 Catering crew must be free of infectious enteric diseases, including hepatitis A.
- 7.7.2 Engineers and those who may be exposed to sewage (e.g. maintaining sewage treatment plants) require evidence of a completed course of active hepatitis A immunisation on employment.

8. Genitourinary

Any person who has haematuria and/or protein on urinalysis must be carefully assessed to exclude any condition which may suddenly worsen and require urgent medical attention, e.g. renal calculi.

A history of renal calculi requires advice on fluid intake in hot weather. The presence of untreated renal calculi presents a high risk.

Urinary incontinence presents a high risk.

A large untreated hydrocele presents a high risk. A small symptomless hydrocele is acceptable.

Prostatism, due to prostatic hypertrophy sufficient to cause urinary symptoms such as frequency or poor stream, presents a high risk until treated due to the risk of acute urinary retention.

Menstrual dysfunction which can lead to incapacitating pain or haemorrhage, e.g. severe endometriosis, unpredictable or severe bleeding or menorrhagia presents a high risk.

8.1 Pregnancy

- 8.1.1 Normal pregnancy carries increased critical health risks and also has an impact on the ability to perform work at sea.
- 8.1.2 The normal risks of pregnancy can be managed routinely on shore but present enhanced problems in a marine environment where antenatal, medical and obstetric care is not available.
- 8.1.3 Work at sea also involves physical effort and endurance, manual handling, standing for extended periods of time, requirements for safe physical movement and shift work. Many of these factors have been associated with an increased risk of spontaneous pregnancy loss.
- 8.1.4 Pregnancy also affects ability for work duties at sea because of:
- the risk of hypotension, especially in hot weather;
 - the risk of falls due to the change in the centre of gravity and balance;
 - difficulty climbing because of increased abdominal girth and additional cardiovascular load;
 - nausea from 'morning sickness' which may be exacerbated by sea-state conditions; and
 - reduced tolerance of physical effort and manual handling.
- 8.1.5 The adverse impact of these factors on agility, safe movement and reduced tolerance of physical effort and manual handling increases especially through the second and third terms of pregnancy.
- 8.1.6 Antenatal and obstetric care is not available at sea, and a miscarriage (pregnancy loss) could be life threatening through risks of haemorrhage and infection.
- 8.1.7 Miscarriage occurs in approximately 15 per cent of recognised pregnancies with a peak incidence in the first 12 weeks. However pregnancy loss occurs at lesser rates throughout the second and third terms of pregnancy. Pre-term births prior to 28 weeks represent 1 per cent of births, rising to 6 per cent between 28 and 37 weeks. Even a normal term birth at sea carries increased risk of avoidable ill health or death for mother and child.
- 8.1.8 Pregnancy has increased risks throughout the whole period, but this in itself is not sufficient justification for exclusion from work at sea in the first two trimesters. Cases should be considered individually seeking a balance of risk and duty of care.
- 8.1.9 Female applicants must be given accurate medical risk information to assist them with informed decision making in relation to pregnancy and work at sea.
- 8.1.10 Pregnancy therefore presents a high risk except for a woman with a previous uncomplicated pregnancy, who is less than 28 weeks in to her pregnancy and who works on coastal voyages only. A report from the treating obstetrician should be considered advisable.

9. Neurological System

Sudden loss of consciousness or loss of control of limbs or balance impairs the ability to control a vessel, small craft or a crane, to work at heights, or alone, and to keep watch.

9.1 Epilepsy

- 9.1.1 Epilepsy can be affected by fatigue. Shift work can therefore exacerbate the condition if a person fails to get adequate sleep. Confirmed or current epilepsy, with a fit within the previous two years, presents a high risk.
- 9.1.2 For applicants with well-controlled epilepsy, evidence of treatment and control of epilepsy (e.g. letter from treating specialist) should be provided for the condition to be acceptable.

Note: *Although only about one-third of patients with a first unprovoked seizure will have further seizures within five years, about 75 per cent of those with two or three unprovoked seizures have further seizures within four years.*

- 9.1.3 A past history of convulsions after the age of five years, with a seizure-free period of at least two years, and not requiring medication, must be carefully assessed.
- 9.1.4 A past, single seizure or cluster of seizures due to exceptional and non-repeatable circumstances (e.g. head injury with complete recovery) may be acceptable.

9.2 Migraine

- 9.2.1 Acute incapacitating attacks of migraine which may be accompanied by neurological signs such as hemiparesis and visual defects present a high risk.
- 9.2.2 An established history of migraine which does not interfere with capacity to work safely is acceptable.

9.3 Stroke

- 9.3.1 A history of cerebrovascular accident generally presents a high risk. However depending on the degree of recovery from the stroke, and provided that problem solving skills and judgement have not been affected, a person may be considered fit for duty at sea. The decision regarding their fitness is made after they have obtained a report from the treating neurologist /rehabilitation physician indicating that a recurrence is unlikely and that there is no significant, clinical residual disability.

9.4 Transient ischaemic attacks (TIAs)

- 9.4.1 If a cardiac cause for such episodes is found and treated, then any restriction should be based on the prognosis of that condition, and the likelihood of recurrences.
- 9.4.2 Where the aetiology of the attacks has been identified, the underlying cause removed, and a six-month period free of attacks has elapsed, the condition may be acceptable.
- 9.4.3 In such cases as outlined above, evidence from a cardiologist/neurologist is advisable.

9.5 Neuromuscular Disorders including Multiple Sclerosis, Parkinsonism

- 9.5.1 Parkinsonism, multiple sclerosis, or other neuromuscular disorders would preclude being in control of a vessel, operating cranes or other equipment and, where the disability is any more than minor muscular weakness, can affect climbing ability on rope ladders and steel rung ladders. Because of the progressive nature of most forms of neuromuscular disorder, these conditions generally present a high risk.
- 9.5.2 Drug induced Parkinsonism may disappear on cessation of the treatment. Should this occur, and the underlying case for which the drugs were administered not be a cause for exclusion in its own right, then the applicant may be considered fit for duty at sea.

9.6 Memory and Cognitive Function

- 9.6.1 Seafarers must be able to do their work tasks safely and efficiently without risk to themselves or others. Intact memory and cognitive function are reasonable health requirements for work at sea and completing efficient work tasks efficiently and safely. Problems with memory and cognitive function might occur with a number of disorders including prolonged high alcohol intake.
- 9.6.2 Where clinically indicated and in cases where reduced cognitive function or memory is suspected, brief screening with a clinical screening instrument such as the Montreal Cognitive Assessment (MoCA) (www.mocatest.org) should be used. Applicants who failed such an assessment would need further medical investigation, specialist review and re-examination.

10. Psychiatric conditions

- 10.1 Psychological and psychiatric conditions and personality difficulties may all affect the safety and well-being of seafarers in a maritime work environment.
- 10.2 Affective disorders such as anxiety and depression affect judgement, attention and motor activity and the Medical Practitioner should consider this in relation to any jobs with responsibility for the safe operation of vessels, cranes and equipment, including emergency procedures. The Medical Practitioner should also be aware that ship-board life may involve lengthy periods away from home, family and other support mechanisms, including psychiatric support.
- 10.3 An acute episode of mental illness (e.g. schizophrenia, schizo-affective disorders, bipolar illness or other major psychiatric illness) or a chronic mental illness manifested by symptoms which indicate there is the likelihood of relapse such that the sufferer may cause harm to herself or himself or others, the vessel or its cargo, presents a high risk.
- 10.4 A mental disorder requiring psychotropic drug therapy presents a high risk if the side-effects of such medication affect alertness, co-ordination, cause drowsiness or postural hypotension.
- 10.5 A present or past mental disorder affecting judgement or psychomotor ability presents a high risk.
- 10.6 Where the mental illness has been controlled and a report obtained from the treating psychiatrist to the effect that a recurrence is unlikely, the person may be considered fit, subject to regular review.
- 10.7 In all cases, where there is doubt about mental or psychological fitness, a specialist psychiatric assessment may be obtained and reviewed.

11. Prescribed medication, drugs and alcohol

Some prescription, over-the-counter, or illegal substances have the capability of altering vision, perception, judgement, attention span, motor function and other characteristics important in the safe operation of vessels, cranes, and powered tools.

11.1 Prescribed and over-the-counter drugs

- 11.1.1 The main issues with these drugs in relation to fitness for duty at sea are:
 - can side-effects place the safety of the person or the safety of others at risk?
 - does the medication require monitoring?
 - is the underlying disease, for which the medication has been prescribed, compatible with working at sea?
 - what is the likely effect of several missed doses if seasickness precludes taking or absorbing medication or if access to medication is not available?
- 11.1.2 If the medication is for short term administration, the person may be considered as temporarily unfit and re-examined.

- 11.1.3 Long term administration of some medications may lead to tolerance of sedative side effects e.g. antihistamines. Once this has stabilised, the taking of medications is not a bar to operating plant and equipment. The medical practitioner must be satisfied that the person does not suffer sedative side effects and is aware of the potentiation effects of interaction with alcohol.
- 11.1.4 The short or long term use of prescribed psychoactive drugs requires, at a minimum, strong warnings about the potentiation by alcohol. Where clinically appropriate it is desirable that alternative therapy, with non-psychoactive drugs if possible, is undertaken. Each case should be assessed individually and may require discussion with the person's treating practitioner. More frequent reassessment may be required.
- 11.1.5 Persons using anti-histamines should use those with the least sedative side-effects e.g. astemizole (Hismanal).
- 11.1.6 Cytotoxic agents, insulin, immunosuppressants and oral corticosteroids present a high risk.
- 11.1.7 Major tranquillisers, narcotics and hypnotics present a high risk. A previous history of such treatment will require further consideration.
- 11.1.8 Prescribed medication should not be recorded on the certificate of medical fitness. The applicant should be encouraged to advise the master of the vessel or operator if they regularly take long term medication. The applicant should be advised to ensure possession of adequate medication to last a voyage.

Table 3: Classes of drugs with potential to affect an individual's skills to operate vessels, small craft, plant and equipment, including cranes

Class of drug	Examples
sedative, hypnotic or anti-anxiety agents	barbiturates, benzodiazepines
analgesics	codeine, narcotics, propoxyphene
ophthalmic agents (topical)	most agents for treating glaucoma
anti-allergy agents	antihistamines
bronchodilators and asthma medications	salbutamol, beclomethason, dipropionate, sodium cromoglycate, budesonide
antibiotics	minocycline
antipsychotic or antidepressant agents	tricyclic, anti-depressants, haloperidol, phenothiazines
anticonvulsants	sodium valproate, phenytoin
anticoagulants	aspirin, coumadin
antihypertensives	clonidine, methyldopa, reserpine
anti-motion sickness agents	antihistamines
unprescribed substances	alcohol, amphetamines, cocaine, marijuana

11.2 Illegal drugs

- 11.2.1 Illegal drugs such as opiates, cannabis and amphetamines may reduce a person's ability to safely operate vessels, cranes and machinery. Drug screening is not required for a certificate of medical fitness, although individual employers may require drug and alcohol screening as part of company policy.
- 11.2.2 Any use of illegal drugs presents a high risk.

Note: *Further information, if required, should be sought from the Australasian Faculty of Occupational Medicine or equivalent specialist centres.*

11.3 Alcohol

- 11.3.1 Alcohol is implicated as a significant factor in work-related accidents.
- 11.3.2 Chronic high alcohol intake (60g per day) impairs cognitive function such as the processing and handling of sensory information and reduces the speed and accuracy of response to psychomotor tasks. This may not become apparent until the person is in an emergency situation.
- 11.3.3 An applicant with a clear history and clinical evidence of chronic alcohol abuse, where there is evidence of end organ damage such as organic brain damage or hepatomegaly, presents a high risk.
- 11.3.4 An applicant who has been diagnosed as suffering from alcoholism should not be considered as fit for duties at sea until a rehabilitation program has been completed and the medical practitioner is satisfied that the applicant is fit to return to duties at sea.

12. Musculoskeletal, balance and coordination

- 12.1 Normal mobility, agility and strength in the spine and all limbs are important for tasks involving climbing, lifting and confined space work.
- 12.2 Vessels have steep stairs, rope ladders and vertical steel rung ladders which must be climbed and hatches which seafarers must negotiate.
- 12.3 Rough weather will increase the need for reasonable hip, knee and shoulder strength, flexibility and agility in relation to climbing.
- 12.4 The majority of lifting tasks are 25 kg or below and much use is made of lifting equipment (cranes and hoists, forklifts) both on vessels and on shore. Lifting is harder to control in rough sea state conditions, during emergency procedures, when moving chains on deck, or when lifting and carrying in confined spaces.

The following conditions present a high risk:

- amputation or congenital loss or acquired functional loss affecting an upper limb or lower limb if this affects climbing;

- amputation or congenital loss or acquired functional loss of a lower limb if this is required to operate a foot control;
- peripheral neuropathy resulting in loss of sensation or proprioception in the extremities as this makes climbing hazardous;
- uncorrected knee instability e.g. locking, giving way;
- uncorrected shoulder dislocation/ subluxation; and
- acute inflammation and pain in any joint which interferes with concentration or impairs the range of motion such that disembarking from a boat cannot be performed safely - the applicant may need to be re-examined at a later date.

The following conditions also present a high risk because they affect the ability to undertake manual handling, climb and occasionally maintain awkward postures in engine rooms and other confined spaces:

- reduced range of movement or pain when rotating the neck - unable to look behind and/ or up when operating plant, including cranes and hoists;
- low back pain which affects activities of daily living and/or results in an inability to shovel, climb, maintain sustained and/or repetitive awkward postures;
- painful spinal or shoulder movements with or without limitation in range of strength.

12.5 An applicant with a significant loss of range of motion or some loss of muscle power may also require a functional assessment.

12.6 Where there is any doubt about mobility or other musculoskeletal issues, the medical practitioner should consider obtaining a functional assessment. Medical practitioner should be guided by the findings in their final determination of fitness for sea service. Medical practitioners should be guided by the findings in their final determination of fitness for sea service.

13. Diabetes and other endocrine disorders

13.1 Diabetes mellitus

13.1.1 The Medical practitioners must bear in mind the risk to safety if the applicant had a hypoglycaemic attack or developed a ketoacidotic coma.

Note: *Insulin dependent diabetes mellitus is more difficult to manage for a person on rotating shift work. There is also the problem of administering optimal emergency care at sea to a person in a coma who may require urgent intravenous therapy.*

13.1.2 The following conditions present a high risk:

- insulin dependent diabetes mellitus (IDDM);
- poorly controlled non-insulin dependent diabetes with unsatisfactory glucometer readings, high levels of glycosated haemoglobin and/or recurrent glycosuria.

Note: *The International Labour Office (ILO) and the World Health Organization (WHO) have produced Standards on Conducting Pre-sea and Periodic Medical Fitness Examinations for Seafarers which place significant restrictions on persons with IDDM serving at sea.*

13.1.3 Applicants with a demonstrated responsible attitude to self-management of a diabetic condition and a report from their treating practitioner confirming adequate control of diabetes, lack of complications (ulcers, retinopathy, renal disease) and ability to work shift work without the risk of a hypoglycaemic attack, may be accepted.

13.1.4 If the applicants' diabetes is currently uncontrolled e.g. due to change in therapy, it may be necessary to consider him or her as temporarily unfit and subject to re-examination in three months.

13.2 Thyroid disease

13.2.1 Fitness for duties at sea will depend on the degree of control of thyroid disease, the absence of complications, especially cardiac, and the requirements for monitoring medication.

13.3 Adrenal disease

13.3.1 Disorders affecting adrenocortical hormone production such as Cushing's syndrome or Addison's disease present a high risk unless the underlying cause has been treated and the applicants' adrenal function is sufficient.

14. Skin disorders

14.1 Infections

- 14.1.1 Contagious skin disease presents a high risk unless the disease has been treated and is no longer contagious.

14.2 Dermatoses

- 14.2.1 Mild endogenous eczema is acceptable but the Medical Practitioner should be satisfied that the condition will not be aggravated by exposure to oils, detergents or other substances at work to a degree sufficient to render the applicant unfit for duty at sea.
- 14.2.2 Psoriasis, not associated with polyarthritis, is acceptable.

15. Haemopoietic disease

- 15.1 Routine blood tests are not required for assessing medical fitness unless clinically indicated, for example there are clinical signs of anaemia, lymphadenopathy or haemarthroses.
- 15.2 Coagulation disorders such as Factor VIII deficiency present a high risk because it will not usually be possible to treat an acute traumatic haemorrhage at sea with replacement of clotting factors.
- 15.3 Leukaemias and myeloproliferative diseases present a high risk.
- 15.4 Chronic lymphatic leukaemia if mild and asymptomatic may be acceptable.

16. Infectious diseases

- 16.1 Active infectious disease presents a high risk. Tuberculosis and contagious skin diseases are mentioned in the relevant sections.
- 16.2 Catering staff must be free of enteric diseases, including Hepatitis A. Engineers may be exposed to sewage (e.g. maintaining sewage treatment plants) or may work on vessel's water supply systems should be actively and reliably protected against Hepatitis A virus infection. It is strongly recommended that these staff members receive a complete course of active immunisation before commencing work in these areas. Applicants who have previously had Hepatitis A will have lifelong immunity against re-infection and would not require active immunisation or booster doses of Hepatitis A vaccine. Evidence of immunity must be sought from the applicant and documented.

- 16.3 Blood borne infections, such as Hepatitis B and C or HIV are not a bar to employment as a seafarer however may present a problem in terms of infection risk via exposure to infected blood. Any seafarer who is identified as presenting such a risk of infection should be advised to ensure that appropriate arrangements are in place so that adequate precautions can be taken in the case of relevant injuries.
- 16.4 Medical Practitioners must consider carefully whether blood borne infections may require ongoing medication or have longer term consequences which may compromise fitness and safety.

17. Neoplasms

- 17.1 Neoplasms of any type have the potential to disqualify an applicant from duties at sea because of:

- acute symptoms, e.g. hemianopia with pituitary tumours,
- complications e.g. pulmonary emboli,
- side-effects of treatment/medication, e.g. immunosuppression, anaemia, nausea.

Frank malignant disease presents a high risk. Applicants must be carefully reassessed after a diagnosis of cancer is confirmed and treatment instituted. The natural history and prognosis of the neoplasm must be taken into account. The progress and likelihood of complications of the disease or its treatment must also be carefully evaluated.

18. Assessment of older seafarers

- 18.1 It is common for seafarers to work well beyond 65 years of age. While illness and medical disorders become increasing problems from 55 years onwards, (especially Diabetes and Cardiovascular Disorder), many older seafarers can meet the required state of medical fitness and physical activity for safe work at sea for extended periods of time. In a small number of cases where reduced cognitive function or memory is suspected, brief clinical screening with a clinical screening instrument such as the Montreal Cognitive Assessment (MoCA) is to be used. (See Section 9.6.2)
- 18.2 When assessing older seafarers, the primary consideration is that they should be in reasonable health and safe to work at sea:
- be fit mobile active and able to do their work tasks safely and efficiently;
 - meet these medical standards including visual acuity/ colour vision;
 - be able to perform physically demanding work;
 - be medically able to work shift work; and
 - be able to be part of a fire fighting team and assist in emergency situations and evacuations.

- 18.3 Where there is any doubt about mobility or other physical capability issues, the Medical Practitioner should consider a functional assessment. Medical Practitioners should be guided by the findings in their final determination of fitness for sea service.



Annex 1. Job task analyses

- Table 1: Master (Inland waters) NC, Master <24 metre NC, Master <45 metre NC and <100 metre NC, Sailing Master Coastal NC and Sailing Master Offshore NC
- Table 2: Marine Engine Driver Grade 3 NC, Marine Engine Driver Grade 2 NC, Marine Engine Driver Grade 1 NC and Engineer Class 3
- Table 3: Coxswain Grade 3 NC, Coxswain Grade 2 NC and Coxswain Grade 1 NC
- Table 4: General Purpose Hand NC

Table 1: Master (Inland waters) NC, Master <24 metre NC, Master <45 metre NC, Master <100 metre NC, Sailing Master Coastal NC and Sailing Master Offshore NC

1. Vision	<ul style="list-style-type: none"> • read instruction manuals, drawings, procedures, etc. • read charts and weather maps • distinguish red/white/green navigation lights • distinguish coloured light alarms • observe aspect of other vessels • read radar, GPS and other monitors/screens (digital, analogue and graphic) • identify navigation lights from beacons, buoys, lighthouse towers, other vessels • keep watch for obstacles to navigation • standing watch – night vision and depth perception
2. Hearing/speech	<ul style="list-style-type: none"> • give/take instructions • communicate by 2-way radio and telephones • use hands free headsets to communicate by radio • hear and distinguish different auditory alarms • listen to machinery e.g. engine
3. Consciousness	<ul style="list-style-type: none"> • alert to changes in machinery vibration e.g. engines • alert to movements of other vessels and ancillary craft • interpret complex information from digital, analogue and graphic computerised monitoring equipment e.g. radar, GPS, electronic charts, compass • alert to and respond to alarms (visual and auditory) • alert to changes in weather • high level decision-making in emergencies • responsible for safety of vessel's crew, passengers and safety of vessel • alert to vessel movements and position of crew
4. Physical	<ul style="list-style-type: none"> • climb narrow, steep stairs • climb 3 metre rope ladders at sea • climb mast • climb steel rungs/ladders • lift hatch covers • fine motor skills to plot courses on charts, use keyboards on computer, rotate knobs, pull levers, push buttons • assist with lifting, manual labour e.g. lifting cylinders, 25 litre drums etc. • cleaning/maintenance of accommodation e.g. bending, reaching, scrubbing, and wiping (varies from vessel to vessel) • place tags for safety checks • handle cargo on deck • handle wires, chains and ropes • hook and unhook tows
5. Other	<ul style="list-style-type: none"> • work shiftwork (4 to 12 hour watches) • away at sea for extended periods (>7 days) • occasional long hours of work (>12 hours) • use computers to write reports and maintain records (log, incidents/accidents, safety management systems) • plan vessel maintenance, repairs and work schedules • fit through escape hatches • work at high temperature, humidity and/or in extreme cold & in storms/cyclones etc. • wear personal protective equipment e.g. safety boots, earplugs or earmuffs, hard hat, gloves, overalls, safety spectacles and occasionally respirators • use computers to write reports and maintain records (log, incidents/accidents, safety management systems) • check and use fire-fighting equipment e.g. hoses and fire extinguishers, etc. • check and use life-saving equipment e.g. life rafts, life jackets, pyrotechnics, etc. • check electronic equipment e.g. radio, radar, electronic charts, etc. • enter confined spaces e.g. oil, ballast, voids and water tanks, etc. • work with heavy seas on deck • work in conditions involving heavy rolling and pitching of vessel

Table 2: Marine Engine Driver Grade 3 NC, Marine Engine Driver Grade 2 NC, Marine Engine Driver Grade 1 NC and Engineer Class 3 NC

1. Vision	<ul style="list-style-type: none"> • read gauges, dials, etc. • read computer screens/monitors, etc. • read instruction manuals, drawings, procedures, etc. • read labels on chemical containers (hazardous materials) • near vision for callipers and other instruments • near vision for identifying and using nuts, bolts, screws, pins etc.
2. Hearing/speech	<ul style="list-style-type: none"> • give/take instructions • communicate by 2-way radio and telephones • use hands free headsets to communicate by radio • hear and distinguish different auditory alarms • listen to machinery e.g. engine
3. Consciousness	<ul style="list-style-type: none"> • alert to changes in machinery vibration e.g. engines • interpret complex information from monitors and gauges on instrument control panels in engine room • alert to and respond to alarms (visual and auditory) • respond to emergencies
4. Physical	<ul style="list-style-type: none"> • lifting and carrying machinery parts e.g. pipes, motors, pumps up to 40 kg (two person lift) • lifting and carrying 25 kg containers of chemicals • use lathes, circular saws, hand tools, grinders & pedestal drill • welding/oxy-cutting • fine manual dexterity in placing nuts, bolts, screws • rotating valve handles, levers, etc. • pulling knobs and levers, pushing buttons to operate machinery/equipment • climbing steep stairways, steel rung ladders, rungs on masts and onto vessel's crane • standing and walking most of the shift • working in awkward postures • entering and working in confined spaces e.g. oil, ballast, voids, water tanks, etc. • working overhead • cleaning/maintenance of accommodation e.g. bending, reaching, scrubbing, wiping, etc. (varies from vessel to vessel)
5. Other	<ul style="list-style-type: none"> • work shiftwork (4 to 12 hour watches) • away at sea for extended periods (>7 days) • occasional long hours of work (>12 hours) • use computers to write reports and maintain records (log, incidents/accidents, safety management systems) • plan vessel maintenance, repairs and work schedules • fit through escape hatches • work at high temperature, humidity and/or in extreme cold & in storms/cyclones etc. • wear personal protective equipment e.g. safety boots, earplugs or earmuffs, hard hat, gloves, overalls, safety spectacles and occasionally respirators • use computers to write reports and maintain records (log, incidents/accidents, safety management systems) • check and use fire-fighting equipment e.g. hoses and fire extinguishers, etc. • check and use life-saving equipment e.g. life rafts, life jackets, pyrotechnics, etc. • order engine room stores • exposure to heat and fumes • safe handling of chemicals • work in conditions involving heavy rolling and pitching of vessel

Table 3: Coxswain Grade 3 NC, Coxswain Grade 2 NC and Coxswain Grade 1 NC

1. Vision	<ul style="list-style-type: none"> • read instructions, procedures and manuals • read charts and weather maps • distinguish red/white/green navigation lights • distinguish coloured light alarms • observe aspect of other vessels • read radar, GPS, compass and other monitors/screens (digital, analogue and graphic) • identify navigation lights from beacons, buoys, lighthouse towers, other vessels • keep watch for obstacles to navigation • standing watch – night vision and depth perception • near vision for identifying shackles, markings on slings, bolts, nuts, screws etc. • read gauges, dials, etc.
2. Hearing/speech	<ul style="list-style-type: none"> • give/take instructions • communicate by 2-way radio • use hands free headsets to communicate by radio in rough seas • alert to and respond to alarms (visual and auditory) • listen to machinery e.g. engine
3. Consciousness	<ul style="list-style-type: none"> • alert to movements of other persons, operating machinery, etc. • monitor equipment including radar, digital and analogue read outs on gauges, GPS, compass • respond to emergencies
4. Physical	<ul style="list-style-type: none"> • manual dexterity to tie knots, splice rope, repair/use canvas tarpaulins, place slings, use pliers, spanners & other hand tools • pulling knobs and levers, pushing buttons to operate machinery/equipment • reaching and working overhead • lift stores • climbing vessel's rope ladders (3m) in rough seas • lifting weights up to 40 kg (two person lift) • use powered and hand tools • mooring/unmooring vessels • standing for long periods (4 hours) • cleaning e.g. bending, reaching, scrubbing, and wiping
5. Other	<ul style="list-style-type: none"> • work shiftwork (4 to 12 hour watches) • occasional long hours of work (>12 hours) • work at heights • work in high temperature, humidity and/or in extreme cold, and in storms, cyclones etc. • fit through escape hatches • vessel's fire and safety rounds – inspect all areas regularly • plan vessel maintenance, repairs and work schedules • wear personal protective equipment e.g. safety boots, earplugs or earmuffs, hard hat, gloves, overalls, safety spectacles and occasionally respirators • exposure to paints, thinners, oils, antifoul, degreasers • entering and working in confined spaces e.g. oil, ballast, voids, water tanks, etc. • working overhead • work in conditions involving heavy rolling and pitching of vessel • check and use fire-fighting equipment e.g. hoses and fire extinguishers, etc. • check and use life-saving equipment e.g. life rafts, life jackets, pyrotechnics, etc.

Table 4: General Purpose Hand NC

1. Vision	<ul style="list-style-type: none"> • read instructions, procedures and manuals • distinguish red/white/green navigation lights • distinguish coloured light alarms • observe aspect of other vessels • read compass and other monitors/screens (digital, analogue and graphic) • identify navigation lights from beacons, buoys, lighthouse towers, other vessels • keep watch for obstacles to navigation • standing watch – night vision and depth perception • near vision for identifying shackles, markings on slings, bolts, nuts, screws etc. • read gauges, dials, etc.
2. Hearing/speech	<ul style="list-style-type: none"> • give/take instructions • communicate by 2-way radio • use hands free headsets to communicate by radio in rough seas • alert to and respond to alarms (visual and auditory)
3. Consciousness	<ul style="list-style-type: none"> • alert to movements of other persons, operating machinery, etc. • monitor equipment including compass • respond to emergencies • generally assist the coxswain, master or engineer
4. Physical	<ul style="list-style-type: none"> • manual dexterity to tie knots, splice rope, repair/use canvas tarpaulins, place slings, use pliers, spanners & other hand tools • pulling knobs and levers, pushing buttons to operate machinery/equipment • reaching and working overhead • lift stores • climbing vessel's rope ladders (3m) in rough seas • lifting weights up to 40 kg (two person lift) • use powered and hand tools • mooring/unmooring vessels • standing for long periods (4 hours) • cleaning e.g. bending, reaching, scrubbing, and wiping
5. Other	<ul style="list-style-type: none"> • work shiftwork (4 to 12 hour watches) • occasional long hours of work (>12 hours) • work at heights • work in high temperature, humidity and/or in extreme cold, and in storms, cyclones etc. • fit through escape hatches • vessel's fire and safety rounds – inspect all areas regularly • plan vessel maintenance, repairs and work schedules • wear personal protective equipment e.g. safety boots, earplugs or earmuffs, hard hat, gloves, overalls, safety spectacles and occasionally respirators • exposure to paints, thinners, oils, antifoul, degreasers • entering and working in confined spaces e.g. oil, ballast, voids, water tanks, etc. • working overhead • work in conditions involving heavy rolling and pitching of vessel • use fire-fighting equipment e.g. hoses and fire extinguishers, etc. • use life-saving equipment e.g. life rafts, life jackets, pyrotechnics, etc.

Annex 2. Guidance in screening for colour vision

1. Need for good colour vision

Masters and coxswains need to be able to distinguish red, green and white navigation lights in order to be able to make correct decisions regarding the aspect of an approaching vessel, and regarding what action needs to be taken, if any, to avoid a collision. Confusion between such lights would lead to incorrect decisions being taken, with the potential for collision and resultant deaths, injuries (human or environment), and loss.

General Purpose Hands also need to distinguish red, green and white navigation lights to perform look out duties.

2. Tests

The Ishihara pseudoisochromatic plate test should be used to screen near coastal seafarers for colour vision impairment. If the individual passes the Ishihara test they are considered red-green colour safe and no further testing is required. However if the tests indicate colour confusion or impaired colour vision, further testing should be completed.

In the case of persons who require to undertake navigational duties, the further test should be the Holmes-Wright Type B lantern standard. This is a lantern test designed for maritime conditions. The test is conducted by some ophthalmologists, optometrists and the Schools of Optometry in various Universities around Australia.

3. Ishihara Test

The Ishihara pseudoisochromatic test (using either the full set of 38 plates or the abridged version of 24 plates) should be used.

A satisfactory response using the 24 page edition is two or less errors on plates 1-17. If the tests indicate impaired colour vision an Holmes-Wright Type B Lantern test should be performed.

4. Holmes Wright Type B Lantern Test

4.1 Standard

- 4.1.1 The lantern test is a practical test of a person's ability, in conditions simulated to represent a navigational situation, to recognise and discriminate between navigation lights used at sea.
- 4.1.2 A lantern test is conducted by means of a Holmes-Wright Type B lantern standard, which projects red, green and white lights viewed indirectly through a polished mirror at a virtual distance of six metres from the eyes. The large aperture of the lantern projects one coloured light at a time and the small apertures project two coloured lights side by side at a time. Each full circuit of the lantern contains nine settings of single large apertures or nine settings of small apertures. The small apertures of the lantern show any combination of two of the three colours.

- 4.1.3 A person who uses an aid to vision for a letter test is required to use the same aid to vision in the lantern test.
- 4.1.4 A person who does not use an aid to vision for a letter test is not permitted to use an aid to vision in the lantern test.
- 4.1.5 A person undergoing the lantern test must not wear a tinted aid to vision for the purpose of passing the test.
- 4.1.6 The lantern test must be conducted in a dark room from which daylight is excluded.
- 4.1.7 A person who requires to adapt to conditions of darkness is to be allowed up to 10 minutes complete or partial darkness in preparation for the lantern test.
- 4.1.8 A person is considered to have passed the lantern test if he or she correctly names the colours of one full circuit of large apertures, four full circuits of small apertures shown in sequence, and nine sets of small apertures shown at random.
- 4.1.9 The procedures specified in 4.1.10 to 4.1.16 should be followed if a person undertaking the lantern test fails to achieve a pass in accordance with 4.1.8.
- 4.1.10 At the first mistake in naming a colour correctly, the examiner must inform the person being tested of the mistake and continue the test, adding a further circuit.
- 4.1.11 If no further mistake is made in the test and the further circuit, the person being tested will be considered to have passed.
- 4.1.12 If a second mistake is made, the procedure under 4.1.10 and 4.1.11 is to be repeated.
- 4.1.13 If a third mistake is made, the test is to be repeated from the start after the person being tested has been given the opportunity to rest his or her eyes or regain composure.
- 4.1.14 In repeating the test under 4.1.13, the examiner is to record the result but not inform the person being tested of mistakes being made.
- 4.1.15 A person who in the repeated test under 4.1.13, correctly names all colours in accordance with 4.1.8 will be considered to have passed.
- 4.1.16 A mistake of red for green or green for red in the repeated test under 4.1.13 means failure of the Holmes-Wright Lantern test.
- 4.1.17 A person who has failed the lantern test may request a further test.

