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QUEENSLAND COASTAL PILOTAGE TRAINING PROGRAM

STUDY GUIDE

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Photo credits (l-r): Pilot ladder (AMSA), satellite photo of the Great Barrier Reef (NASA), pilot boat (Australian Reef Pilots). Website photos accessed December 2003.

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SECTION 1
PROGRAM OVERVIEW

Welcome to the Queensland Coastal Pilotage Training Program. To undertake the program, the trainee will need the following training documents:

- This **Study Guide**, which provides a detailed description of the training program and licensing requirements for Queensland coastal pilots

- A **Trainee Pilot's Workbook**, which each trainee must complete to demonstrate competence in various areas of pilotage work

- A **Training Licence**, which will be issued to each trainee for identification purposes

Trainees should ensure they have these training documents on commencement of their training.

CONTACT DETAILS

If you need to contact AMSA for advice or assistance on any aspect of the training program, please contact:

Manager, Ship Operations & Qualifications, AMSA
address   PO Box 2181, Canberra ACT 2601
phone   (02) 6279 5908
fax   (02) 6279 5056
email   mopilotage@amsa.gov.au

There is also a Coastal Pilots page (www.amsa.gov.au/SP/pilot/Pilot.htm) on the AMSA website. To again access to the site, please contact AMSA.

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PREAMBLE

The Australian Maritime Safety Authority (AMSA) is a Commonwealth Government authority charged, among other things, with responsibility for the regulation of coastal pilotage. AMSA's charter is to enhance efficiency in the delivery of safety and other services to the Australian maritime industry and to protect the marine environment.

The function of regulating coastal pilotage was transferred from the Marine Board of Queensland to AMSA as of 1 July 1993. Legislative power for regulation of pilot qualifications and operations is found in the *Navigation Act 1912* and detailed requirements are set down in Marine Orders.

In response to accepting responsibility for regulating coastal pilotage, AMSA has designed the Queensland Coastal Pilotage Training Program to facilitate the training of pilots for service on the Queensland coast and Torres Strait.

PILOT TRAINING

Persons undertaking the coastal pilotage training program will be of mature age and will have successfully completed the education, training and practical seagoing experience necessary to be awarded a certificate of competency as Master (Unlimited). The achievement of that award implies that candidates have the ability and self-discipline to undertake what is largely a self-directed program of training and the attitude and skills to participate productively in the 'master/apprentice' relationship on which this pilot training is premised.

This training program is also structured on the assumption that the trainee has accumulated practical seagoing experience and that he or she possesses substantial ship management and navigating skills. Therefore, the program is directed principally at the development of specialist local knowledge of particular waters and the higher level, cognitive skills which set the pilot apart from the normal navigating officers on a vessel.

TRAINING GOAL

Grabowski (1990, September *Journal of Navigation*, volume 43, number 3) provides a useful insight into the fundamental nature of the pilotage task:

> As in many 'decision making under uncertainty' scenarios, pilots while engaged in piloting are inundated with much information and required to make crucial decisions in real time. Piloting is an inherently judgmental activity. Pilots develop heuristics for transiting particular waterways.

The goal of this program is to develop a trainee who can competently and safely perform the duties of a coastal pilot. **Competency** as a coastal pilot means not only being able to perform the pilotage task, but also being able to demonstrate problem solving ability and skill in planning ahead.

This training program regards coastal pilotage as being an immediate, **pro-active**, anticipatory activity where familiarity with local conditions is the key to success. In this view, navigation tends to be a

more reactive activity, for which long term planning is the key. This is not to understate the importance of thorough preparation and planning for a pilotage; rather it is to emphasise the critical differences between the role of a coastal pilot and the Master and navigating officer of a ship.

Moreover, this program is designed to train pilots for pilotage in the only area in the world recognised by the international community as justifying compulsory pilotage due to the especially sensitive reef environment. The coastal pilot's responsibilities thus are to safely pilot a vessel through the route for which he/she is licensed and in doing so ensure the safety of life, the environment and property.

This training program is a total rewrite of the previous AMSA coastal pilot training program and satisfactory completion of the program requires the commitment and goodwill of trainees, supervising pilots and check pilots to achieve it's potential. All parties should consider carefully what the program aims to do and how. The following sections, therefore, set out:

- AMSA's requirements for issue of a coastal pilots licence and the licences available
- The purpose and structure of this training program
- AMSA's expectations of trainees
- Guidance to supervising pilots and assessing pilots and their respective roles

Please note:
A trainee pilot may not be in charge of any transit or be responsible for pilotage duties for which a licence must be held. Such responsibilities always are those of the (supervising or assessing) licensed pilot. This fact conditions the way in which a trainee may learn and be assessed.

TERMINOLOGY

The following definitions should be used for the purposes of this training program:

- **Licenced pilot**   A pilot holding an unrestricted licence for a route. A trainee pilot may accompany a licenced pilot on any voyage for familiarisation purposes

- **Supervising pilot**   A supervising pilot guides and instructs a trainee on training voyages, informally monitors the trainee's performance, and in general helps the trainee to become familiar with the coastal pilot's way of life. Any pilot holding an unrestricted licence for at least 5 years can be a supervising pilot.

- **Assessing pilot**   An assessing pilot conducts a formal assessment of a trainee pilot's competence as a coastal pilot as a final requirement of the training program. All assessing pilots must be check pilots.

- **Check pilot**   Check pilots are pilots licenced by AMSA as a check pilot.

ISSUE OF COASTAL PILOT LICENCES

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1   INITIAL AND FULL LICENCES

Licences for coastal pilotage are of two types: an initial licence (restricted operation) and a full licence (unrestricted operation).

The minimum requirements for an initial licence and the pilotage routes for which an initial licence must be sought are set out in this section.

1.1   MINIMUM REQUIREMENTS FOR AN INITIAL LICENCE

The Australian Maritime Safety Authority has laid down the minimum requirements that must be met to ensure eligibility for an initial licence as a coastal pilot. To be eligible a person must meet all of these requirements:

- be an Australian citizen or be entitled to permanent residence in Australia

- hold a valid certificate of competency as Master (Unlimited) or Certificate of Recognition issued under Marine Orders Part 3

- have completed not less than 36 months service (of which 18 months must have been within the previous 5 years) as navigating officer in charge of a watch, or pilot, on ships 35 metres or over in length while holding a Master (Unlimited)certificate

- Hold a valid certificate of medical fitness referred to in Marine Orders Part 9 (Health – Medical Fitness)

- have satisfactorily completed an approved program of training including Bridge Resource Management

Licensing is possible only upon satisfying all the above requirements. This training program is the approved program referred to.

A valid Master (Unlimited) certificate is required for the initial license as a coastal pilot. It is not a requirement for subsequent revalidation of the licence.

1.2   PILOTAGE ROUTES

AMSA will licence a person for service in the following routes:

- Inner Route including Torres Strait (Prince of Wales Channel)
- Hydrographers Passage
- Great North East Channel
- Whitsunday Islands (transit only)
- Whitsunday Islands (anchorage)

A person may seek a licence for one or all of the routes concerned and in undertaking this program, a trainee will select the areas relevant to the licence for which he/she is aiming. A trainee is free to undertake training for any or all routes at any time, but must bear in mind the following:

- It can be difficult to obtain the assistance of supervising pilots and arrange observer voyages.

- Training voyages are usually arranged through the pilot service provider with whom the supervising pilots are associated.

- No person is under legal obligation to act as a supervising pilot.

- It is at the discretion of a Master or shipowner to permit a trainee to accompany a pilot on a passage as an observer.

1.3   TRAINING LICENCE FOR TRAINEE PILOTS

A trainee pilot commencing the coastal pilotage training program will be issued with a licence by AMSA as a means of identifying the holder as a bonafide trainee pilot who is qualified to undertake the training program.

1.4   RESTRICTIONS TO INITIAL LICENCES

The demands of coastal pilotage are such that AMSA has decided that pilots with their *initial* licences be restricted in the vessels they may pilot to fulfil safe performance requirements. The restrictions are as follows:

- **Inner Route and Torres Strait (Prince of Wales Channel)**
  These routes are draught sensitive. Accordingly, a pilot holding a restricted licence is limited in the draught of the vessels, which he/she may pilot, and graduates to a full licence in the following stages, on completion of each of which his/her licence will be endorsed for the next draught limit:

  - twelve transits on vessels with a draught of not more than 10.0 metres*
  - six transits on vessels with a draught of not more than 10.5 metres
  - six transits on vessels with a draught of not more than 11.0 metres
  - six transits on vessels with a draught of not more than 11.5 metres

  Upon completion of these transits the pilot may apply for a licence for unrestricted operation as a coastal pilot in the Inner Route and Torres Strait.

- **Hydrographers Passage**
  A pilot holding an initial licence endorsed for service on ships transiting Hydrographers Passage may not pilot a loaded oil, gas or chemical tanker until the pilot has completed twenty transits of the Passage on other vessels. Upon completion of the required transits a pilot may apply for a licence without restriction for service for Hydrographers Passage.

  * Pilots holding an initial inner route licence should not undertake any of the first 12 voyages on ships over 15 knots

- **Great North East Channel**
  A pilot holding an initial licence endorsed for the Great North East Channel (GNEC) may not pilot a loaded oil, gas or chemical tanker until the pilot has completed two transits of the Channel. Upon completion of the required transits a pilot may apply for an unrestricted licence for the GNEC. A prerequisite for the issue of a GNEC licence is for the applicant to hold an Inner Route licence.

1.5   MEDICAL FITNESS REQUIREMENTS

A pilot applying for an initial licence must hold a current certificate of medical fitness as prescribed under Marine Orders, Part 9 'Health-Medical Fitness'. Application forms for a medical examination may be obtained from any office of AMSA where details of the standards, the fee payable and addresses of Medical Inspectors of Seafarers may be obtained. Please note that:

•   the medical requirements are currently identical to those required for the renewal of a certificate of competency.

•   it is the pilot's responsibility to ensure that his/her medical certificate is renewed every two years.

1.6   RENEWAL OF LICENCES

Coastal pilot licences are subject to renewal every two years. Renewals are dependent upon a minimum number of transits of each of the route(s) concerned in a period, a prescribed number of which must have been in the preceding twelve months.

An approved pilot's professional development course must have been completed within 4 years of making the application for renewal. Proof of attendance at an approved Bridge Management Course and evidence of a check pilot voyage for the route concerned (within the past two years) is required for the renewal of all licences.

THE TRAINING PROGRAM

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This training program provides a publicly available syllabus which details the requirements all persons aspiring to a coastal pilot's licence must fulfil. This program is so constructed as to also provide tangible evidence that the program has been completed and that the trainee has been found to have reached a standard that guarantees that he or she is fit to commence duty as a coastal pilot.

The training program is the product of a joint effort. It has been developed in consultation with many organizations and individuals, with the following as major contributors:

- practising coastal pilots
- the Australian Maritime Safety Authority (AMSA) as the licensing authority
- the Australian Maritime College (AMC) and the Flexible Learning Centre of the University of South Australia (UNISA), the initial team that developed the curriculum and produced the initial program material
- Pivot Maritime International which revised the program material in 2004

1.7   PROGRAM GOAL

It is important that the goal of this program be borne in mind at all times. The desired outcome is the development of a safe, competent coastal pilot; and to this end, the program requires trainees, supervising pilots and assessing pilots to consider qualitatively what being a coastal pilot involves.

This training package, therefore, is aimed at the development of competent trainees who can demonstrate their skills confidently to supervising and assessing pilots.

1.8   TRAINING APPROACH

Such an aim makes it obvious that the program is not based upon the traditional notions that ability can be indicated by the period spent in training and that training is simply a personal matter between trainee and supervisor.

Rather, the assessment of a trainee undertaking this program is summative: it is the outcome of the process of training. To this end, AMSA has devised a program that allows the trainee to undertake detailed study and practice at his or her own pace, benefiting from whatever relevant background experience he or she has had. Thus, it is reasonable to expect that a person who has had extensive navigational experience of the particular route for which a licence is sought will be ready for assessment more quickly than someone who has had no prior experience of the waters concerned.

The time necessary to train to a suitable standard is also influenced by other factors, such as aptitude and speed of learning, as well as factors which are largely outside the control of the individual trainee, such as the availability of opportunities to observe on voyages.

When the trainee feels that he or she can formally demonstrate that mixture of knowledge, skill and judgement that is the basis of performing a task or a sequence of tasks, whether straightforward or complex, which characterise the demands upon a coastal pilot, he or she may request assessment.

Successful assessment is the goal and the end point of training. Where the trainee and supervisor have cooperated closely in the trainee's progress, success should be expected. The process of assessment will be explained in detail later.

1.9   PROGRAM STRUCTURE

The term 'structured' is applied to the program for two reasons. Firstly, it is constructed around the different areas of knowledge and skills required for successful training as a coastal pilot. Secondly, the program is structured in such a way as to provide documentary evidence of orderly learning and detailed assessment.

This program is designed to do two things:

- Firstly, it establishes a structured, comprehensive program which a trainee is expected to follow and complete in relation to the routes for which a licence is sought. It is designed to incorporate, in ways a trainee studying 'on-the-job' may follow effectively, a list of general and essential, route-specific knowledge to supplement the guidance which will be received from the supervising pilot. To assist, some appropriate secondary sources are suggested.

  Supervising pilots, of course, will also benefit from the structured approach. The explanatory sections and associated check lists should ensure that all required aspects of any route are covered methodically. Similarly, the program will show what has been assessed and what remains to be assessed.

- Secondly, the program provides a tangible record of the fact that a trainee has done what is asked of him or her and that the requirements of the program have been satisfied as demonstrated by the signatures of the assessing pilots. The program also provides the pilot with a factual basis on which to form opinions about the readiness of a trainee for licensing.

The satisfactory completion of this program is dependent upon trainees, supervising pilots and assessing pilots bringing a positive attitude to the tasks involved. The completeness of a trainee's study is important. So too are the questions and answers that are the basis of the continuing interaction between trainee and supervisor which are critical to the success of this training and the maintenance of standards of safe coastal pilotage.

In AMSA's view it is essential to the success of this program that trainees, supervising pilots and assessing pilots accept what is asked of them under the program and act accordingly.

1.10   THE IMPORTANCE OF SELF LEARNING

The training program puts strong emphasis on the notion of self-learning and what it means to AMSA, the licensing authority.

As explained throughout, this coastal pilotage training program is premised on the idea that it will be undertaken by experienced seafarers engaging in a program of personal study under the guidance of supervising pilots with the benefit of practical observations on training voyages.

The training program establishes the structure within which learning may be organised and against which 'completeness' may be controlled and tested. It is, however, up to the trainee to seek out the knowledge and to identify and practise the critical skills through interaction with the supervising pilot and by engaging in exercises or simulations.

The success of this kind of training depends heavily on the way a trainee and a supervising pilot relate to one another and to the way that knowledge, skills and experiences are shared and evaluated.

1.11   COMPONENTS OF THE TRAINING PROGRAM

The training program has two main components:

- This **Study Guide**, which contains:
    - a detailed overview of program requirements (Section 1)
    - the self-study modules that a trainee must complete (Section 2)
    - assessment details (Section 3)

- A **Trainee Pilot's Workbook**, which a trainee pilot must complete to provide details of his or her practice and assessment voyages

As the trainee works through each module in the study guide, he or she must keep a record of the activities undertaken and information acquired. To that end, and as evidence that the requirements of this program have been met, AMSA requires that a trainee maintain a personal workbook in which to record the activities he or she has undertaken during the completion of the modules.

The workbook will help indicate to supervising pilots the progress the trainee is making as well as areas requiring further attention. It will also, of course, form an invaluable resource in a pilot's working life and act as a resource on which the pilot may build as part of a commitment to career long professional development.

The training program is a minimum guide only in the professional training of a coastal pilot and the requirements of the program are not inflexible. However, AMSA expects that while a trainee may add to the matters covered, there will be no significant omissions. With the experienced guidance of the supervising pilot, the trainee is expected to comprehend the essentials of the course and to mould that learning into a personal approach to the pilot's task. This means that there is no 'right' way to present material or to express an understanding of any aspect of piloting.

Supervising pilots are asked to recognize and respect this fact. The corollary is that trainees must recognize and respect the knowledge and experience of supervising pilots and understand the opportunity they have to develop and test themselves with a fellow professional.

1.12 SELF STUDY MODULES

The training program covers three areas of study: background knowledge, common procedures and processes, and local area knowledge. To assist the trainee, section 2 of the study guide provides guidance and information that the trainee is expected to study on his or her own.

MODULE 1: BACKGROUND KNOWLEDGE

Coastal pilotage is not simply a matter of local knowledge and navigational and ship handling skills. This section covers topics which are necessary background to understanding the pilot's role and to carrying it out effectively and safely.

Not least among these topics is the topic of communication. The coastal pilot may find him/herself dealing with a crew speaking a number of different languages and representing a wide variety of cultures. The safety implications of effective interpersonal communication (including knowing what to expect with regard to cultural attitudes and mores, courtesies and relationships) are obvious.

Trainees must also recognise that, especially with the introduction of compulsory pilotage, they are representatives of, or ambassadors for, this country.

Background knowledge is reflected in the manner a trainee prepares for a pilotage and in the thoroughness of that preparation, as well as in the understanding a trainee displays about the pilot's role. Supervising pilots should observe the attitudes and understanding of their trainees when assessing and encouraging them.

MODULE 2: COMMON PROCEDURES AND PROCESSES

A methodical, detailed approach to preparation and planning for a pilotage, as well as in the conduct of the transit is essential. This module guides the trainee through each stage of a pilotage, aspects of which will also be reflected in the trainee's workbook.

MODULE 3: LOCAL AREA KNOWLEDGE

The title of this module is self-explanatory. The details to be documented and learned are presented in the form of a checklist to ensure that nothing is left to chance.

Clearly, special local knowledge is the principal quality a coastal pilot has to offer the client and the Australian and world communities in protecting the specially sensitive reef environment.

The trainee will identify the areas relevant to the route for which a licence is sought and develop personal reference material in his or her workbook.

1.13 ASSESSMENT OF COMPETENCE

Formal assessment is the concluding activity of the training program. Assessment requirements are summarized below and discussed in greater detail in section 3 of the study guide. Assessment details are also found in the workbook.

ASSESSMENT RECORD

The assessment record is critical to the success of the program as it provides a tangible record of the thoroughness of training and of the standard achieved.

The thoroughness of training is reflected in two ways:

- the trainee's completed workbook
- the signatures of assessing pilots against local knowledge requirements

These formal assessment checks show that the program has been covered. They are relatively straightforward, dealing with materials that with experience will involve no mystery to trainees and which will be thoroughly familiar to supervising and assessing pilots.

Assessing whether a trainee has achieved the training standard, however, is less straightforward and requires discussion.

COMPETENCY OF TRAINEES

Competency is a key concept in assessment. **Competencies** are concerned with outcomes and are implicit in things done, that is, in activities. Formal assessment of trainee pilots is aimed at evaluating their ability to safety undertake pilotage of the route(s) for which they are seeking a licence. It is the final stage and represents the outcome of the training program.

Of necessity, competencies are based upon a comprehensive integration of relevant knowledge and skills, and this integration is made evident in the way things are done. This training program aims to develop knowledge and skills that enhance those acquired while training for certification, as well as augmenting other skills developed during the time that trainees worked as ships' officers at the levels and for the periods required for entry into this program.

The program is based on on-the-job learning for the trainee who must develop requisite knowledge and skills during training voyages under the guidance of supervising pilots and demonstrate such knowledge and skills during formal assessment voyages under the supervision of assessing (check) pilots.

1.14   STUDY AND REFERENCE MATERIALS

Piloting is not simply a matter of practical experience, though that of course is the largest single factor in the licensed pilot's armoury of skills and knowledge. The list of materials provided below is a minimum of the sources from which necessary information may be obtained.

Thus, for example, a trainee must know the legal position of a pilot under Marine Orders Part 54 and the *Great Barrier Reef Marine Park Amendment Act 1991*. A trainee will already be familiar with the international conventions that govern much of the seafarer's professional life.

The materials also point to information on navigational aids, tides and other technical data. There are also references to articles dealing in an introductory way with professional and commercial aspects of piloting.

AMSA does not require that a trainee obtain these materials. However, coastal pilotage is a profession requiring continuing self-learning. These references provide a convenient starting point for that personal commitment to the maintenance of professional standards expected of pilots.

All of these publications are maintained in a library at AMSA head office in Canberra. Pilots and trainees may borrow any of these publications for short periods at no charge.

RECOMMENDED READING

Haigh, Goodchild & Syms. *Voyage Planning: A Standard Procedure*. Pivot Maritime, Launceston.

Swift A J. *Bridge Team Management* London: Nautical Institute.

The Nautical Institute. *Pilotage and Shiphandling*. London: The Nautical Institute.
International Chamber of Shipping (1998). *Bridge Procedures Guide*. (1998). 3rd edition. London: Marisec.

United Kingdom, Hydrographer of the Navy. *Admiralty List Of Radio Signals* (current edition).
Taunton, Somerset Hydrographer of the Navy. [Most volumes are published annually]. The volume titles are:
Volume 1: Coast Radio Stations
Volume 2: Position Fixing Systems and Time Signals
Volume 3: Maritime Safety Information Broadcasts
Volume 4: Meteorological Observation Stations
Volume 5: Global Maritime Distress and Safety System
Volume 6: Pilot Services and Port Operations
Volume 7: Vessel Traffic Services and Reporting Systems

Australian Maritime Safety Authority (2002). *Australian Global Maritime Distress and Safety System (GMDSS) Handbook*. (5th Edition) Canberra: AMSA

Australian Communications Authority (1998) *Marine Radio Operators Handbook*. Melbourne: ACA

Australian Maritime Safety Authority *Marine Notices* (relevant subjects). Canberra: AMSA.

Australian Maritime Safety Authority. *Advisory Notes to Coastal Pilots* Canberra: AMSA.

Australian Maritime Safety Authority. *Tide Tables: Torres Strait and Great Barrier Reef* (current year). Canberra: AMSA.

Australian Maritime Safety Authority, Queensland Transport *AUSREP and REEFREP Ship reporting instructions for the Australian area*. Canberra: AMSA
Australian Maritime Safety Authority, Queensland Transport *Reef Guide - A Shipmaster's Handbook to the Torres Strait and the Great Barrier Reef*. Canberra: AMSA and Queensland Transport

Queensland Transport. *The Official Tide Tables and Boating Safety Guide* (current year). Brisbane: Queensland Department of Transport [Contains useful sections on Queensland official tide tables; Queensland coastal weather/cyclones and coastal radio /SAR contact and communications.]

United Kingdom, Hydrographer of the Navy (2002). *Australia Pilot*, volume 3: East Coast of Australia (NP15). 9th edition. Taunton, Somerset Hydrographic Office

United Kingdom, Hydrographer of the Navy (1989). *The Mariner's Handbook* (NP100). 6th edition. Taunton, Somerset Hydrographic Office

Royal Australian Navy. Hydrographic Service. *Annual Australian Notices to Mariners* (current year). Canberra: RANHS.

Royal Australian Navy. Hydrographic Service. *Australian Seafarers Handbook* Canberra: RANHS.

Royal Australian Navy. Hydrographic Service. *Australian National Tide Tables* (AHP11) (current year). Canberra: RANHS.

Australian Maritime Safety Authority (1995). *Ship-Helicopter Transfers, Australian Code of Safe Practice*. Canberra: AMSA

LEGISLATION AND REGULATION

Relevant government publications include legislation and associated regulations enacted by state, Commonwealth and international assemblies (such as the International Maritime Organization of the United Nations). Australian government publications are available from any AGPS bookshop or from the appropriate websites.

Great Barrier Reef Marine Park Act 1975 (Commonwealth)

Great Barrier Reef Marine Park Amendment Act 1991 (Number 121 of 1991) (Commonwealth)
      Great Barrier Reef Marine Park Regulations
      Great Barrier Reef Marine Park Regulations (Amendment)

Great Barrier Reef Marine Park Authority *Great Barrier Reef Marine Park: Far Northern Section Zoning Information.* Townsville, Qld: GBRMPA.
And similar, for:
> Far Northern
> Cairns/Cooktown
> Townsville/Whitsunday
> Mackay/Capricorn

Navigation Act 1912 (Commonwealth)
> Marine Orders (Canberra: AMSA)
> Part 3: Sea-going Qualifications
> Part 9: Health-Medical Fitness
> Part 23: Miscellaneous Equipment and Safety Measures
> Part 54: Coastal Pilotage
> Part 56: REEFREP
> Part 57: Helicopter Operations

Protection of the Sea (Prevention of Pollution from Ships) Act 1983 (Commonwealth)
Queensland Marine Safety and Pollution Prevention Legislation (available from the Queensland Government Bookshop)

Seas and Submerged Lands Act 1973 (Commonwealth)

IMO CONVENTIONS, RESOLUTIONS AND PUBLICATIONS

International Maritime Organization (1995). *GMDSS Handbook Handbook on the Global Maritime Distress and Safety System.* (2nd Edition) London: IMO.

International Maritime Organization Marine Environment Protection Committee (1990). *Identification of the Great Barrier Reef as a Particularly Sensitive Area*. Resolution MEPC 44(30) - 16 November 1990.

International Maritime Organization Marine Environment Protection Committee (1990). *Protection of the Great Barrier Reef Region*. Resolution MEPC 45(30) - 16 November 190.

International Maritime Organization (1997). *SOLAS*. Consolidated edition, 1997. London: IMO.

International Maritime Organization (1985). *Standard Marine Navigational Vocabulary*. London: IMO.

International Maritime Organization Assembly. *Use of Pilotage Services in the Torres Strait and the Great North East Channel.* Resolution A710(17) - 16 November 1991.

International Maritime Organization Assembly (1981). *Use of Standard Marine Navigational Vocabulary.* Resolution A.488(12) - 19 November 1981.

International Maritime Organization (1997). *MARPOL 73/78*. Consolidated edition, 1997. London: IMO.

SUPPLEMENTARY READING

Australian Maritime Safety Authority. *National Marine Oil Spill Contingency* Canberra: AMSA

Foley, John CH (1987). *Coral Gateway- the Hydrographers Passage Story.* Aspley, Qld: Nairana Pty Ltd

Great Barrier Reef Marine Park Authority (1982, November). *Cook, Cays and Corals - a Bibliography of Publications about the GBRMP, Cairns Section.* Townsville, Qld: Great Barrier Reef Marine Park Authority.

Hundloe, Tor (1985). *Fisheries of the Great Barrier Reef.* Townsville, Qld: GBRMPA.

Irving C M (1996). *Marine Pilot Safety* London: Nautical Institute.

Mort, SW (1993). *Points North - Points of General Interest Between Cairns and Torres Strait Thursday Island:* Torres Industries.

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ROLES AND RESPONSIBILITIES OF TRAINEE, SUPERVISING AND ASSESSING PILOTS

This section outlines specific guidelines and instructions for trainee, supervising and assessing pilots in the conduct and completion of the training program. Questions not answered by these notes should be raised in the first instance with the:

Manager, Maritime Operations – North, AMSA
address   PO Box 10790, 410 Ann St, Brisbane QLD 4000
phone   (07) 3001 6800
fax   (07) 3001 6801

Assessment details are discussed in section 3 of the study guide. They are also found in the workbook.

1.15   NOTES TO THE TRAINEE PILOT

AMSA will license only those persons who are able to show proof that section 3 of the program has been duly completed.

Coastal piloting is qualitatively different from the tasks and responsibilities of a Master or deck officer. This training program is designed to elaborate on the pilot's role and responsibilities. It identifies the aspects AMSA considers essential. It should result in the development of a personal resource of continuing relevance and usefulness in the form of the workbook. Preparation of the workbook should also establish and reinforce study habits relevant to coastal piloting and continuing (self) education.

TRAINEE'S ROLES AND RESPONSIBILITIES

It is the trainee's immediate responsibility to undertake the work required by the program and to establish a purposeful relationship with supervising pilots. Similarly, it is the trainee's responsibility to be thoughtfully watchful on observer trips without being intrusive.

Remember that at all times the pilot is responsible for the conduct of his or her duties; assisting a trainee is an additional task. It is necessary, therefore, that a trainee cooperate with supervising pilots at all stages of training and assessment.

The trainee's primary purpose is to learn the trade: the term is all encompassing and requires more than mechanical learning. At all times the trainee should attempt to relate facts and perceptions of skills required to the task of piloting in particular situations.

TRAINEE PILOT'S WORKBOOK

Piloting is an essentially practical profession requiring the application of knowledge, skills and judgment to the identification and appreciation of risk factors and to devising strategies to overcome them to achieve a safe passage. In short, it is the view of AMSA that coastal piloting is an activity requiring judgment, problem solving skills and decisiveness underpinned by the substance of detailed

knowledge and developed understandings of routes and their requirements.

The relevance of all aspects of the training program is therefore evident. For this reason AMSA requires that trainees record their notes and observations on the workbook. Trainees are required to show their workbooks to supervising and assessing pilots. They are also required to allow the Manager, Maritime Operations - North to inspect the workbook at the time they apply for a licence.

Granting a licence is thus, in part, contingent upon proof of background study as well as upon the assessment of competence by assessing pilots. Nevertheless, the latter remains the principal guarantee of competence.

Read the following notes to supervising pilots and assessing pilots carefully and recognize their role in this program. It is up to trainees as much as to the supervisors and assessors to make this program effective and productive.

1.16   NOTES TO THE SUPERVISING AND ASSESSING PILOT

What is to be assessed and how? What does signing off a program mean? These notes are offered to assist the supervising and assessing (check) pilot answer these questions. Trainees are advised to become familiar with what supervising and check pilots are being asked to do and to cooperate with them as fully as possible.

GENERAL REQUIREMENTS

A supervising and assessing pilot must have an unrestricted licence to operate in, the route for which training or assessment is being sought by the trainee.

Only check pilots can be assessing pilots.

GUIDANCE, ADVICE AND MONITORING: SUPERVISING PILOTS

Supervising pilots are asked to:

- act as guides and advisers to ensure effective learning by trainees
- be a resource for trainees, who will need to draw upon knowledge, understandings and unrecorded 'tricks of the trade' often not available elsewhere
- monitor progress of a trainee's workbook for accuracy and completeness

Awareness of the trainee's progress along the way will assist a supervising pilot in preparing the trainee for the formal assessment stage. Supervising pilots are asked to read the three modules in section 2 of this study guide to establish how a trainee is progressing and on what areas the trainee needs advice in terms of knowledge and skills development concerning:

- background knowledge (module 1)
- common procedures and processes (module 2)
- local knowledge (module 3)

The trainee is expected to know and be able to demonstrate a detailed knowledge of all the factors listed in the modules above. To ensure completeness, the areas of study concerned are specified in the section and checklists provided in the workbook.

AMSA expects that a trainee will develop a personal workbook reflecting the elements of pilotage knowledge and practices set out in this package. In so doing, the trainee will need to ask for the assistance of supervising pilots to ensure adequate coverage of required knowledge and that it is accurately and comprehensively recorded.

Regular discussion and checking of the workbook is a valuable learning tool. Commitment of this detail to memory only by the trainee is not satisfactory and provides supervising pilots with no tangible basis on which to assist and guide them.

Remember that the workbook is the trainee's personal resource and may be organised in a format that a supervising pilot might not wish to use. The only criterion concerning the way workbooks are to be put together is that they be effective for the trainee.

Checking the workbook is part of the invaluable, if informal advice and guidance a supervising pilot can offer a trainee. It is also an effective basis from which to informally check the trainee's understanding of the material he/she is collecting. This is probably best done on a question and answer basis, which, if appropriate, may be supplemented by sketches or diagrams, which of course should then be incorporated, if appropriate, into the workbook.

Checking may be done aboard ship or ashore, in an operational context or not. Checking is at the discretion of the supervising pilot who may check an item from time to time or ask for regular reporting arrangements while associated with the trainee. Such arrangements are at the discretion of the supervising pilots.

As a result of any checking, a supervising pilot may advise the trainee that the information collated on an area is sufficient or insufficient, accurate or not, up-to-date or obsolete and so on. This is a matter of guidance based on experience and, therefore, is a judgment for the supervising pilot to make. A supervising pilot may wish, for example, to advise different learning and/or research strategies or to point out areas requiring additional effort.

Alternatively, the pilot may be prepared to advise that documentation and understanding (here understood as the ability to effectively make use of knowledge and skills in practical circumstances) are adequate. In short, checking the workbook allows a supervising pilot to know how completely and accurately the trainee has researched and understood critical local knowledge. It allows the supervising pilot to offer advice where it is needed and ensures that the trainee's learning is as efficient as possible.

This checking is informal and an active part of the trainee's learning process. AMSA does not require that a record be kept of such checks.

FORMAL ASSESSMENT: ASSESSING PILOT

As a final requirement, the program requires that the trainee be formally assessed against or in terms of the route-specific local knowledge requirements and the overall requirements for safe piloting in specified parts of particular routes. The following notes are a guide to this essentially subjective activity.

Role of the assessing pilot. Formal assessment involves evaluating or appraising the quality of the training outcome. Because of the strong elements of judgment implicit in pilotage, this training program relies upon the professional integrity and expertise of practising, senior pilots to recommend to AMSA that, to the best of their judgment, the performance of a trainee is such that the pilot is prepared to support the trainee as ready to provide pilotage services for the route(s) concerned.

The activities on which AMSA expects an assessing pilot to base that judgment are discussed below. Nevertheless it is worth reiterating that *at no stage is a trainee to act as pilot. Assessment is not to be based upon the trainee actually having responsibility for the piloting of a vessel.* An assessing pilot may, however, allow a trainee to actually conduct hands on pilotage under the close supervision of the assessing pilot. This may be an appropriate method for assessing competence of a trainee approaching completion of the training program.

Signing off. An assessing pilot is asked to sign off specific activities to indicate that the trainee has reached the required standard for a particular activity.

A trainee must request assessment. It is essential that a trainee feels sufficiently confident of his/her preparation before asking for a formal assessment. A supervising pilot, of course, may indicate to the trainee that this stage had been reached.

Choice of assessing pilot. A trainee may request assessment by any check pilot with whom he/she is associated. The assessing (check) pilot need not have been supervising the trainee or have checked the trainee's progress in learning and documentation prior to the time of assessment. Such involvement, of course, is likely to be of assistance to each party, but is not required.

Assessment coverage. Formal assessment and signing off requirements cover two areas: local area knowledge and pilotage.

- **Local area knowledge**
  Specialist, detailed knowledge of local features and conditions is a critical component of a pilot's ability to ensure added safety of navigation in hazardous waters. The assessing pilot must be satisfied with the **accuracy** and **completeness** of the trainee's knowledge of the pilotage area. The trainee's knowledge of an area will, of course, be either adequate or inadequate, but he/she also needs to be aware of the significance and applicability of the information regarding pilotage through the place concerned. Clearly an element of understanding and of identification of relevant risk factors and their application to 'real life' situations is involved.

  Assessment may be done *in situ* (ie in the course of a transit of the area concerned - if the pilot is free) or may be done elsewhere with or without the use of charts and/or any other aids the assessing pilot wishes. Both assessing pilot and trainee should agree to the timing and manner of the assessment as far as possible.

  AMSA requires that the assessment of local knowledge be indicated by the assessing pilot's signature and dated for each component area relevant to the route(s) for which a licence is sought. Provision is made in the workbook for signatures.

- **Whole passages**

  Assessment should not take place until local knowledge assessments are completed. An assessing pilot should sign off only those components actually covered by a passage.

  A multitude of factors must be taken into account when assessing a trainee's competence as a coastal pilot on a specified route and the purpose of this set of assessments is to make the task of the assessing pilots more manageable.

  AMSA expects that this assessment will cover any activity which is required to guarantee a safe, competent pilotage. Such activities include the preparation, planning and conduct of the pilotage. **Remember, the trainee is not the pilot and may not have charge of a vessel as pilot.** Assessing pilots, therefore, will need to consider the strategies by which they intend to satisfy themselves on the points covered by this training program.

  Preliminary matters may be covered, for example, by setting a trainee the task of producing a pilotage plan then discussing with him/her the reasons for the measures indicated. Or a written justification of the plan may be required. Alternatively, an assessing pilot may satisfy himself /herself as to the ability of the trainee to prepare comprehensively for a safe passage by detailed oral questioning. Other phases of preparation and passage conduct indicated in the program will assist the assessing pilot in assessing the whole passage component. As with local knowledge components, assessment involves forming a judgment overall about the accuracy of knowledge, the level of relevant skills, the identification of risk factors of significance to the pilotage and the development and ability to implement effective solutions.

  Please note, however, that AMSA is concerned that the assessing pilots sign off a section **only when satisfied that the full range of activities that make up a safe pilotage for that section have been safely demonstrated.**

  AMSA asks that, where possible, assessing pilots satisfy themselves as to problem-solving and decision-making abilities of trainees. One assessment strategy which may be useful during the conduct of a pilotage would be to pose 'real-life' problems or situations arising from or related to particular stages of the passage and have the trainee propose 'solutions' with detailed analyses and explanations leading to their proposed course of action. Also, close observation and detailed questioning of the trainee are other appropriate strategies which will permit an assessing pilot to come confidently to a conclusion about the trainee's competence.

  Where an assessing pilot is in any doubt the assessment should be terminated, with guidance as to weaknesses if appropriate. The trainee may request another assessment when ready.

  It is apparent from the above that assessing pilots are asked to develop a comprehensive estimation of the trainee. Their signature as to competence in a 'whole passage' component will reflect a cumulative assessment of the trainee covering a range of factors. Particular strengths or even relative weaknesses are not something to be reported. The signing off acknowledges the overall judgment of ability for safe operation as a pilot.

Australian Government

Australian Maritime Safety Authority

SECTION 2
SELF STUDY MODULES

Section 2 comprises three modules that trainees are expected to study on their own.

- **Module 1** deals with the *background knowledge* which is essential for Queensland coastal pilots. Much of the work associated with this module is based upon the resource material which was listed in section 1.

- **Module 2** looks at the *procedures and processes* which are common to all Queensland coastal piloting operations. Here we introduce the idea of following standard procedures in order to ensure that nothing is omitted in both planning and executing the pilotage passage. The module considers the planning and procedures to be followed before, during and after any pilotage passage. This module can be carried out both ashore and on-board during a period of observation.

- **Module 3** deals with the highly specific *local area knowledge* which is at the core of any good pilot's skill base. In essence, it is your mental road map, your decision making framework. Its importance cannot be over-emphasised and it is vital that during your periods of on-board training you draw upon the knowledge of, and skills demonstrated by, the senior pilots. The module is presented in a **task-oriented format**. This means your success in mastering local knowledge and applying such knowledge to ensure a safe passage is able to be closely monitored by senior pilots.

Each trainee is strongly encouraged to seek the guidance and advice of practising senior pilots in the course of their self study. Information collected and knowledge gained in each module should be recorded in the workbook.

Australian Government

Australian Maritime Safety Authority

MODULE 1. BACKGROUND KNOWLEDGE

2.1   INTRODUCTION

This module is concerned with the background knowledge which is considered necessary for a successful Queensland coastal pilot. Most of the information required can be found in the source materials listed in section 1 of the study guide.

TOPICS

This module begins with a brief examination of the Master/pilot relationship. The question of pilotage areas is then considered, including the special requirements of the *Great Barrier Reef Marine Park (GBRMP) Act 1975* as it applies to zones and sea use, as well as areas where concentrations of fishing and tourist craft are likely to be found.

Next, attention is drawn to the major meteorological conditions which sometimes affect the piloting task. The module then concludes with some more personal matters such as Notices to Mariners and a trainee's personal navigational information and responsibilities under both customs and quarantine legislation.

WORKBOOK

Part 2 of the workbook is designed for note taking and record keeping.

- 'Pre-assessment Voyages' allow trainees to comment on pilotage operations specific to a particular voyage (pilot transfer, weather, route, tides, traffic, navigation and passage planning, bridge resource management and human factors, non-routine events/ emergencies).

- The 'Additional Nautical Knowledge' lists 13 background knowledge areas (pilot boat transfer arrangements, local weather conditions, navigation instruments, ship reporting requirements, traffic conditions and passing requirements, ship manoeuvring information, fatigue and risk management, safety management system, emergency procedures, helicopter procedures, pilotage booking arrangements, shipping information in Queensland ports, regulations and legal requirements)

Trainees can use these same headings to organize their notes, but need not be limited to them. Other headings can be added as warranted. The goal should be an orderly documentation of knowledge gained and lessons learned, and one that can be systematically revised and updated as the trainee gains experience.

Being a pilot is a matter of constantly learning, updating and reviewing. People, ships and attitudes change.

2.2   MASTER/PILOT RELATIONSHIP

The Master/pilot relationship is clearly stated in Australian legislation. The *Navigation Act 1912* (Commonwealth), section 410B states:

> A pilot who has the conduct of a ship is subject to the authority of the Master of the ship and the Master is not relieved from responsibility for the conduct and navigation of the ship by reason only of the ship being under pilotage.
>
> Not withstanding anything contained in a law of the Commonwealth or of a State or Territory, the owner or Master of a ship navigating under circumstances in which pilotage is compulsory under a law of a State or Territory is answerable for any loss or damage caused by the ship, or by fault of the navigation of the ship, in the same manner as he would if pilotage were not compulsory.

Marine Orders, Part 28 (M028) which brings into force relevant requirements of the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW 95), provides further clarification:

> **Navigation with pilot on board**
> 3.3.38   Despite the duties and obligation of pilots, their presence on board does not relieve the master or officer in charge of the navigational watch from their duties and obligations for the safety of the ship. The master and the pilot must exchange information regarding navigation procedures, local conditions and the ship's characteristics. The master and/or the officer in charge of the navigational watch shall cooperate closely with the pilot and maintain an accurate check on the ship's position and movement.
>
> 3.3.39   If in any doubt as to the pilot's actions or intentions, the officer in charge of the navigational watch must seek clarification from the pilot and, if doubt still exists, must notify the master immediately and take whatever action is necessary before the master arrives.

It is clear that while pilots, almost without exception, understand this relationship there are many Masters and officers of the watch who do not. It is in your interest to remind watch officers and, where appropriate, Masters of their role with a pilot embarked. Throughout your period of training you should note how experienced pilots handle this situation and consider how you might handle such a situation yourself.

The following extract from *Seaways*, the journal of the Nautical Institute, enhances the issues:

> **Navigation with pilot embarked**
> Despite the duties and obligations of a pilot, his presence on board does not relieve the Master or officer in charge of the watch from their duties and obligations for the safety of the ship. The Master and pilot shall exchange information regarding navigation procedures, local conditions and the ship's characteristics. The Master and officer of the watch shall cooperate closely with the pilot and maintain an accurate check of the ship's position and movement.

2.3   ROLE OF THE PILOT

Pilots are engaged for a variety of reasons, depending upon circumstances which include pilotage based upon local knowledge, liaison, ship handling and bridge support. There is also the consideration that the presence of a pilot considerably eases the fatigue factor placed upon the Master, thus reducing the potential threat to the environment and potential for grounding or collision.

The duty of a pilot is to direct the navigation of the ship and to conduct its passage so far as the course and speed of the ship is concerned. The pilot monitors local traffic conditions and guides the vessel past local hazards. As necessary, he or she liaises with port authorities.

The position of the pilot on board a vessel is aptly summarised by the Canadian Royal Commission on Pilotage, Ottawa 1968, as follows:

> …. to 'conduct a ship' must not be confused with 'being in command of a ship'. The first expression refers to action, to a personal service being performed; the second to a power. The question whether a pilot has control of navigation is a question of fact and not of law. The fact that a pilot has been given control of the ship for navigational purposes does not mean that the pilot has superseded the master. The master is, and remains, in command; he is the authority aboard. He may, and does, delegate part of his authority to subordinates and to outside assistants whom he employs to navigate his ship-ie., pilots. A delegation of power is not an abandonment of authority, but one way of exercising authority.

JOINING A VESSEL

Preparations to embark and disembark a pilot and the rigging of the pilot ladder are important considerations which require careful attention to avoid accidents and danger to life.

When the pilot boards a vessel and joins the bridge team, the principles of Bridge Resources Management (BRM) should be applied. The majority of Australian serving masters, deck officers and pilots have completed AMSA approved BRM courses. The approved professional development courses which coastal pilots must complete before renewing their licences cover BRM principles of bridge teamwork, collective decision making and a balance between authority and assertiveness. BRM principles define the chain of responsibility and authority, agreed duties and responsibilities, awareness of monitoring duties, and the means of ensuring that the bridge team has a common mental picture of the proposed voyage. Sound BRM practices help guard against human error which is recognised internationally as the cause of a large percentage of marine accidents each year.

Ideally a card will be made up which will include all the information that a pilot is likely to need, such as call sign, draught, tonnages, dimensions, engine and propeller details, manoeuvring speeds, steering and thruster details, anchors and cable lengths, air draught and details of bridge equipment. (A suitable card exists in the ICS Bridge procedures guide). Also to be reported should be compass errors and any radar heading errors.

PASSAGE PLANNING

The International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978, as amended requires that ships plan the intended voyage in advance, taking into consideration all pertinent information.

Coastal pilots can reasonably expect that ships intending to transit through the Great Barrier Reef will have a passage plan. However these plans may not have the detail required to ensure the safe passage of the vessel in all circumstances.

Consequently, pilots should maintain passage plans for the various routes within the compulsory pilotage areas of the Great Barrier Reef. Further information on passage planning can be found in the following publications:

- ICS: Bridge Procedures Guide, 3rd Edition 1998

- AMSA *Advisory Notes to Coastal Pilots* 3/99 and 3/03

The Nautical Institute also encourages pilots to provide a pilotage plan to enable the Master and/or officer of the watch to form a bridge team together with the pilot. The pilot also has a role to play in informing 'the bridge' about relevant information from shore-based authorities. The officer of the watch should ask the pilot about his intentions and support him by checking his actions.

Increasingly coastal pilots are confronted with language difficulties and (can) find themselves alone on the bridges of ships for considerable periods. Their ability to call the crew or cope with an emergency under these circumstances is dangerously limited because of the lack of ship's personnel to assist. Upon boarding, therefore, a pilot should ensure he/she is never left unattended.

THE IMPORTANCE OF CLEAR COMMUNICATION

In spite of a clear statement of roles and responsibilities, there is still the potential for considerable uncertainty in the Master/pilot relationship. Where Masters are uncertain their concerns may be summarised in the questions: *'Who is in charge of the navigation of the ship?'* and *'What levels of interference will be tolerated by those on the bridge at the time?'*

The principal causes of such uncertainty are:
- unclear regulations
- lack of communication between Master and pilot
- navigation of the vessel is completely handed over to the pilot
- Master monitoring the pilot subjectively
- watch officer reluctant to question the pilot
- insufficient appraisal and planning of the pilotage passage
- errors and omissions by the pilot detected too late to avoid an incident

Being aware that these omissions may lead to an undetected error is the basis for working out company policies and operational procedures to remedy the situation.

The problem of improper Master/pilot relationships is a serious one and has been quantified in the Analysis of Claims 1992 conducted by the UK P&I Club. During the year the Club had 156 property damage claims totalling $160 million comprising 11 per cent of claims by number and 20 per cent by value. The report went on to say:

> There is a need to improve communication between the Master and pilot and for there to be a clear understanding between them as to who is responsible for what task at each stage in the manoeuvring of the ship. The report stresses the need for appropriate training in this area.

2.4 CULTURAL DIFFERENCES

Because the role as a pilot brings pilots into contact with many different cultures and because those cultures have differing perceptions, it is important for you to be aware of cultural differences.

The article shown on the following pages provides a useful explanation of cultural differences in the shipboard context. You should use it as a guide to help you develop your own strategies for:

- recognising where cultural differences may adversely affect communication to the detriment of safety
- dealing appropriately with such situations to ensure a safe operational outcome

2.5 USE OF ELECTRONIC CHARTING SYSTEMS

 An ECS is an excellent tool for reducing human error provided total reliance is not placed on it. There is an increasing tendency amongst "modern" navigators to rely almost totally on the ECS at the expense of traditional navigational skills. The majority of pilots carry with them a lap top computer with ECS and GPS functionality – trainee pilots should note the following:

- Some ECS are licensed to use the AHO produced Seafarer digital charts. Others compile their own data-bases under licence using AHO data. Some commercial ECS data-bases are completely unauthorised.

- The quality of commercial chart data-bases varies widely and their source and accuracy are unknown to the user.

- The Seafarer data bases are kept up to date for Notices to Mariners, new charts and new editions. Commercial data bases frequently have poor or no up-date service.

- ECS does not replace the paper chart. Only a type approved ECDIS with an official data base can do this.

CROSS CULTURAL ISSUES IN THE MANNING OF SHIPS
Professor David H Moreby

Cross-cultural differences are not a banner but an opportunity... in this company we benefit from a mixture of fast-acting Caucasians (Westerners) and more thoughtful, more cautious Orientals.
Mr Frank Tsao, Chairman, International Maritime Carriers (IMC), Hong Kong

Introduction

This whole cross-cultural issue can be explored and researched in depth or it can be seen as very simple and easily explained. Fundamentally it is to do with nothing more than attitudes and competence.

Cross-cultural or multi-national manning is not new in shipping: for a hundred years or more, British-owned and British-officered ships have employed Indian and Chinese ratings; Greek-owned and Greek-officered ships have employed rating from a variety of countries; and Dutch-owned Dutch officered passenger ships used to employ catering rating from the former Dutch East Indies.

When compared with the past, a major difference today is this: the Master and Officers of each ship were from the same culture as the owner and shared common values and a common language whereas today the Master, officers and ratings are often from a different country and culture than the owner, hold different values and speak a different language.

The emergence of large numbers of Masters and officers from the Third World and the virtual disappearance of seafarers from the OECD countries have important implications for the marine infrastructure of each traditional maritime country in the developed world. In the past, expatriate ship's officers from the UK served as pilots, surveyors and examiners etc., in India, Burma, Singapore and Hong Kong; expatriate Dutch officers served as pilots and surveyors in the Former Dutch East Indies; expatriate French officers served in similar capacities in the former French Indo-China. Today we must expect and plan for expatriate Indians, Burmese, Filipinos and Koreans to serve as pilots, surveyors, superintendents (ie, Port Captains and Port Engineers) etc., in Britain, the Netherlands and Norway to name only a few of the OECD countries with the need to staff their marine infrastructures. We may also see ships' officers from the former Soviet Union staffing the marine infrastructures of Western Europe and Scandinavia.

Again, when compared with the past, another major difference today is the greater use of casual labour engaged through manning agents. In the past, the larger liner and tanker companies directly employed all their officers and, in some cases, their ratings on permanent company service contracts. Strong company loyalty was commonplace. The superintendents (port captains and engineers) knew all their senior officers and had often sailed with them when they were- juniors. Strong 'collective competence'- of the sea-going and shore staffs ensured that ships were operated efficiently and safely; the sea staff clearly understood their long-term career progression from sea to shore appointments in the same company.

Today, although there are some exceptions, many owners have resorted to engaging crews through ship management companies and manning agents on a casual basis. The owners and their superintendents no longer know the seafarers manning their ships. The 'collective competence' of sea plus shore staffs has almost disappeared and is being replaced by 'quality' systems which, at heart, are nothing more than attempts to regain efficient and safe operations based on loyalty, commitment and positive attitudes to ship efficiency. Furthermore, the majority of seafarers today no longer see any long-term career progress from sea to shore appointments in the same shipowning company.

Modern seafarers, especially those recruited from the developing countries suffer from, or face, three problems which have to be resolved by their (foreign) ship-owner employers:

a)   They do not understand clearly to whom they should give their loyalty - to the owner, ship manager or manning agent.

b)   Some suffer serious financial hardship through corruption by clerks in their manning agencies, which clerks demand corrupt payments to keep the seafarer on the roster and ensure he gets employment at the end of his vacation period. The owner or ship manager who resolves this problem will gain the heart-felt thanks and loyalty of his seafarers.

c)   Junior officers recruited from developing countries suffer from discrimination or from lack of respect by their senior officers from the traditional maritime countries. Senior officers from the traditional maritime countries understand their own training and examination systems. They neither understand nor do they trust the training and examination systems in other countries.

There are a number of reported cases of junior officers from certain developing countries being clearly incompetent although apparently certificated. Senior officers from developed countries having actual or perceived incompetent junior officers face intolerable work loads by 'having to do everything themselves' ie, constantly checking bridge watchkeepers and being out on deck for all cargo operations. On the other hand, junior officers from developing countries may be truly competent yet are not allowed to get on with their jobs through mistrust by their seniors.

Competence

The whole shipping industry clearly needs to separate competence from qualification - even though the qualifications are often entitled 'Certificates of Competency'.

The UK Department of Transport's report Technology and Manning for Safe Ship Operations in the 1990's[2] showed clearly that, in declining order of importance, real competence requires:

-       The ability to handle data/information.
-       The ability to handle (i.e., manage) people.
-       The ability to handle things (i.e., machinery and equipment).

The ability or inability to handle data, people and things can easily be -measured or detected and any defects can readily be remedied by training. An owner or ship management company recruiting officers from another country could check the applicants' ability to read and understand charts, pilot books, company instructions, maintenance manuals, etc. The owner could also check the applicants' understanding of how to manage, supervise and counsel the people forming the crew. He could also check the applicants' understanding of how to set up, start, tune and maintain various items of equipment and machinery.

An advanced, computerized system for the objective testing of the competence of recruits at all levels from all countries is being developed by the Norwegian Marine Technology Research Institute (Marintek) at Trondheim, Norway. In this system various navigational, cargo and machinery situations are displayed in graphical form on a screen and the applicant being tested is required to select the correct answer from the four or five alternatives presented. This testing system is culture-free but it does require an ability to read and understand English. It has the additional merit of the tester being able to insert new situations to prevent applicants getting hold of the correct answers and learning them off by heart.

Motivation

The performance level of a seafarer (as any other worker) is based partly on ability and partly on motivation. Ability stems from training and experience and can easily be assessed. The more difficult aspect of performance to judge and develop is the motivation to perform well.

There are dozens, if not hundreds, of books on motivation but most are culturally biased. Fundamentally, motivation is determined by (i) the physical and mental health of the individual; (ii) by his or her individual needs; and (iii) by the social conditions on board. These may be explained in a little more detail.

i.   The initial physical health of an individual seafarer can be readily determined by a thorough medical examination. His or her continued health will be determined by adequate and enjoyable nourishment, by relatively pollution-free working conditions, by comfortable sleeping arrangements and by adequate periods for relaxation.

The mental health of individual seafarer is rarely measured at the recruitment stage but it can be adversely affected by alcohol and drug abuse, by stress, by social isolation (e.g., by being the only person in a crew of total foreigners) and by mishandling by his or her superiors.

ii.   The basic and higher needs of individuals have been well explained by Maslow and will not be repeated here. In addition, the performance of individual seafarers is affected by family responsibilities, by personal perceptions of what are 'good' or 'bad' ships or 'good' or 'bad' trades and by personal aspirations for promotion or job security. The satisfaction of the individual needs of a seafarer, especially in multi-national crews, requires sensitive handling by senior officers.

For example, an individual rating or junior officer may be upset or switched off' if he is reprimanded in public (i.e., in the hearing of his fellows) by a 'foreign' senior officer. The golden rule which should be followed by all officers in multi-national ships is "Praise in public but reprimand in private".

The issue of individual needs is so easy to understand. The individual who realizes and experiences greater satisfaction of his individual needs through good performance levels is far more likely to work well than the individual who experiences no psychological satisfaction through good performance.

iii.   The third and final cluster that effects [sic] motivation (to perform well) is the social conditions on board. The social conditions experienced by the individual seafarer are determined partly by the formal organization on board and partly by the informal organization. The formal organization will be discussed in a later subsection under Power Differentials.

The informal organization is to do with friendship patterns and off-duty social activities, and greatly affects the performance level of an individual seafarer. For example, an individual seafarer being the only one from his country in an otherwise, 'foreign' crew may subconsciously think to himself "They don't like me and I don't like them so why should I work well to help that bunch of Brits, or Norwegians, or Indians or Filipinos, etc?"

Off-duty activities need to be sensitively understood and managed by the master and senior officers. For example, Filipinos generally prefer to spend their off-duty hours in the company of other Filipinos whether they be officers or ratings, and singing and making music form an important part of their off-duty social life. On the other hand, European and Scandinavian seafarers, especially officers, prefer to read, write or pursue hobbies in the privacy of their cabins. In a European-Filipino manned ship each group needs to understand and respect the other.

This particular preference pattern on activities in off-duty hours presents problems to some senior European officers in ships with junior Filipino officers and Filipino ratings. The Filipino juniors prefer to mix with their fellow countrymen and are often accused by their seniors, of getting `too familiar' with the ratings.

This problem does not arise in ships with European senior officers, junior Indian officers and Indian ratings. The Indian juniors prefer to mix and be identified with their European senior officers than with their fellow countrymen ratings.

Power Differentials and Rule Orientation

One of the leading researchers in cross-cultural differences is Geert Hofstede[3]. By investigating managers and workers in forty different countries, he developed a 'power differential index' (PDI) which measures the hierarchical distance maintained by managers from their subordinates and the, distance that the workers see their managers removed. A high PDI score indicates that the managers have a great deal of power over their workers and remain distant from them. A low PDI score indicates the opposite. Different factors cause high and low PDI scores as given in **Table 1**.

Table 1 : Factors causing high and, low PDI scores

High PDI	Low PDI
1 Tropical and subtropical	Moderate to cold
2 Less need for technology	More need for technology

3	More traditional agriculture and less modern industry	Less traditional agriculture and more modern industry
4	Less education of lower strata	Higher education of lower strata
5	Weak development of educated middle class	Strong development of educated middle class
6	Less national wealth	Greater national wealth
7	Wealth concentrated in a small elite	Wealth more widely distributed
8	Political power concentrated	Political power by representation
9	Large size population	Small population
10	Historical events - colonialism	Historical events -independence
11	Less questioning of authority in general	More questioning of authority in general

Source: Hofstede

Later, Hofstede investigated the attitudes people held towards company rules. A high score on the `rule orientation index' (ROI) arises when people abide by the letter of the rules even when, in the circumstances, this is against the best interests of the company. A low ROI score shows that the workers use company rules as nothing more than general guidelines.

The present author applied the 'Work Environment Preference Schedule' (WEPS) developed by Gordon[4] to senior ships' officers and middle level shipping managers from seventeen countries. A high WEPS score shows the willingness of a person to subordinate himself to the wishes of his superiors (similar to a high PDI score) and to follow exactly the rules and regulations (similar to a high ROI score).

By combining the results of all these investigations and using only the major shipping countries involved, the pattern is given in Table 2. This pattern has very important implications for manning and ship management. A ship owner, ship manager or shipmaster employing crews from the same cluster as himself finds it relatively easy for he does not need to change his management style. However, a shipmaster from one cluster (e.g., a low PDI, low ROI Scandinavian) will have to change his managerial style and become more authoritarian and more 'remote' from his crew if it consists of people from another cluster (e.g., high PDI, high ROI Indians).

Table 2: Applications of work environment preference schedule to senior ships' officers and middle level shipping managers

	High PDI	Low PDI
High ROI	France, Italy, Greece, Spain, S America, India, Malaysia, Singapore	W Germany
Low ROI	Japan, Philippines, West Africa, East Africa	USA, NW Europe Scandinavia, Canada, Australia

Stereotypes

The stereotypes we see in others are usually wrong and always highly dangerous. There are, for example, people who believe 'all' Arabs are Muslims; 'all' Italians belong to the Mafia; 'all' Australians drink beer. There are even some people who believe 'all' Norwegians are good seamen!

Of course the preceding statements are nonsense but, nevertheless, stereotypes of others exist in each one of us. Stereotypes develop from films, books, television, stories and chance meetings and become over-generalizations. Each one of us should recognize that he or she carries in his or her head a dangerous capsule of beliefs that can poison relationships with people of other cultures. What modern shipping requires, above all else, are cosmopolitan managers who have removed from their brains the poison pill of stereotyping.

Communications

English is widely accepted as the international language of shipping and, in fact, the IMO Convention on Standards of Training, Certification and Watchkeeping (STCW) requires the Master and all Deck Officers to be capable of speaking English. However, STCW does not require Engineer Officers and Chief Stewards to speak English and yet Chief Engineers have to negotiate with ship chandlers. For the commercial efficiency of ships it is just as important for Chief Engineers and Chief Stewards to speak English as it is for the Master and Deck Officers.

Responsible owners and ship managers will ensure that their officers can read, write, speak and understand English by testing them in reading and explaining one or two pages of, say, a Pilot Book or by making them take one of the more formal and better known tests such as the Test of English as a Foreign Language (TOEFL) or the International English Language Test System (IELTS). The method of marking these tests differ but no deck officer at or above the rank of Third Mate should be employed if he scores less than 500 on the TOEFL test (maximum score 650) or less than 5.0 on the IETLS test (maximum score 9).

In the past, when certain British liner companies had long-term policies of employing Indian ratings, officers were encouraged to learn Hindustani: but today, when officers may sail with ratings from different countries in successive ships, it is difficult if not impossible to encourage them to learn to speak the language of any rating who might be employed.

For the day-to-day management of the ship it is common and quite acceptable practice to appoint a leading rating (e.g., Bosun) to act as translator between Chief Mate and the ratings. However, this is a dangerous way of manning a ship for, in a crisis, the one translator may not be at the scene of the crisis or, worse still, may have been killed or injured. Another aspect of this dangerous practice of employing a single translator is that a rating may call out a warning in a language not understood by the officer at the scene and vice versa.

There really is substance in the allegation that the safety standards of ships and their crews are not as high in multi-national/multi-language crewed ships as they are in single national, single language ships.

A fundamental and serous problem arises in multi-lingual crewed ships immediately before and during crises. People panic in their own languages, not necessarily in English. The single, most important communication issue is for all people on board a ship to understand in each other's language crisis calls such as 'fire', 'watch out', 'run', 'duck', 'jump', 'get out of here' etc.

Another fundamental communication problem facing European or Scandinavian officers sailing with Oriental juniors and ratings concerns the meaning of the word "yes". For example, if a British officer criticises a British rating by saying "You didn't do a good job" he would expect the reply "no I didn't, sorry". But if a British officer reprimands an Oriental rating with the same words, the Oriental reply would be "Yes" (meaning, "Yes, I agree with you. I didn't do a good job"). Also, after giving instructions for a particular job, the European officer may end up by asking "Do you understand what you have to do?" The Oriental rating will invariably reply 'Yes" even when he does not fully understand what he has to do. In order to avoid misunderstanding the wise European officer will end up by saying "Now tell me what you have to do". This takes more time but mistakes should be avoided.

The manner of giving orders and the use of the words "please" and "thank you" have cross-cultural implications. Norwegians, for example, do not often use "please" and "thank you" when dealing with other Norwegians but these words are very important for Filipinos.

Cross-cultural Clashes

Ships are total institutions. No other industry in the world expects its workers to live and work together twenty four hours a day, seven days a week for months on end. On shore, ex-patriate managers sent by their parent companies to work abroad go back each evening to a culturally familiar home or club where they can mix with their fellow countrymen.

Shipowners and managers need to appreciate the particular problems faced by all the individual seafarers in a multi-nationally crewed ship and, in this context, history cannot be ignored.

A ship's crew can work and live in harmony if, for example, it has a British Master and senior officers with juniors and ratings from a former Commonwealth country such as India or Burma but there would be disharmony if the crew composition was the other way around - Indian Master and Seniors with UK juniors and ratings. The same can be said for Japan and Korea. One may be able to man a ship with a Japanese Master and Officers and Korean ratings but there would be disharmony if the ship had a Korean Master and Korean officers with Japanese ratings.

Officers from Scandinavian countries (with no previous history of colonial domination) find it relatively easy to work with Filipino juniors and ratings and it is only a matter of time before there will be ships manned by Filipino Masters and seniors with Scandinavian junior officers on their way up through the ranks.

Conclusion

Among the seafarers manning today's global merchant fleet there is widespread ignorance of the history and culture of the countries from which seafarers are drawn. The Norwegian Shipowners' Association has taken a constructive step towards resolving this problem by producing a video 'Who is a Norwegian?' which explains the cultural backgrounds of Norwegians and Filipinos. This was written and produced by Norwegians to give some understanding to Norwegian seniors and to Filipino juniors and ratings. It would be good to see similar videos written and produced by Filipinos and by Indians to explain to their fellow countrymen what to do, what to expect and how to behave when sailing with Scandinavian and Europeans Masters and senior officers.

A cheaper yet effective way of strengthening cross-cultural understanding is through the use of Culturgrams[5]. Although these were written by Americans for Americans they nevertheless give a concise explanation of customs and courtesies, the people, lifestyle, the climate, history, government, economy, education and health for each country. Stocks of appropriate Culturgrams could easily and cheaply be held aboard each ship.

Effective and harmonious cross-cultural manning requires:
i.   a deliberate, long-term policy by the ship owner or ship manager;

ii.   mutual trust, mutual respect and mutual understanding; and

iii.   clear career paths for each seafarer including management positions ashore.

Editor's note: Professor David H. Moreby was born in 1930 in Northern Rhodesia (now Zambia) and completed his pre-sea training on the S.A.T.S. General Botha. He was at sea as a deck officer in Shell tankers from 1947 to 1959, and with Clan Line in 1964. He holds an Extra Master's Certificate and the Degree of Doctor of Philosophy. From 1973 to 1987, he was Dean of the Faculty of Maritime Studies at Plymouth Polytechnic, and is now Visiting Professor at the Institute of Marine Studies, University of Plymouth. He is a Fellow of the Nautical Institute.

Since 1970, he has been a consultant to the IMO, ILO and UNCTAD, and to many global shipping companies on manning and ship management. He was a Principal Researcher in the U.K. Department of Transport's "Technology and Manning for Safe Ship Operations", and in the B.M.L "Critical Levels of the U.K. Merchant Fleet". For 22 years, until 1992, he was the organizer of the annual shipping course for Galbraiths of London, and he still lectures in many parts of the world on manning, ship management, and joint ventures

From 1983 to 1989, he was a Director of Jayship, London, and is currently Managing Director of Marine Intelligence Ltd., Plymouth.

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2.6 PILOTAGE AREAS

Understanding a pilot's responsibilities requires an understanding of the different forms of pilotage areas and their limits.

For Queensland coastal pilots, there are three forms of pilotage area:

- **Compulsory pilotage areas.** These are defined in the schedules to the *Great Barrier Reef Marine Park (GBRMP) Act 1975* (Commonwealth). Here it is important to understand the legal requirements for users as well as the different zones found within the park and the requirements for their use. Associated with the GBRMP Act are the GBRMP Zoning Plans and it is these plans which provide you with the sort of information with which you must be familiar.

- **Recommended pilotage areas**, which, in the context of the Queensland coastal pilot, are those defined by the International Maritime Organization (IMO) Resolution A.710(17).

- **Voluntary pilotage areas,** which are not defined as compulsory or recommended but for which the services of a pilot are available. Within these areas, pilots must know the names and positions of all navigational aids and principal geographic features.

NOTE: Refer to Marine Orders Part 54 (Coastal Pilotage) 6.1.1 for explanation of areas for which a licence is valid.

While considering pilotage areas, it is also important that trainees become familiar with those areas where fishing vessels operate. Here, advice from a senior pilot will be valuable. However, there is nothing like experience to become familiar with the lights and methods of operations used by fishing vessels working off the Queensland coast.

Tourist and private recreational vessels also provide a hazard for transiting ships. Consequently, trainees must be aware of those areas where tourist vessels normally operate and where they are likely to be going. The major areas of operation for tourist vessels are:

- Cairns/ Port Douglas area
- Townsville
- Whitsunday Islands

2.7 METEOROLOGICAL CONDITIONS

For the Queensland coastal pilot, the major meteorological conditions which directly affect the pilotage operation are the seasonal changes. The 'dry' predominantly produces SE'ly winds, while the 'Wet' predominantly produces NW'ly winds. These seasonal changes directly affect the general flow of coastal currents, which clearly is important when piloting. Of course, the 'wet' is also the season for Tropical Revolving Storms.

For details associated with Queensland coastal meteorological conditions, the following two publications are particularly useful:

- *Australia Pilot*, volume 3
- *The Official Tide Tables and Boating Safety Guide* (Queensland Transport)

2.8   PERSONAL MATTERS

A pilot's personal navigational information is very much a tool of the trade. However, this information can be dangerous if it is not correct and up-to-date. There are no ifs, buts or maybes; **all pilots must keep this navigational information current.**

NOTICES TO MARINERS

To remain current, pilots must use the fortnightly corrections issued through the medium of *Notices to Mariners*.

It is also important to remember that the *Annual Notices to Mariners* contains information relevant to piloting off the Queensland coast. Specifically, notices 9, 10C, 10D, 22, 22A, 23, 24 and 28 are important. Only you can take responsibility for ensuring your navigational information is correct and up-to-date and the importance of ensuring this cannot be overemphasised.

QUARANTINE AND CUSTOMS OBLIGATIONS

A pilot's obligations under both quarantine and customs legislation should also be well understood. With respect to quarantine, a pilot must carry his/her personal quarantine documentation as well as have a broad understanding of procedures which are applicable to ships.

Each pilot is issued annually with an 'Authority to Board and Leave a Vessel Subject to Quarantine', under the signature of the Chief Quarantine Officer, Brisbane. The authority commences annually on January 1st. Application for renewal is made by the management of pilot service providers. Pilots are required to study the authority carefully and strictly adhere to the provisions. The Australian Quarantine Inspection Service (AQIS) has made it clear that it will not be lenient with offenders. There have been cases in the past where pilots have been seriously hindered in their movements because they have ignored the Commonwealth regulations.

Not infrequently a pilot will find the Master of an overseas registered ship asking for advice on procedures. When it comes to Customs, pilots should be aware of what the legislation requires of them so that they do not breach the legislation.

2.9   CONCLUSION

This module has covered the background knowledge which is considered a necessary prerequisite for any successful Queensland coast pilotage operation. The importance of gaining familiarity with the information highlighted in this module cannot be overstated. It is particularly important that a trainee pilot should:

- know where to find the needed information
- be able to apply it to his or her own pilotage operation
- understand the importance of providing a service to clients

MODULE 2. PILOTAGE PROCEDURES

2.10 INTRODUCTION

This module is concerned with procedures and processes which are common to virtually all pilotage operations. In a way, the module is very much about planning in that it is concerned with setting up routines to be followed for particular parts in a voyage.

TOPICS

The module can be viewed as emulating a voyage in that it is concerned with what a pilot should do:

- Prior to the trip
- On joining the ship
- While on passage
- On leaving the ship

The approach taken to explain these stages is broad. However, the points considered most important to the success of the pilotage operation are all covered.

Please note that the procedures and processes covered in this section refer to what licensed pilots do in the course of their duties.

While under training, the trainee's primary task is to be very familiar with these procedures and processes, and to be aware of the need to develop routines and why pilots need these routines. Developing personal checklists can be a way of dealing with routine activities.

WORKBOOK

As in Module 1, trainees should use part 2 of the workbook for their notes. Notes on pilotage procedures can be added to the section on 'Pre-assessment Voyages' and organized according to the stages listed above. The workbook also has dedicated sections for charts and distance tables.

It may also be useful to study the assessment voyage checklist (see 'Assessment Voyages' also in part 2 of the workbook) as this details all activities that a pilot must address before, during, and after a pilotage. Trainees can develop their own personal checklists based on this more detailed checklist.

2.11 PRIOR TO THE TRIP

A number of basic matters should be taken into account when planning a trip. Most of them are fairly obvious to any experienced seafarer. However, this is not to say they are unimportant.

REST

The pilot should be sufficiently rested and in good health.

SHIP DETAILS

To start the planning process, it is good practice to determine some basic details about the ship to be piloted, namely:

- flag of registry
- ship type
- size and draught
- speed

WEATHER CONDITIONS

Following on from this, a pilot will find it necessary to determine current and anticipated navigational conditions likely to affect the pilotage operation, namely:

- weather forecast
- state of the tide at critical points
- direction of tidal streams
- traffic and likely passing points
- current Auscoast warnings

PASSAGE PLANNING

Having determined this basic information, experience indicates it is useful to sit down and 'think through' the pilotage passage. Points to consider include where the ship will be during the day and during the night, where the pilot will have periods of rest and where there are periods of work, where the pilot is likely to encounter concentrations of fishing and/or tourist vessels.

Pilots should develop clear and concise passage plans following the principles described in the *ICS Bridge Procedures Guide* 3rd Edition 1998 and *AMSA Advisory Note to Coastal Pilots on Passage Planning*. Trainees must become familiar with the requirements of these publications.

BOARDING PROCEDURES

Having undertaken this planning, the next stage is to be at the boarding ground at the right time, that is, early. Boarding, of course, is a question of the use of launch or helicopter.

If boarding from a launch, the pilot must ensure that the pilot ladder is properly rigged and safe to use, that is, the ladder complies with SOLAS Ch V-17 requirements
If using a helicopter, the pilot will find the AMSA *Ship-Helicopter Transfers Australian Code of Safe Practice* useful for procedural matters. Trainees must become familiar with the requirements of this publication.

PILOT CARD AND WHEELHOUSE MANOEUVRING DIAGRAM

Be familiar with the pilot card found in the ICS Bridge Procedures Guide and use this knowledge as basis when checking the pilot card of the vessel to be piloted. This familiarisation strategy is

particularly useful for new pilots because some vessels may not have a pilot card or the card may be in a foreign language.

2.12 ON JOINING THE SHIP

If joining the vessel at sea, the pilot, upon arriving on the bridge, should seek out the Master and introduce himself or herself. Prior to giving any orders the pilot must formally receive the 'con' from the Master.

SET THE SHIP'S DIRECTION

Immediately after the introductions, the pilot should determine the ship's heading and current engine order. This will allow the pilot to immediately give orders to align the ship in the direction it is to proceed.

APPLY BRM PRINCIPLES

Upon assuming the conduct of the vessel, the pilot should ensure from the outset that Bridge Resource Management principles are effectively followed during the master/pilot information exchange and after, and that officers of the watch, helmsmen, and lookouts are all aware of what is required of them to support the pilot in navigating the vessel.

CHECK VESSEL CHARACTERISTICS

Once underway on the correct heading, it is essential to determine:

- the vessel's draught
- gyro error
- any problems with critical equipment (main engines, steering, radar, communications, navaids)

At this point it may also be prudent for the pilot to determine:

- sea speed and any engine notice required to reduce speed or go to 'standby' status
- location and characteristics of the VHF

CHECK VESSEL'S ICS PILOT CARD

Having settled the ship into its passage, the pilot should ask the Master for the ICS Pilot Card which details pertinent information on the handling characteristics of the ship. Should a vessel not have an ICS Pilot Card, the pilot will have to seek this information on a point by point basis. The *ICS Bridge Procedures Guide* contains a copy of the Pilot Card and trainees should familiarise themselves with its format.

ANCHOR READIED

Additionally, where appropriate, the pilot should expect at least one anchor to be ready for letting go.

CHECK CHARTS AND LAY APPROPRIATE COURSE

Once the ship has reached the first open area, the pilot should check the ship's chart(s) to ensure they are current. Having determined this, the pilot can lay off the appropriate courses or have the ship's personnel do this themselves.

MASTER'S FAMILIARITY WITH AUSTRALIAN REPORTING REQUIREMENTS

The pilot should verify that the Master is familiar with the REEREP/AUSREP reporting requirements.

2.13 WHILE ON PASSAGE

Once on passage, there are a number of tasks the pilot will need to perform. The order in which these tasks are performed will vary from passage to passage and this variation should be taken into account during passage planning.

KEY TASKS

Among the more obvious tasks of a pilot during passage are:

- assessing the standard of the watchkeepers with whom the pilot must work
- monitoring the vessel's track through water and over ground
- monitoring the radar and shipping traffic
- checking compass errors (including magnetic compasses)

CONSTANT CHECKS ON COMPASS ERRORS AND STEERING

After getting underway, use a transit as soon as possible to check compass errors. From time to time, the pilot should also check the steering regardless of whether hand or auto steering is in use. In confined waters such as the Torres Strait, the pilot must check the steering on an almost constant basis.

Remember: you will need to always adjust your behaviour to circumstances. Some pilots prefer to use hand steering when manoeuvring, turning, or passing other ships as the vessel is more immediately controllable in this mode of steering.

COMMUNICATION

It is also necessary to communicate with traffic (particularly when approaching another vessel in a confined water situation or during reduced visibility) and adhere to the requirements of the Colregs and SMCP.

VESSEL HANDLING AND MANOEUVRING

Exercise caution at all times. For pilots in particular, is it is important to remember that vessel handling characteristics do not always follow conventional expectations or the indicated behaviour of manoeuvring diagrams (which indicate 'deep water' performance only) and that manoeuvring characteristics may alter considerably from load to ballast condition and between slow and full speed and according to the depth of water and nature of the seabed beneath the vessel. In addition, propulsion systems and their characteristics may vary significantly from ship to ship in their reaction time.

SHALLOW WATER

Not infrequently while on passage you may have to make a decision on which route to take because of shallow water. Where this occurs, tidal heights and duration, the draught and trim of the vessel, depth of water, nature of the seabed, and effects of squat and heel, and duration of the critical voyage, are all important factors to consider. With squat, experience has shown that the Barras formula gives a conservative answer which provides a good safety margin. The formula is:

$$\text{squat (metres)} = \frac{\text{speed}^2\text{(knots) x } C_B}{100}$$

LEGAL REQUIREMENTS

Finally, ensure the ship complies with requirements of MARPOL. If pollution of the sea occurs, ensure that the master complies with pollution reporting requirements (ie a POLREP message must be sent in compliance with details found in the AUSREP/REEFREP handbook). In section 1 a number of publications refer to pollution. Trainees must be aware of the different forms of pollution and their likely effects.

2.14 ON LEAVING THE SHIP

Before leaving the ship, the pilot must ensure the following tasks are performed:

- point out the relevant navigation marks and traffic to the Master
- indicate anticipated traffic if known
- indicate anticipated weather if known and significant to vessel operations
- leave the vessel on a safe heading and in a safe position
- before disembarking, advise the Master of the ship's course and the engine setting (and recommended speed if relevant)

Once off the ship, deal with necessary routine administrative matters such as filing reports.

2.15 CONCLUSION

The pilotage procedures and processes covered in this module are virtually the same for all pilotage operations. Throughout the training program, trainee pilots will have the opportunity to put these procedures and processes into practice.

MODULE 3. LOCAL AREA KNOWLEDGE

2.16 INTRODUCTION

This module is concerned with highly specific local knowledge which forms the core of a qualified pilot's skill base. As noted in the overview to section 2, this local area knowledge is a trainee's mental road map or decision making framework.

TOPICS

The module starts by identifying information relevant to a coastal pilot in respect of Queensland coastal ports. Following this, the main sectors of each of the three licence areas are identified. Then, to conclude the module, the pilotage knowledge appropriate to each sector of each licence area is identified.

WORKBOOK

As in the previous modules, trainees should use part 2 of the workbook to record their notes. There are dedicated sections on local area knowledge, voyage charts and distance tables.

2.17 ADVICE TO TRAINEES

- **For this module learn only that information for the area for which a licence is sought.** The relevance of local knowledge is conditioned by draught, size, type of vessel, time of day and weather conditions.

- Unlike Modules 1 and 2, this module is presented in a task oriented format. Read this module very carefully in close conjunction with section 3 of the study guide and the workbook.

- It is essential to record and organize in a rational and accessible way all the information gleaned from question and answer sessions with supervising pilots and from your own experiences. This is particularly necessary as much of this information is not recorded in publications and may change from time to time.

- Quite clearly there is an immense amount of local knowledge to absorb and as such there are few, if any, short cuts. This means that it is particularly important to take advantage of your on-board training and the knowledge gained from senior pilots.

- Additionally, you may find it valuable to develop your workbook database as you become familiar with the locale. It is, of course, absolutely vital that you update it regularly and keep a back up copy.

- Checking may be carried out in either a non-operational or operational environment (or both) so that the supervising pilot or assessing pilot is assured the trainee can actually use the knowledge in practice.

- A trainee should ask for a formal assessment only when confident in his or her grasp of detail and ability to integrate that knowledge meaningfully.

- It is up to the trainee to check off knowledge and skills learned. However, in the final analysis, the assessing pilot must be convinced you are competent.

2.18 LICENCE AREAS

For the purposes of this training program, the following are the 5 licence areas associated with pilotage for the Queensland Coast:

1   Hydrographers Passage

2   The Inner Route, which is broken down into the following sectors:
   a)   Western Approaches to Torres Strait
   b)   Prince of Wales Channel
   c)   Alert Patches to Wyborn Reef
   d)   Wyborn Reef to Chapman Island
   e)   Fairway Channel (LADS Passage)
   f)   Chapman Island to Pipon Island*
   g)   Pipon Island to Gubbins Reef
   h)   Gubbins Reef to Cairns

   Pilots do not regularly use this area but trainees should attempt to arrange one voyage through the area

3   The Great North East Channel (GNEC) which includes the navigable waters between
       Alert Patches and Bramble Cay

4   Whitsunday Islands (transit only)

5   Whitsunday Islands (anchorages)

The prerequisite for licence area 3 is to hold an Inner Route licence.

2.19 KEY SECTOR CHARACTERISTICS

Senior pilots consider that each sector has factors of importance to take account of when piloting. These include:

Western Approaches to Torres Strait

> Charted depth
> Tidal height
> Under-keel clearance
> Confined route
> Un-piloted traffic

Prince of Wales Channel

> Charted depth
> Tidal height
> Under-keel clearance
> Very Confined route

Strong tidal stream
Un-piloted traffic

Alert Patches to Wyborn Reef

Charted depth
Very confined route
Cross track stream

Wyborn Reef to Chapman Island

Confined sections
Un-marked dangers

Chapman Island to Pipon Island via Heath

Very confined sections
Charted depths
Un-marked dangers
F/v concentrations

Fairway Channel (LADS Passage)

Very confined sections

Pipon Island to Gubbins

Very confined sections

Alert Patches to Dalrymple via Caldbeck (GNEC)

Confined sections
Cross track streams
F/V concentrations

Hydrographers Passage

Very confined sections
Strong cross track streams

Whitsunday Passage

Tidal stream
Pleasure craft

2.20 PILOTAGE KNOWLEDGE BY SECTOR

Trainees should record in the workbook, under appropriate headings, all requisite information listed below on the area(s) for which they are seeking a licence.

HYDROGRAPHERS PASSAGE

a) Courses, distances and navigation aids between Blossom Bank and Mackay/Hay Point or Abbot Point
b) Least depths and routes for best water for maximum draught vessels departing Hay Point
c) Clearing marks and bearings between Blossom Bank and Little Bugatti Reef

d) Precautions required departing Hay Point on a maximum draught vessel
e) Tidal information and streams in vicinity of Blossom Bank, Ferris Shoal, Bond Entrance, Bugatti Reef, Creal Reef and Three Rocks

WESTERN APPROACHES TO TORRES STRAIT*

a) Depths available to the West and South West of Gannet Passage and Varzin Passage up to 25 miles from Booby Island
b) Closest safe anchorage to the west of Booby Island for vessels between 10.5 metres and 12.2 metres draught
c) Shoal areas west of Booby Island and areas of deepest water approaching Varzin and Gannet Passages; Strength & direction of tidal stream in vicinity of Gannet & Varzin
d) Navigation aids for Gannet Passage and Varzin Passage
e) Booby Island Pilot Boarding ground
f) Route for best possible water in Gannet or Varzin Passages
g) Deepest safe water anchorage between Goods and Booby Islands
h) Torres Strait Tide Tables
i) VHF radio tide gauges
j) Tidal heights and under keel clearance calculations

PRINCE OF WALES CHANNEL*

a) High and Low lights on Goods Island and their combined function
b) Function of red sector on Goods Island Low Light
c) Least water and best depth through Prince of Wales Channel
d) Navigation aids between Harrison Rock and East Strait Island leads; characteristics, sectors and purpose, swing radius of buoys
e) Standard tidal ports between Booby Island and Twin Island
f) Strength and direction of stream in Prince of Wales Channel between Harrison Rock and Twin Island
g) Torres Strait Tide Tables
h) VHF radio tide gauges and tidal streams
i) Preparation of tidal information for deep draught transits of Torres Strait and Under Keel Clearances required
j) The Barras formula for squat
k) Transit times from Booby Island to Alert patches and speed requirements at minimum UKC

***NOTE:** For the areas above (referred to as the Torres Strait), it is important to use the *Torres Strait Tide Tables* and data from the radio tide gauges to determine suitable tidal windows to ensure the safe passage of ships. This is a skill which must be exact due to the critical timing necessary to make a safe transit.

ALERT PATCHES TO WYBORN REEF

a) Courses and distances for draughts between 6.0 metres and 12.2 metres
b) Clearing marks, CPAs and transits used in the area
c) Tidal information and streams between:
    - Alert Patches and Alpha Rock
    - Alpha Rock and Albany Rock
    - Albany Rock to Wyborn Reef.
d) Navigation aids Alert Patches to Wyborn Reef
e) Anchorages in vicinity of Strait Rock for maximum draught vessels
f) Deep water route in Adolphus Channel
g) Cautions to be observed in the area

WYBORN REEF TO CHAPMAN ISLAND

a) Courses, distances and navigation aids between Wyborn Reef and Chapman Island
b) Clearing marks for Pearn Rock, Paluma Patch, Kemp Rocks, Tannadice Rock and Lansdown Reef
c) Procedure for rounding Clerke Island and meeting vessels in vicinity
d) Tidal information and streams experienced between Wyborn Reef and Chapman Island

LADS PASSAGE & FAIRWAY CHANNEL

a)   Courses and navigation aids from Wye Reef to Pipon Island including transits & sectors
b)   Requirement for deep draught vessels to remain within the two way route and avoid charted shoals 2 miles south of Wye and 6 miles north west of Pipon
c)   Monitor variations in cross-track tidal streams
d)   Note traffic bottleneck at Sunk/Frederick and the buoys at 13° 18' S

CHAPMAN ISLAND TO KING ISLAND VIA HEATH

a)   Courses, distances and navigation aids between Chapman Island and King Island Variations in courses for light, medium and deep draught vessels
b)   Transits, clearing marks and bearings for Dugdale Rock, Morris Rock, Parry Rock and Howard Rock
c)   Procedure for vessels meeting at Waterwitch Reef, Heath Reef, Iris Reef buoy and Eden Reef
d)   Procedure for north bound vessels passing east of Health Reef to clear Khandalla shoals
e)   CPAs and clearing bearings for Ballerina Shoal, Dayman Rock and Yule Rock
f)   Tidal information and streams experienced between Chapman Island and King Island
g)   Note F/V concentrations in Princess Charlotte Bay

KING ISLAND TO GUBBINS REEF

a)   Courses, distances and navigation aids between King Island and Gubbins Reef
b)   Clearing marks and bearings for Singleton Patches, Unison Reef, Davy Patches, Switzer Reef, Gunga Shoal, Turtle Reef, Sim Reef and Maxwell Reef
c)   Alternative routes for light, medium and deep draught vessels
d)   VHF procedure for vessels using Howick North Channel
e)   Alternative route at Gubbins Reef for maximum draught (ie: 13.5m) for vessels ex Cape Flattery
f)   Tidal information and streams experienced between King Island and Gubbins Reef

GUBBINS REEF TO CAIRNS

a)   Courses, distances and navigation aids between Gubbins Reef and Cairns
b)   Offshore dangers along the route and Satellite Reef
c)   Tidal information and streams experienced between Gubbins Reef and Cairns. Variations in currents due to seasonal changes
d)   Proliferation of pleasure craft

WHITSUNDAY ISLANDS

a)   Strong tidal streams
b)   Direction of tidal stream as a determinant of whether to go inside or outside of the Whitsunday Islands
c)   Proliferation of pleasure craft

     Note:
     (1) A pilot should be aware that under certain circumstances passage inside the Whitsunday Islands is undesirable.
     (2) GBRMPA prohibits the use of West Molle Channel by commercial vessels

ALERT PATCHES TO DALRYMPLE ISLAND PILOT GROUND

a)   Controlling depths between Richardson Reef and Kirkaldie Reef
b)   Controlling depths between Bet Reef and Arden Island
c)   Tidal information and tidal streams between Twin Island and Dalrymple Island

d)   Navigation aids between Twin Island and Dalrymple Island
e)   Courses and clearing marks used between Twin Island and Dalrymple Island via direct route West
     of Arden I, between Moian Reef and Newman Reef and West of Smith Cay, East of Caldbeck
     Reef and West of Smith Cay for moderate and deep draught vessels

2.21 CONCLUSION

This module has dealt with the highly specific local area knowledge which is required before a full
pilotage of a licence area is attempted. Thus, the knowledge here has been somewhat
compartmentalised; what is now to be done is to put this knowledge into practice by planning for and
proposing in detail plans for a number of complete pilotages to demonstrate your competence to
assessing pilots.

It is important to reiterate that **a trainee is allowed to have as many practice voyages as deemed
necessary.** Once ready, the trainee should then formally request assessment and discuss in detail with
the assessing pilot assessment requirements.

Trainees are strongly advised to discuss in detail with the assessing pilot what is expected of the trainee
and when and how the trainee is expected to demonstrate piloting capabilities. It may help to review
'Responsibilities of Trainee, Supervising and Assessing Pilots' in
section 1 of this study guide. The next section, Assessment of Competence, discusses at length
assessment requirements.

Australian Government

Australian Maritime Safety Authority

SECTION 3
ASSESSMENT OF COMPETENCE

This section is the culmination of the training program. It is designed to ensure a trainee's competence as a coastal pilot on specific routes. In this context, competence is considered to be the outcome – the lives of persons, protection of the environment and the safety of ships is assured by the satisfactory performance of a task or series of tasks.

As discussed earlier in this study guide, assessment is based on a trainee's completed workbook and voyage assessments. Voyage assessments will test a trainee pilot's local knowledge and pilotage skills for the area for which a licence is sought, and include component sections assessment and whole passage assessment.

Details of assessment requirements are provided in this section.

ASSESSMENT OF COMPETENCE

3.1   ASSESSMENT INSTRUCTIONS

The purpose of the assessment is to show that, in the professional judgment of the assessing pilots, the trainee has performed particular activities and tasks competently. For effective and fair assessment, the following assessment instructions must be followed.

GENERAL INSTRUCTIONS

Both the trainee and assessing pilot should read the **Program Overview** (section 1 of this study guide) and ensure they agree on what the assessing pilot wants the trainee to do. In addition, trainees and assessing pilots should bear in mind their respective responsibilities.

Assessment forms are found in the workbook. Trainees should ensure all relevant sections of the workbook are signed off by assessing pilots.

INSTRUCTIONS FOR TRAINEES

It is the trainee's responsibility to:

- decide when to request formal assessment

- ask an assessing pilot for formal assessment of component sections first and then whole passages (**please note: whole passage assessment cannot be requested until all component sections have been signed off**)

- present the appropriate part of the workbook to the assessing pilot for signature

INSTRUCTIONS FOR ASSESSING (CHECK) PILOTS

Following request from a trainee pilot, the assessing pilot is asked to:

- assess component sections and whole passages (**please note: whole passage assessment should not occur until component section assessment is complete**)

- sign off relevant sections of the trainee's workbook as appropriate

3.2   WORKBOOK ASSESSMENT

Trainees must familiarize themselves with the workbook and all the requirements for completing it. They must also ensure that relevant pages and sections are signed off by assessing pilots.

3.3   LOCAL KNOWLEDGE: COMPONENTS SECTION ASSESSMENT

Logistics of arranging suitable training voyages are such that route certification requirements have been broken down into convenient sections. The following table lists the licence areas and sectors as well as

the passage requirements per sector. **Component sections assessment should be completed before whole passage assessment is allowed.**

As the areas listed below are discussed in Module 3 (section 2) of this study guide, trainees are strongly urged to review the module in its entirety. Further details are also found in the workbook.

Licence Area	Sectors	
Hydrographers Passage	Hydrographers Passage	
The Inner Route	1	Western Approaches to Torres Strait*
	2	Prince of Wales Channel*
	3	Alert Patches to Wyborn Reef
	4	Wyborn Reef to Chapman Island
	5	Fairway Channel (LADS Passage)
	6	Chapman Island to King Island via Heath
	7	King Island to Gubbins Reef
	8	Gubbins Reef to Cairns
Great NE Channel	Alert Patches to Dalrymple Island Pilot boarding Ground*	
Whitsunday Islands	Whitsunday Islands	

*Indicates a common area referred to as the Torres Strait

3.4   LOCAL KNOWLEDGE: WHOLE PASSAGE ASSESSMENT

Trainees and assessing pilots should bear in mind the following passage assessment requirements:

1.   As noted earlier, the components section of the local area knowledge assessment has to be completed before a trainee can move on to whole passage assessment.

2.   Assessing pilots are asked to verify a trainee's satisfactory performance only for those route sections covered in a particular pilotage.

3.   Assessing pilots and trainees should note that for some routes, transits are to be undertaken by day and night and for all routes in both directions. These may be undertaken in any convenient sequence; indeed, this requirement acknowledges that the order in which particular transits are undertaken will depend on availability of vessels.

4.   The requirement for day and night transits for some shorter sections is to ensure trainees have demonstrated experience of the area under various conditions. It is understood and accepted that night transits could involve clear weather with bright moonlight, and day transits could involve overcast and rainy conditions with limited visibility. Furthermore, it may not be possible to complete a full section in total night or day conditions. Taking the foregoing into consideration, it is left to the discretion of the assessing pilot to decide if a transit generally qualifies as a day or a night passage.

5.   It is a requirement that at least 2 assessing (check) pilots must sign off transits in respect of each identified route section. As near as possible, no assessing pilot should sign off more than 50% of assessments.

Please also note:

•   There may be no right or wrong judgments involved. An assessing pilot is asked to acknowledge that something may be done safely and competently even if it is not exactly as the assessing pilot would have done it.

•   An assessing pilot may decline to sign and should discuss apparent study needs with the trainee.

- Where the trainee or assessing pilot has any doubt or question, he or she should contact AMSA. Contact details are found at the start of this study guide.

Passage requirements are summarized below.

Sectors	Passage Requirements
Torres Strait (1)	2 x east bound passages 2 x west bound passages 1 passage in each direction must be by day 1 passage in each direction must be by night - involve at least 2 assessing (check) pilots
Cairns to Thursday Island (1)	2 x north bound passages 2 x south bound passages - involve at least 2 assessing (check) pilots
Great North East Channel (2)	1 x northeast passage 1 x southwest passage 1 passage should be by day if practicable 1 passage should be by night if practicable - involve at least 2 assessing (check) pilots
Hydrographers Passage	4 passages, one in each direction by day and one in each direction by night - between Creal Reef and Blossom Bank - involve at least 2 assessing (check) pilots
Whitsunday Islands	Assessment voyages not required

Notes:
1. Any combination of passages counts for assessment purposes. For example, a Gladstone to Thursday Island passage counts as 1 passage S/N Cairns to Thursday Island and 1 passage E/W Torres Strait (day/night).
2. For assessment purposes, a Great North East Channel passage also incorporates a Torres Strait passage.
3. To be eligible for the issue of a GNEC licence a pilot must hold an Inner Route licence as a prerequisite.

5   SIGN OFF AND WORKBOOK SUBMISSION

Trainees must ensure that all relevant sections of their workbooks are duly completed and signed off by assessing pilots.

Completed workbooks should then be submitted to the Brisbane office of AMSA for a final assessment. The workbook will be returned to the trainee once AMSA is satisfied all requirements have been met.

This completes the training program.

6   APPLICATION FOR A LICENCE

Applications for an initial coastal pilot licence may be submitted at the same time the workbook is submitted to AMSA.

Applications should be made to:

Manager, Maritime Operations – North, AMSA
address   PO Box 10790, 410 Ann St, Brisbane QLD 4000
phone   (07) 3001 6800
fax   (07) 3001 6801

SUPPORTING DOCUMENTATION

Each application must be accompanied by the following documentation:

- Completed workbook

- Proof of citizenship or permanent residence (eg passport, birth certificate, Department of Immigration documentation on residence status)

- Current Australian Certificate of Competency as Master (Unlimited) or Certificate of Recognition

- Proof of at least 36 months service as a navigating officer in charge of a watch/ Master/pilot on ships 35 metres or over in length while holding a Master (Unlimited) certificate

- Current Certificate of Medical Fitness referred to in Marine Orders Part 9 (Health – Medical Fitness)

- Proof of having attended a Bridge Resource Management (BRM) course

Please keep all information up to date and continue building on the knowledge gained during this period of training.