



Message from the Head of Centre, CMS

Up to 90% of world trade is carried on ships and shipping is said to be the lifeblood of the global economy. Thousands of ships are managed and operated today within a complex network of ships serving the global economy where shipping operations require precision without room for errors to keep the world supply chain running. The impact of shipping on global trade is tremendous as we have seen in the recent blockage of the Suez Canal due to a vessel grounding for a few days. Even in the Maldives, small businesses on islands felt the panic. We are seeing shipping is constantly evolving to cater to the changes in world trade, ship design, maritime legislation, technology, and so on.

Despite the technological advances for example in navigation, the basic principles of navigation that have been there for hundreds of years have not changed. A navigation student's foundation is laid on these principles. At the Centre for Maritime Studies, we ensure the students who complete their courses attain the competencies of STCW and have a good understanding of the basic principles.

Maldivian seafarers have served on shipping companies worldwide and earned their reputation for their talent, good seamanship, and discipline. Although the existing number of seafarers in the Maldives is only a few hundred, they continue to serve as Ship Captains, Marine engineers, and ratings on foreign-going vessels worldwide.

As ship captains, marine pilots, marine surveyors, shipping professionals and executives, educators, etc., women in maritime play an integral part in the global shipping/maritime sector today. To recognize the service of women and raise their profiles in the maritime sector, promote sustained employment, and address the current gender imbalance in maritime, the IMO International Day for Women is observed every year on the 18th of May.

Some of the best aspects of choosing a seagoing career as far as I am concerned is that seafarers are well paid, and it is one of the well-regulated industries. Occupational health and safety, seafarer welfare, safe working and living conditions, and fair terms of employment today are primary conditions for a seafarer to work on a ship.

We at the Centre for Maritime Studies, The Maldives National University will endeavor to provide the best learning experience to students who wish to seek a seagoing career through our team of experienced lecturers and the best training facilities available in the country.

Take the challenge for an exciting career in shipping!

“Explore the seas, Explore the world”

Capt. Mohamed Zaid

Head of Centre

Centre for Maritime Studies

The Maldives National University



Figure 1: Navigation Simulator with ECDIS

According to IMO Resolution MSC.232(82) an Electronic Chart Display and Information Systems (ECDIS) is a navigation information system which with adequate back-up arrangements that can be accepted as complying with the up-to-date chart required by regulations V/19 and V/27 of the 1974 SOLAS Convention, as amended, by displaying selected information from a system electronic navigational chart (SENC) with positional information from navigation sensors to assist the mariner in route planning and route monitoring, and if required display additional navigation-related information.

ECDIS has brought revolutionary changes to the way we navigate on board ships since July 2012. Testament to this is the paperless navigation which is widely used today onboard ships at present.

At the Centre for Maritime Studies, ECDIS generic training courses commenced in March 2021 by delivering the IMO model course 1.27. I had the opportunity to be the trainer for the first batch of ECDIS course at CMS and would like to share my experience with ECDIS since 2013 as a user and as a trainer.

I received my first ECDIS generic training in 2013 and since then, have undergone several type-specific ECDIS training, and used ECDIS for navigation on board vessels up to 2019. As a shipping company requirement ECDIS generic training was done again in 2019.

As an officer onboard using ECDIS for navigation back in 2015, I take note that during this time alarms on ECDIS were difficult to manage and some display information on the ENC such as names of anchorages, and fairways were absent in the usual display modes. It can be said that my first experience with ECDIS for navigation was not “user friendly”.

The ECDIS presentation library used on the ECDIS back in 2015 was S-52 Edition 3.4 which had many drawbacks. To address the ECDIS drawbacks in the ECDIS presentation library, IHO S-52 Edition 4.0 was introduced in September 2014 and went into effect in August 2017 thereby making the ECDIS operation much more effective and user friendly.

Although many textbooks are recommended in the IMO model course, relevant course notes and the below IMO, IHO documents, the ECDIS user manual, and industry-recommended best practices may be sufficient for a user to understand ECDIS.

Resolution MSC.232(82), December 2006- IMO Revised performance standards for ECDIS

S-52 Edition 6.1.(1), October 2014 -Specifications for Chart Content and Display Aspects of ECDIS

S-52 (Annex A) Edition 4.0.(3), October 2014 - IHO ECDIS Presentation Library

S-57 Edition 3.1, November 2000-IHO Transfer Standard for Digital Hydrographic Data.

S-58 Edition 6.1.0, September 2018-ENC Validation Checks

S-61 Edition 1.0, January 1999 Product Specification for Raster Navigational Charts (RNC)

S-63 Edition 1.2.(1), March 2020 - IHO Data Protection Scheme

S-64 Edition 3.0.(3), December 2020 IHO Test Data Sets for ECDIS

S-65 Edition 2.1.0, May 2017: ENC Production, Maintenance and Distribution Guidance

S-67 Edition 1.0.0, September 2020- IHO Mariners’ Guide to Accuracy of Depth Information in ENC’s

Industry Recommendations for ECDIS Training- The Nautical Institute (<https://www.nautinst.org/technical-resources/technical-library/ecdis/ecdis-guidance.html>)

STCW Regulations II/1, II/2, I/12

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

As an ECDIS trainer, I feel ECDIS students need to have a good understanding of the Performance standards of ECIDS according to MSC 232 (82) and relevant IHO standards. The mentioned knowledge will assist the ECDIS user to become skilled in the operation and use of the ECDIS and achieve the learning outcomes of the IMO model course 1.27. It is a good practice for all ECDIS users to repeat the IMO model course 1.27 every five years.

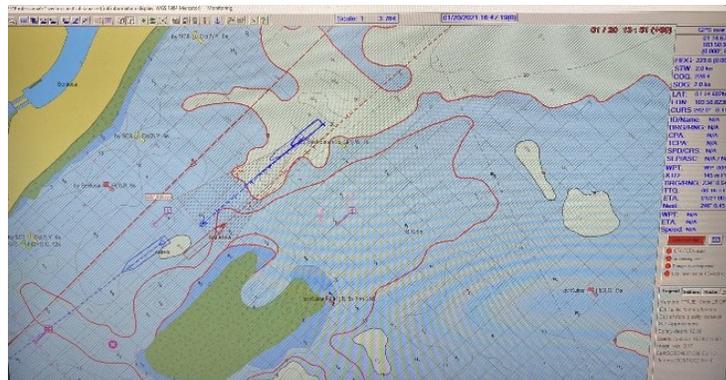


Figure 2: MARIS ECDIS Display

*photographs: CMS

Presently many modern Safari boats in the Maldives are equipped with an impressive array of state-of-the-art navigational and communication equipment to enhance safety of navigation. The vessels' trade routes cover most of the inland waters of the Maldives.



Every year MNDF's Coast Guard unit is notified of several preventable accidents taking place in Maldives due to human error. The authority also claimed of sea accidents being reported in every five days throughout the year. This means an approximate at least 73 incidents or more every year.

Most of the above vessels are manned by a Captain holding Niyami-1 Certificate and is the only certified navigator and watchkeeper. Often the Captain's watchkeeping hours are long even after a busy work schedule in ports, marinas and anchorages for change of passengers and lifting of necessary supplies for the voyage. As these vessels follow the minimum manning requirements, the Captain's long work hours lead to fatigue which is a contributing factor to many accidents at sea. Although not a regulatory requirement, in order to reduce the risk for the safety of life at sea, it may be prudent to employ certified watchkeepers to promote safety of navigation.



Pre-joining briefing and familiarization is a good practice carried out in the shipping industry. Although the employed captains on Safari boats are certified, it is highly recommended to conduct a pre-joining briefing or a training program for captains so as to ensure the captains are familiarized with the expensive ship-specific equipment, machinery, and most of all Company's policies.

I feel safety standards can be built and will lead to good work discipline onboard, thereby reducing the risk to the property and the vessel owners.



**photographs: Google*



The sextant, an instrument for measuring angles, was developed from a suggestion by Captain John Campbell of the Royal Navy in 1757. Those promoting the use of lunar distances, or "lunars," for finding longitude at the end of the 18th century stimulated the invention of the sextant.

The name "sextant" is from the Latin sextans, "the sixth part". The arc of early marine sextants is approximately the sixth part of a circle, but because of the optical principle involved, the instrument measures angles of 120°. Most modern instruments measure something more than this.

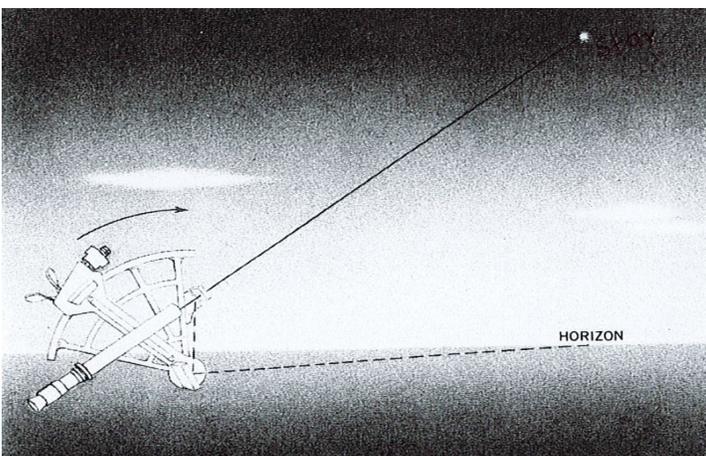
The sextant, so called because its graduated arc is about one sixth of a circle, was the natural development of Haley's Octant.

The local name for sextant is "Filaa". "Filaa elhun" is the local term for taking sights using sextant.

Because of its great value for determining position at sea, the sextant has been a symbol of navigation for more than 200 years. The quality of his instrument, the care he gives it, and the skill with which he makes observations are to the navigator matters of professional pride.

Prior to the invention of satellite aided navigation and position fixing systems sextant was the primary instrument used by the navigator to determine vessel's position at high seas using heavenly bodies.

The sextant is a precision instrument capable of measuring angles in the vertical, horizontal and oblique planes, to within an accuracy of about 10 or 20 seconds of arc.



- In marine navigation the sextant is used for the following purposes:
- a) Measuring the altitude of a celestial body above the horizon
 - b) Measuring the vertical angle subtended by a prominent land mark
 - c) Measuring the horizontal angle between two prominent land marks

There are basically two types of sextant in common use at sea, as follows:

- a) The micrometer Sextant – the most common
- b) The Vernier Sextant – now infrequently used

The difference between the two types consists mainly in the method of measuring and reading the scales. The great advantage of the micrometer sextant lies in its clearance and in the speed and ease with which it can be read, even in conditions of poor light. The Vernier sextant on the other hand is no less accurate, and having fewer moving and wearing parts, it may be expected to remain in adjustment for a longer period.

The optical principle on which a sextant is constructed is as follows:

"If a ray of light is reflected from two mirrors in succession, the angle between the first and last directions of the ray is twice the angle between the mirrors".

This optical principle stems from two simple laws of optics, as follows:

When a ray of light strikes a plane mirror, the angle of incidence is equal to the angle of reflection.

The angle of incidence, the normal and the angle of reflection, all lie in the same plane.

There are two types of sextant errors. Adjustable error and non adjustable errors.

With the aid of sight reduction tables and the use of altitude taken from sextant to problem is solved to find the position line of the observer, hence the position of the vessel.

The Sextant, how to use it, and to find the position using sextant are taught at the Centre for Maritime Studies in the Celestial Navigation Module of Certificate IV in Marine Operation programme.



*Photographs: CMS



NEW TECHNOLOGIES FOR GREENER SHIPPING

World Maritime Day was first held in 1978 to mark the 20th anniversary of the International Maritime Organization (IMO) Convention's entry into force when the IMO had 21 member states whereas currently IMO has 175 member states. Every year on the last week of September (29th September), World Maritime Day is celebrated to provide the opportunity to appreciate the importance of shipping and other maritime activities and to draw attention to a certain component of the IMO's activities

This year's world maritime day theme is "New technologies for greener shipping" which promotes inclusive innovation, partnerships, research & development, addresses 04 of the 17 UN sustainable goals, and makes way for the shipping industry for a green transition into a sustainable future.

Innovation and technology in shipping is changing rapidly since the 90s.

The ship's engines are small and smart today and built to comply with IMO's MARPOL convention's energy efficiency and emission control standards. Main and auxiliary engines today are fitted with much automation and electronics for operation.

Ships today use Very-low sulfur fuel oil (VLSFO) with a sulfur content of 0.50% and Ultra-low sulfur fuel oil (ULSFO) with a sulfur content of 0.10% in Emission Control Areas (ECA). Other than heavy fuels, LNG is used as a fuel source on some ships today as LNG is said to remove sulfur in the pre-liquefaction process, and hence, it emits almost no Sulfur Oxides (SO_x) or Particulate Matter (PM) when burned and emits less NO_x (nitrogen oxides) and CO₂ than other fossil fuels. Non fossil fuel such as Methanol is emerging as a popular candidate for decarbonizing shipping. (<https://bit.ly/3LVa1uW>)





Signing the agreement between MNU and MTCC to establish Maritime Survival Centre.



Orientation for Students of Certificate 4 in Marine Operations, Batch 8



Grade 9 students of Ghaazee School visit to Centre for Maritime Studies to learn about seamanship.



HE President of The Maldives, Ibrahim Mohamed Salih visits CMS stall at Maldives Marine Expo 2022.



The Vice Chancellor of MNU Dr Mohamed Shareef made a courtesy call on the Indian High Commissioner HE Shri Munu Mahawar. Discussions were held on cooperation with India on maritime education and other areas of mutual interest.



Meeting of The Maldives National University, The Directorate General of Shipping and Stakeholders on 29th August 2022 at Mumbai



Visit to Training Ship Rahaman, Mumbai on 30th August 2022



Visit to Samundra Maritime Training Institute, Mumbai on 30th August 2022

Upcoming Courses at Centre for Maritime Studies- Apply now !

November 2022:

- ⇒ Proficiency in Basic Oil and Tanker Operations
- ⇒ Shipboard Draught Surveying
- ⇒ Radar Navigation at Management Level
- ⇒ Proficiency in Advanced Fire Fighting
- ⇒ Security Training for Port Facility Personnel (PSSO, PFSA, PFDSD)
- ⇒ Niyamikamuge Certificare II
- ⇒ Proficiency in Medical First Aid
- ⇒ Company Security Officer
- ⇒ Falhuveringe Certificate Course
- ⇒ Proficiency in Medical Care

December 2022:

- ⇒ Proficiency in Basic Liquefied Gas Tanker Operations
- ⇒ Proficiency in Crisis Management and Human Behaviour
- ⇒ Master and Deck Officer Refresher and Updating Course
- ⇒ Engineer Officer Refresher and Updating Course
- ⇒ Proficiency in Crowd Management
- ⇒ Refresher and Updating Courses:
 - ◇ RU-PFPPF
 - ◇ RU-PPST
 - ◇ RU-PEFA
 - ◇ RU-PSSR
 - ◇ RU-PSCRB
 - ◇ RU-PAFF

Certificate in Marine Operations Course commencing on January 2023

This Course provides the mandatory requirements for knowledge understanding and proficiency in table A-II/1 of STCW Code. The Deck Officer will have the competency to keep navigational watch at sea and at anchor, cargo/port watch, independently on vessels of unlimited gross tonnage engaged on international voyages.

**Course intake will open in December 2022*



 **CENTRE FOR
MARITIME
STUDIES**

Certificate 4 in Marine Operations

 mnu.edu.mv

