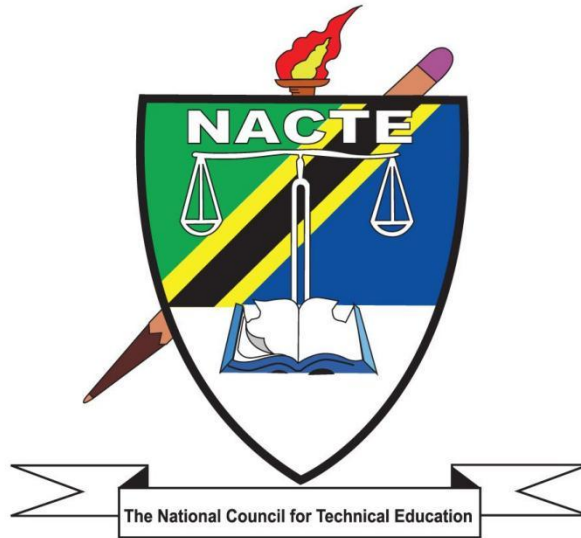


**NATIONAL COUNCIL FOR TECHNICAL EDUCATION**



**DECEMBER 2022**

**PROPOSED OCCUPATIONAL STANDARDS**

**FOR MARINE NAVIGATION TECHNICIAN**

**OCCUPATION: MARINE NAVIGATION**

**LEVEL: NTA 6**

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## **FOREWORD**

The National Council for Technical Education (NACTE) is a corporate body established by the National Council for Technical Education Act, Cap.129. The Act provides a legal framework for the Council to coordinate the provision of technical education and training in Tanzania. The mandate of NACTE is three-fold, namely; Regulatory, Quality Assurance and Policy Advisory.

In discharging its mandate, the Council has been charged with the responsibilities, among others, to:

- (a) assist technical institutions in the transmission of knowledge, principles and training in the field of technical education and training for the benefit of the people of Tanzania;
- (b) assist technical institutions in the overall development of the quality of education they provide and to promote and to maintain approved academic standards;
- (c) establish and make awards in technical education which are consistent in standard and comparable to related awards in Tanzania and internationally; and
- (d) ensure that the quality of education required for the awards is met and maintained throughout the delivery of the course.

In the course of execution of these responsibilities, the Council has been instituting various measures aiming at advancing the quality of training provided in technical institutions in respect of the changing demands of the labour market, both local and international.

To achieve the above obligation, NACTE, under the Ministry of Education, Science and Technology implemented the East Africa Skills for Transformation and Regional Integration Project (EASTRIP), a project aiming at promoting regional integration through supporting the regional corridors and sector markets, developing common standards and qualifications, and promoting mobility of students, faculty, and graduates. The project supports the Government of Tanzania to address shortage of skills in five sectors namely:

- (a) Energy;
- (b) Construction;
- (c) Information and Communication Technology (ICT);
- (d) Transportation; and
- (e) Agribusiness.

To address the skills miss-match and shortage in the five (5) sectors in the country, the project specially funded, among others, a component of Development of Occupational Standards for Technical and Vocational Education and Training (TVET). In this regard, NACTE endeavoured to identify qualified and highly experienced experts in the five sectors from both the industry and training institutions to carry out the development of Occupational Standards. The exercise was carried out at Morogoro Teachers College – Morogoro from 16<sup>th</sup> July to 10<sup>th</sup> August, 2021. The output of the exercise is Occupational Standards for 12 occupations. Occupational standards for Marine Navigation Technicians are among the occupational standards for 12 occupations which have been developed.

Since Occupational Standards are statements of work performance reflecting the ability to successfully complete the functions required in an occupation, as well as the application of knowledge, skills, attitudes and understanding in an occupation, it is the Council's expectations that the developed standards will form a robust base for decision making and provide explicit guidance to policy makers, curriculum developers, educators, employers and other stakeholders in matters related to manpower planning as well as execution of Technical and Vocational Education and Training undertakings.

Prof. J. W. Kondoro

**Chairman**

Dar es Salaam

**August 2022**

## ACKNOWLEDGEMENT

The National Council for Technical Education (NACTE) is charged with the mandate to be the Quality Assurance organ of the Government in matters related to Technical and Vocational Education and Training (TVET) and production of qualified manpower for both local and international labour markets. In order to realize this obligation, NACTE endeavours to institute policies, guidelines and standards and to set the quality benchmarks for training institutions.

However, this is only possible if there is a strong base, linking the training institutions on one hand and the demands of the industry/labour market for relevant manpower on the other hand. Therefore, the Council undertook a step to develop Occupational Standards in sectors considered to be the engine to steer the country's desire to achieve an industrial economy. This exercise would not be a success without the input and support from our stakeholders. I am indebted to acknowledge some of them here.

I wish to acknowledge and appreciate the support from the Ministry of Education, Science and Technology through the East Africa Skills for Transformation and Regional Integration Project (EASTRIP) for the financial support which facilitated the preparation of this document. I also wish to appreciate Mrs Leah Lukindo and Eng. Dr. Simon Baregu for the tireless efforts and commitment in facilitating and guiding the standards development process, Ms. Eileen Tzamburakis and Ms. Chausiku Yakweli Ibrahim for compiling and type setting the final document; and the NACTE Secretariat for coordinating the whole activity.

In a very special way I wish further to extend my sincere gratitude to this team of wonderful experts who tirelessly dedicated their time and availed their invaluable intellect in the preparation of this document. I would like to recognise the colossal inputs of the following experts:

<b>S/N</b>	<b>Name</b>	<b>Designation</b>	<b>Organization</b>
1	Eng. Thomas J. Mayagilo	Lecturer	Dar-es-Salaam Maritime Institute (DMI)
2	Capt. Gilbert L. Mokiwa	Master	Dar-es-Salaam Maritime Institute (DMI)
3	Dr. Eliamin Kasembe	Rector	Dar-es-Salaam Maritime Institute (DMI)

<b>S/N</b>	<b>Name</b>	<b>Designation</b>	<b>Organization</b>
4	Eng. Mushumbusi Abdu Dauda	Lecturer	Dar-es-Salaam Maritime Institute (DMI)

In addition, the Council hopes to further enhance the internationalization of Occupational Standard and promote the modernization and internationalization of industries in Tanzania, so as to facilitate Tanzania's integration into the international market and tap its development potential. Therefore, the Council invited the China - Africa Vocational Education Alliance, China - Africa (Chongqing) Vocational Education Alliance, and Chinese vocational colleges to participate in the development, revision, and review of the Occupational Standard documents. It is firmly believed that they will provide strong support for the development of vocational education and related industries in Tanzania based on their rich experience in vocational education, relying on China's advanced and complete industrial chain as well as its status in the international market.

Therefore, I would like to express my heartfelt appreciation to this professional team composed of Chinese colleges, institutions and experts for their hard work and dedication. They've made great contributions to the compilation of this document. I would like to thank the following colleges and experts for their support.

<b>No.</b>	<b>College</b>	<b>Name</b>	<b>Title/Area of Expertise</b>
1	Jiangsu Maritime Institute	Zhang Haifeng	Associate Professor/Marine Technology
2		Wan Jianxia	Associate Professor/Marine Technology
1	Shandong Transport Vocational College	Ni Wenliang	Associate Professor/Ship Management
2		Qiu Liang	Lecturer/Marine Technology

Dr. A. B. Rutayuga

**Executive Secretary**

Dar es Salaam

**August 2021**

## **ABBREVIATIONS**

<b>CPP</b>	Controllable Pitch Propeller
<b>DMI</b>	Dar -es-salaam Maritime Institute
<b>GPS</b>	Global Positioning System
<b>ICT</b>	Information Communication Technology
<b>IMO</b>	International Marine Organisation
<b>ISPS</b>	International Ship and Port Facility Security
<b>MBS</b>	Minimum Breaking Strength
<b>MLC</b>	Maritime Labour Convention
<b>NACTE</b>	National Council of Technical Education
<b>NOS</b>	National Occupational Standards
<b>OOW</b>	Officer on Watch
<b>OS</b>	Occupational Standards
<b>SOLAS</b>	Safety of Life At Sea
<b>SWL</b>	Safe Working Load
<b>TET</b>	Technical Education and Training
<b>TVET</b>	Technical and Vocational Education and Training
<b>WLL</b>	Working Load Limit
<b>MARPOL</b>	Marine Pollution
<b>VHF</b>	Very High Frequency

## GLOSSARY OF TERMS

<b>Circumstantial Knowledge:</b>	Detailed knowledge for decision-making in regard to different circumstances and cross-cutting issues.
<b>Competence:</b>	The ability to use knowledge, understanding, practical and thinking skills to perform effectively to the workplace standards required in employment.
<b>Competency:</b>	A description of the ability one possesses when able to perform a given occupational task effectively and efficiently.
<b>Competency-Based Education:</b>	An instructional system that derives its content from validated tasks and bases assessment on the learner's performance.
<b>Curriculum:</b>	A description or composite of statements about "what is to be learned" by the trainee/student in a particular instructional programme; a product that states the "intended learning outcomes".
<b>Educational/Training Programme:</b>	The complete curriculum and instruction (what and how) that is designed to prepare a person for employment in a job or other particular performance situation.
<b>Occupation:</b>	A specific position requiring the performance of specific tasks – essentially the same tasks are performed by all employees having the same title. (Example: baker)
<b>Occupational Analysis:</b>	A process used to identify the tasks that are important to employees in any given occupation.
<b>Occupational Area:</b>	This is a broad grouping of related jobs. Example: food service.
<b>Occupational Standards:</b>	Specific requirements of competences people are expected to demonstrate in a particular occupational area, including knowledge and relevant attitudes. They also act as performance tool of assessment of the pre – scribed outcomes.
<b>Performance Criteria:</b>	It indicates the expected end results or outcome in form of evaluative statements.

<b>Skills:</b>	The ability to perform occupational tasks with a high degree of proficiency within a given occupation. Skill is conceived of as a composite of three completely interdependent components: cognitive, affective, and psychomotor.
<b>Standards:</b>	it is a set of statement, which if proved true under working conditions, means that an individual is meeting an expected level and type of performance.
<b>Task Analysis:</b>	The process of analyzing each task to determine the steps, related knowledge, attitudes, performance standards, tools and materials needed, and safety concerns required of employees performing it.
<b>Task:</b>	A work activity that has a definite beginning and ending, is observable or measurable, consists of two or more definite steps, and leads to a product, service, or decision.
<b>Underpinning Knowledge:</b>	This is crucial knowledge that an individual must acquire in order to demonstrate competences that are associated in performing a given task.
<b>Verification Process:</b>	The process of having experts review and conform the importance of the task (competency) statements identified through occupational analysis. Other questions, such as the degree of task learning difficulty are also frequently asked. This process is also sometimes referred to as validation.
<b>Occupational Competence:</b>	The application of knowledge and skills to perform consistently to the standards required in the work context.

## **1.0. INTRODUCTION**

Technical Education and Training (TET) is one of the most important education sub-sectors in Tanzania, responsible for developing a skilled workforce to support the country's industrialization economic agenda. Tanzania's Development Vision 2025 intends to raise the country's economy to a middle-income status. This requires a skilled workforce that is aligned with the needs of the public and private sectors of the economy. The National Council for Technical Education has begun the job of drafting Occupational Standards that will eventually be adopted as National Occupational Standards for TET in order to ensure that it meets the needs of the labour market and the country's economic agenda.

National Occupational Standards (NOS) are PERFORMANCE CRITERIA that are matched with labour market demands. Each National Occupation Standard describes functions, performance standards, and knowledge/understanding for one important function or task. They combine skills, knowledge, and attitudes to describe best practice. They are useful tools for establishing job roles, personnel recruiting, supervision, and appraisal, as well as TET standards. They're also helpful for benchmarking and harmonizing qualifications on a national and international level. Standards, in general, provide a solid framework for high-quality TET that is labour market-relevant, current and consistent in delivery across all public and private institutions.

However, it must be noted that, Occupational Standards and Training standards/qualifications standards are different. Occupational standards are defined in terms of activities performed by a person in a selected occupation (e.g., an electrical engineer designs electrical wiring circuits, performs trouble shooting in electrical wiring, etc.) and they are usually defined by employers following procedures agreed upon by all stakeholders. Education and training standards are developed from the activities defined in occupational standards, and they include learning objectives to ensure that the necessary skills and knowledge are developed by a person to enable him or her to function at an agreed level in an occupation. Education and Training standards are used to define curricula in training institutions. It is however critical that there must be a direct link between the occupational standards and the training standards to respond to demands of the labour market.

In TET delivery, Tanzania adopted the Competency-based Education and Training (CBET) approach. The CBET approach focuses on providing learners with the skills and knowledge required to meet the occupational standards. Occupational standards are thus the starting point for developing

Competency-based Education and Training (CBET) programs. TET institutions will be required to benchmark their curricula with relevant occupational standards.

Occupational Standards are developed based on a given occupation's current and future demands. As a result, they serve as a means of bridging the gap between the worlds of employment and technical education and training (TET).

The Marine Navigation Technician Occupation has its own set of occupational standards. The document explains how the occupational standards were developed, as well as the scope, the occupational profile in the form of DACUM charts, and the Occupational Standards.

## **2.0. OCCUPATIONAL STANDARD DEVELOPMENT PROCESS**

The Occupational standards development process began with an examination of major documents that guide Tanzanian skill development. The 10-year National Skills Development Strategy (2016-2026) was one of the documents reviewed, and it outlined six (6) economic sectors that should be prioritized when developing skills development programmes. These sectors include: Transport and Logistics, Tourism and Hospitality, Agribusiness, Construction, Energy and ICT. NACTE labour market reports were also used in the literature review to determine the skills demand in the Tanzanian labour market as a whole.

After the literature review, a workshop comprised of expert workers and educators with substantial knowledge and experience in the occupation conducted an occupational analysis utilizing the DACUM approach to produce the occupational profile. The analysis resulted in DACUM Charts, which are attached as **Appendix 1** to this document.

The occupational standards were then developed. Experts in Occupational Analysis and the Development of Occupational Standards facilitated the workshop. Interviews, online surveys, and a stakeholder forum were used to validate the occupational standards. Engineers, supervisory technicians on the job, and experienced marine navigation technicians were key informants in the survey to discover occupational trends. This information was used to gain insight from the workplaces regarding trends and changes in the profession, including how well graduates are prepared for working in the occupation. A total of ..... online surveys were completed by experts from the labour market across the country. Apart from the survey aiding in defining the

scope for the occupational analysis, they served to engage a wide cross-section of experts in the occupation. The stakeholders' forum was attended by 100 participants from different parts of the country representing various companies.

### **3.0. THE SCOPE AND OVERVIEW OF THE OCCUPATION STANDARDS FOR MARINE NAVIGATION TECHNICIANS**

These standards cover a broad range of duties and tasks that can be performed by a Marine Navigation Technician. However, the occupational standards are not meant to replace individual job descriptions, they are to be used for guidance in defining skill levels and knowledge for the technician in specific settings or positions. The Marine Navigation Technician may perform tasks in a number of key areas of the occupational standards, but not necessarily in all areas. For example, in large operations other individuals may be employed or designated to perform specific tasks.

Marine Navigation Technicians work in the Marine Transport Sub sector. Marine transportation includes cargo-carrying commercial shipping (e.g. merchant marine) and non-cargo commercial shipping (e.g. ferries, cruise ships, etc.). Marine vessels move goods and people from one part of the world to the other, manned by a cadre of trained and qualified seafarers. There are many types of ships and of various sizes, trades, and different manning levels. The manning level of a ship is governed by the ship's trade type. Cruise vessels lead in the number of crew required to satisfy their Manning certificate level. A manning certificate is a document that contains information about the number of crew members required for a ship's safe operation and the qualifications of each member.

A standard marine vessel has three main departments namely:

1. Navigation / Deck department
2. Engineering Department and
3. Catering Department.

The **Navigation** department is manned by the following crew members:

1. **The Captain** who is the Master and Commanding Officer of the ship.
2. **The Chief Officer** who is second in command and head of Deck Department.
3. **The Second Officer** who is "Officer of the Watch" and responsible for Navigation.
4. **The Third Officer** who is also "Officer of the Watch" and responsible for Life Saving Appliances.
5. **The Fourth Officer**, who is present in some ships, also keeps watch.

6. **The Bosun** is the Petty Officer –head of all deck ratings.
7. **The Ratings:** These could be of any number depending on the manning certificate level, size of ship and trade.

This **Occupation Standard** covers the “**Marine Navigation Technician**”, who in this case will include the following: **Second Officer**, whom we referred to as Officer of the Watch (OOW) and on the NACTE awards system is at NTA 6. **Third Officer**, also an Officer of the Watch (OOW) is considered an NTA 5 (Operational Level). **Fourth Officer**, who also keeps watch, is considered an NTA 4 (basic technician)

**The Marine Navigation Technician** plays an important role in ensuring safe sailing, navigation and berthing of the marine vessel. The standard covers the main duties of the Marine Navigation Technician as follows:

1. Contributing to safe navigation
2. Handling cargo on board the vessel
3. Performing shipboard maintenance
4. Controlling the operation of on-board equipment
5. Performing watchkeeping during sailing
6. Performing watchkeeping when the ship is anchored or berthed
7. Performing chart reading
8. Maintaining safe navigation
9. Undertaking communication with different parties
10. Performing loading and unloading activities
11. Performing safe anchoring
12. Performing safe berthing.

The Occupational standards have been clustered into NTA qualification levels i.e. NTA level 4, 5 and 6

#### **4.0. VALIDITY PERIOD**

The occupational standards will be valid for 3-5 years due to the fast-changing nature of technology. The review will proceed in the same manner as the previous one, with new occupational standards being developed based on current labour market Information.

## **5.0. OCCUPATIONAL STANDARDS**

### **5.1. OCCUPATIONAL STANDARD FOR MARINE NAVIGATION TECHNICIAN NTA 6**

<b>OCCUPATION</b>	MARINE NAVIGATION TECHNICIAN	<b>OCCUPATION CODE</b>	
<b>DUTY TITLE</b>	PERFORMING OF WATCHKEEPING DUTIES ON BOARD SHIP	<b>DUTY NO.</b>	601
<b>TASK TITLE</b>	RESPOND TO RADIO SIGNALS AND OTHER COMMUNICATIONS	<b>TASK NO.</b>	6011
<b>PERFORMANCE CRITERIA</b>	A person carrying out this task must be able to apply knowledge and skills to respond to radio signals and other communications aboard a marine vessel in accordance with the current versions of regulations and standards governing the marine field.		
<b>RANGE STATEMENT</b>	The task will be performed aboard a marine vessel. For successful performance of the task, the following will be required: 1. VHF Radio; 2. SSB Radio; 3. Encoder.		
<b>EVIDENCE REQUIREMENTS</b>			
<b>Direct Performance</b>		<b>Practical Performance</b>	
<p>The person performing this task must be able do the following:</p> <ol style="list-style-type: none"> <li>1. Call stations to confirm reception;</li> <li>2. Keep battery fully charged;</li> <li>3. Observe roles and regulations as to code of marine signals;</li> <li>4. Check Radio operational status;</li> <li>5. Tune radio to required frequency;</li> <li>6. Listen in to incoming radio messages;</li> <li>7. Respond promptly to incoming messages.</li> </ol>		<p><b>Detailed knowledge about:</b></p> <p><b>1.0. Methods</b> This person performing this task must be able to explain how to:</p> <ol style="list-style-type: none"> <li>1.1. Maintain communication;</li> <li>1.2. Keep batteries fully charged;</li> <li>1.3. Keep radio watch to catch important radio messages (Msgs).</li> </ol> <p><b>2.0. Principles</b> The person must be able to explain the principles of:</p> <ol style="list-style-type: none"> <li>2.1. Observing network discipline;</li> <li>2.2. Maintain radio discipline;</li> <li>2.3. Observe code of marine signals.</li> </ol> <p><b>3.0. Theories</b> The person must be able to explain:</p> <ol style="list-style-type: none"> <li>3.1. Possible causes of radio faults;</li> <li>3.2. Cause of failure in radio operability;</li> <li>3.3. Maintain radio discipline when talking on the radio;</li> <li>3.4. Safe use of tools and instruments.</li> </ol> <p><b>4.0. Essential Skills</b></p> <ol style="list-style-type: none"> <li>4.1. Communication skills;</li> <li>4.2. Radio operator skills.</li> </ol> <p><b>5.0. Math Skills</b></p>	

	5.1. Simple arithmetic.
<b>DESCRIPTION OF END PRODUCTS/SERVICE</b>	Radio call communication to be maintained or channel 16.
<b>CIRCUMSTANTIAL KNOWLEDGE</b>	<b>Detailed knowledge about:</b> <ol style="list-style-type: none"> <li>1. Safe handling of communication equipment;</li> <li>2. Health and safety legislations and regulations (OSHA);</li> <li>3. Waste disposal methods.</li> </ol>

<b>OCCUPATION</b>	MARINE NAVIGATION TECHNICIAN	<b>OCCUPATION CODE</b>	
<b>DUTY TITLE</b>	PERFORMING OF WATCHKEEPING DUTIES ON BOARD SHIP	<b>DUTY NO.</b>	601
<b>TASK TITLE</b>	SET COURSE	<b>TASK NO.</b>	6012
<b>PERFORMANCE CRITERIA</b>	A person carrying out this task must be able to set a voyage course of a marine vessel in accordance with the current versions of regulations and standards governing the marine navigation occupation.		
<b>RANGE STATEMENT</b>	The task will be performed aboard a marine vessel. For successful performance of the task, the following will be required: 1. Navigating charts; 2. compass Rose; 3. Parallel Rule; 4. Pencil; 5. RADAR; 6. Sextant; 7. GPS.		
<b>EVIDENCE REQUIREMENTS</b>			
<b>Direct Performance</b>	<b>Practical Performance</b>		
The person performing this task must be able to do the following: 1. Identify area of navigation; 2. Obtain relevant navigation charts; 3. Plot initial position and position of final destination; 4. Pick up course from compass rose; 5. Check position every after twenty minutes; 6. Navigate accordingly to rules of the radio; 7. Observe collision regulation.	<b>Detailed knowledge about:</b> <b>1.0. Methods</b> This person performing this task must be able to explain how to: 1.1. Do passage planning after choosing appropriate charts and tools; 1.2. Set the course of a marine vessel; 1.3. Use different navigation charts; <b>2.0. Principles</b> The person must be able to explain the principles of: 2.1. Day and night time navigation; 2.2. Signalling and communication; 2.3. Rule of the Road. <b>3.0. Theories</b> The person must be able to explain: 3.1. Finding ships position using Celestial Bodies; 3.2. Finding ships position using sextant or GPS. <b>4.0. Essential Skills</b> 4.1. Communication skills; 4.2. Team work; 4.3. Ocean navigation. <b>5.0. Math Skills</b>		

	5.1. Coordinate geometry 5.2. General arithmetic
<b>DESCRIPTION OF END PRODUCTS/SERVICE</b>	The course for the voyage is set successfully.
<b>CIRCUMSTANTIAL KNOWLEDGE</b>	<b>Detailed knowledge about:</b> 1. Safe handling of navigation equipment; 2. Health and safety legislations and regulations (OSHA); 3. Map reading.

<b>OCCUPATION</b>	MARINE NAVIGATION TECHNICIAN	<b>OCCUPATION CODE</b>	
<b>DUTY TITLE</b>	PERFORMING OF WATCHKEEPING DUTIES ON BOARD SHIP	<b>DUTY NO.</b>	601
<b>TASK TITLE</b>	MAINTAIN COURSE	<b>TASK NO.</b>	6013
<b>PERFORMANCE CRITERIA</b>	A person carrying out this task must be able to maintain the course of a sailing marine vessel in accordance with the current versions of regulations and standards governing the marine navigation occupation.		
<b>RANGE STATEMENT</b>	The task will be performed aboard a marine vessel. For successful performance of the task, the following will be required: 1. Charts; 2. Parallel rules; 3. Pencil; 4. GPS.		
<b>EVIDENCE REQUIREMENTS</b>			
<b>DIRECT PERFORMANCE</b>	<b>PRACTICAL PERFORMANCE</b>		
The person performing this task must be able do the following: 1. Commence voyage; 2. Appoint helmsman; 3. Post helmsman or fix autopilot; 4. Give course to helmsman or autopilot; 5. Steer the course; 6. Check position frequently every after thirty minutes; 7. Keep look out to avoid hazards; 8. Steer according to planned course; 9. Observe rules of the road.	<b>Detailed knowledge about:</b> <b>1.0. Methods</b> This person performing this task must be able to explain how to: 1.1. Observe team work in the Bridge during passage; 1.2. Steer clear of possible collision.  <b>2.0. Principles</b> The person must be able to explain the principles of: 2.1. Observing network discipline; 2.2. Working in the Bridge; 2.3. Reporting to OOW.  <b>3.0. Theories</b> The person must be able to explain 3.1. Chart work; 3.2. Weather focus; 3.3. Rules of the Road; 3.4. Collision Regulations;  <b>4.0. Essential Skills</b> 4.1. Use of chart; 4.2. Passage planning; 4.3. Communication skills.  <b>5.0. Math Skills</b> 5.1. Coordinate geometry; 5.2. General arithmetic.		
<b>DESCRIPTION OF END PRODUCTS/SERVICE</b>	Vessel's course maintained throughout the voyage.		
<b>CIRCUMSTANTIAL</b>	<b>Detailed knowledge about:</b>		

**KNOWLEDGE**

1. Safe handling of communication equipment;
2. Geographical features of navigating area;
3. Map reading.

<b>OCCUPATION</b>	MARINE NAVIGATION TECHNICIAN	<b>OCCUPATION CODE</b>	
<b>DUTY TITLE</b>	PERFORMING OF WATCHKEEPING DUTIES ON BOARD SHIP	<b>DUTY NO.</b>	601
<b>TASK TITLE</b>	MAINTAIN SPEED	<b>TASK NO.</b>	6014
<b>PERFORMANCE CRITERIA</b>	A person carrying out this task must be able to maintain the speed of a sailing marine vessel in accordance with the current versions of regulations and standards governing the marine navigation occupation.		
<b>RANGE STATEMENT</b>	The task will be performed aboard a sailing marine vessel. For successful performance of the task, the following will be required: 1. Bridge console; 2. Well running main engines; 3. Trouble free transmission system.		
<b>EVIDENCE REQUIREMENTS</b>			
<b>Direct Performance</b>		<b>Practical Performance</b>	
<p>The person performing this task must be able do the following:</p> <ol style="list-style-type: none"> <li>1. Set telegraph to full speed ahead power to maximum continuous rating;</li> <li>2. Set propeller pitch to ahead running (CPP);</li> <li>3. Maintain Engine cooling;</li> <li>4. Maintain Engine lubrication;</li> <li>5. Maintain fuel viscosity.</li> </ol>		<p><b>Detailed knowledge about:</b></p> <p><b>1.0. Methods</b> This person performing this task must be able to explain how to:</p> <ol style="list-style-type: none"> <li>1.1. Use Controllable Pitch Propeller (CPP);</li> <li>1.2. Communicate with engine room crew;</li> <li>1.3. Operation telegraph system correctly.</li> </ol> <p><b>2.0. Principles</b> The person must be able to explain the principles of:</p> <ol style="list-style-type: none"> <li>2.1. Navigation principles;</li> <li>2.2. Working in the Bridge;</li> <li>2.3. Watchkeeping duties.</li> </ol> <p><b>3.0. Theories</b> The person must be able to explain:</p> <ol style="list-style-type: none"> <li>3.1. Instrumentation, control and automation;</li> <li>3.2. Fuel chemistry;</li> <li>3.3. Correct operation of main engines;</li> <li>3.4. Rules of the Road;</li> <li>3.5. Collision Regulations.</li> </ol> <p><b>4.0. Essential Skills</b></p> <ol style="list-style-type: none"> <li>4.1. Communication skills;</li> <li>4.2. Team work;</li> <li>4.3. Interpersonal skills;</li> <li>4.4. Maritime English.</li> </ol> <p><b>5.0. Math Skills</b></p> <ol style="list-style-type: none"> <li>5.1. Fuel consumption calculations;</li> <li>5.2. General arithmetic;</li> </ol>	

	5.3. Speed calculations.
<b>DESCRIPTION OF END PRODUCTS/SERVICE</b>	Vessel's speed maintained throughout the voyage.
<b>CIRCUMSTANTIAL KNOWLEDGE</b>	<b>Detailed knowledge about:</b> 1. Bridge console instruments; 2. Main engine operating principles; 3. Signal transmission.

<b>OCCUPATION</b>	MARINE NAVIGATION TECHNICIAN	<b>OCCUPATION CODE</b>	
<b>DUTY TITLE</b>	PERFORMING OF WATCHKEEPING DUTIES ON BOARD SHIP	<b>DUTY NO.</b>	601
<b>TASK TITLE</b>	MAINTAIN SHIPS SAFETY	<b>TASK NO.</b>	6015
<b>PERFORMANCE CRITERIA</b>	A person carrying out this task must be able to maintain the safety of a sailing marine vessel in accordance with the current versions of regulations and standards governing the marine navigation occupation.		
<b>RANGE STATEMENT</b>	The task will be performed aboard a marine vessel. For successful performance of the task, the following will be required: 1. Firefighting equipment; 2. Trouble free pumping system; 3. Personal Protective Equipment (PPE).		
<b>EVIDENCE REQUIREMENTS</b>			
<b>Direct Performance</b>		<b>Practical Performance</b>	
<p>The person performing this task must be able do the following:</p> <ol style="list-style-type: none"> <li>1. Regular servicing of firefighting equipment;</li> <li>2. Maintenance of fire pumps;</li> <li>3. Maintenance of fire detecting sensors;</li> <li>4. Regular checking of ship's structure integrity.</li> </ol>		<p><b>Detailed knowledge about:</b></p> <p><b>1.0. Methods</b> This person performing this task must be able to explain how to:</p> <ol style="list-style-type: none"> <li>1.1. Use firefighting equipment;</li> <li>1.2. To work in a team to salvage the vessel;</li> <li>1.3. To equip himself with PPE;</li> <li>1.4. To perform ship drills.</li> </ol> <p><b>2.0. Principles</b> The person must be able to explain the principles of:</p> <ol style="list-style-type: none"> <li>2.1. Principle of operation of pumps;</li> <li>2.2. Safety of life at sea;</li> <li>2.3. Watchkeeping.</li> </ol> <p><b>3.0. Theories</b> The person must be able to explain:</p> <ol style="list-style-type: none"> <li>3.1. Basic and advanced firefighting;</li> <li>3.2. Personal survival techniques;</li> <li>3.3. Ship's structure elements;</li> <li>3.4. Importance of ship drills.</li> </ol> <p><b>4.0. Essential Skills</b></p> <ol style="list-style-type: none"> <li>4.1. Communication skills;</li> <li>4.2. Interpersonal skills;</li> <li>4.3. Team work;</li> <li>4.4. Integrity;</li> <li>4.5. Maritime English;</li> <li>4.6. Punctuality.</li> </ol> <p><b>5.0. Math Skills</b></p>	

	<b>5.1. General arithmetic.</b>
<b>DESCRIPTION OF END PRODUCTS/SERVICE</b>	Vessel's safety maintained throughout the voyage.
<b>CIRCUMSTANTIAL KNOWLEDGE</b>	<b>Detailed knowledge about:</b> 1. Lifesaving apparatus; 2. Navigation under harsh weather conditions; 3. Collision regulations.

<b>OCCUPATION</b>	MARINE NAVIGATION TECHNICIAN	<b>OCCUPATION CODE</b>	
<b>DUTY TITLE</b>	PERFORMING OF WATCHKEEPING DUTIES ON BOARD SHIP	<b>DUTY NO.</b>	601
<b>TASK TITLE</b>	APPLY RULES OF THE ROAD DURING NAVIGATION	<b>TASK NO.</b>	6016
<b>PERFORMANCE CRITERIA</b>	A person carrying out this task must be able to apply rules of the road to a sailing marine vessel in accordance with the current versions of regulations and standards governing the marine navigation occupation.		
<b>RANGE STATEMENT</b>	The task will be performed aboard a marine vessel. For successful performance of the task, the following will be required: 1. Navigation charts; 2. Compass rose; 3. Slide rule; 4. Sextant; 5. GPS.		
<b>EVIDENCE REQUIREMENTS</b>			
<b>Direct Performance</b>		<b>Practical Performance</b>	
<p>The person performing this task must be able do the following:</p> <ol style="list-style-type: none"> <li>1. Steer the vessel according to the chosen route;</li> <li>2. Comply with the rules in question;</li> <li>3. Perform watchkeeping duties;</li> <li>4. Record of ship's speed behaviour.</li> </ol>		<p><b>Detailed knowledge about:</b></p> <p><b>1.0. Methods</b> This person performing this task must be able to explain how to:</p> <ol style="list-style-type: none"> <li>1.1. Read navigation charts;</li> <li>1.2. Plot the chosen course;</li> <li>1.3. Steer the ship;</li> <li>1.4. Maintain course.</li> </ol> <p><b>2.0. Principles</b> The person must be able to explain the principles of:</p> <ol style="list-style-type: none"> <li>2.1. Navigation;</li> <li>2.2. Passage planning;</li> <li>2.3. Watchkeeping.</li> </ol> <p><b>3.0. Theories</b> The person must be able to explain</p> <ol style="list-style-type: none"> <li>3.1. Coastal navigation;</li> <li>3.2. Traffic separation and narrow waterway collision regulation;</li> <li>3.3. Helmsman skills.</li> </ol> <p><b>4.0. Essential Skills</b></p> <ol style="list-style-type: none"> <li>4.1. Communication skills;</li> <li>4.2. Interpersonal skills;</li> <li>4.3. Team work;</li> <li>4.4. Integrity;</li> <li>4.5. Maritime English;</li> <li>4.6. Punctuality.</li> </ol>	

	<b>5.0. Math Skills:</b> 5.1. General arithmetic; 5.2. Mathematics for deck officers.
<b>DESCRIPTION OF END PRODUCTS/SERVICE</b>	The vessel is navigated according to Rules of the Road throughout the voyage.
<b>CIRCUMSTANTIAL KNOWLEDGE</b>	<b>Detailed knowledge about:</b> 1. Type of ships; 2. Navigation under harsh weather conditions; 3. Collision regulations.

<b>OCCUPATION</b>	MARINE NAVIGATION TECHNICIAN	<b>OCCUPATION CODE</b>	
<b>DUTY TITLE</b>	PRECAUTIONS FOR PASSENGER PROTECTION AND SAFETY IN EMERGENCY SITUATIONS	<b>DUTY NO.</b>	601
<b>TASK TITLE</b>	MAINTAIN SECURITY	<b>TASK NO.</b>	6017
<b>PERFORMANCE CRITERIA</b>	A person carrying out this task must be able to understand the procedures for passenger safety and protection.		
<b>RANGE STATEMENT</b>	The task will be performed aboard a sailing marine vessel. For successful performance of the task, the following will be required: 1. Fire control plan; 2. Thermal suits; 3. Life jackets; 4. Ship-wide alarm system.		
<b>EVIDENCE REQUIREMENTS</b>			
<b>Direct Performance</b>		<b>Practical Performance</b>	
The person performing this task must be able to do the following: 1. Identify the type of alarm; 2. Be able to instruct passengers and crew members on the proper wearing of life jackets and thermal suits; 3. Be able to organize the orderly evacuation of passengers on site; 4. Be able to master the evacuation sequence between passengers and crew members.		<b>Detailed knowledge about:</b> <b>1.0. Methods</b> This person performing this task must be able to explain how to: 1.1. Read fire control plans for escape routes; 1.2. Properly wear life jackets and thermal suits; 1.3. Show the sequence of boarding and evacuation of escape personnel.  <b>2.0. Principles</b> The person must be able to explain the principles of: 2.1. Evacuation sequence arrangement.  <b>3.0. Theories</b> The person must be able to explain: 3.1. Vessel alarm system; 3.2. Fire control plan theory.  <b>4.0. Essential Skills</b> 4.1. Communication skills; 4.2. Interpersonal skills; 4.3. Teamwork; 4.4. Integrity; 4.5. Maritime English; 4.6. Punctuality.  <b>5.0. Math Skills</b> 5.1. General arithmetic.	
<b>DESCRIPTION OF END PRODUCTS/SERVICE</b>		Be able to arrange for the orderly evacuation of the passenger and crew members in the event of an emergency.	

**CIRCUMSTANTIAL KNOWLEDGE****Detailed knowledge about:**

1. Lifeboat & rescue boat & life raft types
2. Fire prevention and evacuation protection measures

<b>OCCUPATION</b>	MARINE NAVIGATION TECHNICIAN	<b>OCCUPATION CODE</b>	
<b>DUTY TITLE</b>	PERFORM CHART WORK DURING NAVIGATIONAL WATCH	<b>DUTY NO.</b>	602
<b>TASK TITLE</b>	APPLY THE APPROPRIATE CHART DURING NAVIGATIONAL WATCH	<b>TASK NO.</b>	6021
<b>PERFORMANCE CRITERIA</b>	A person carrying out this task must be able to choose the right chart and plot a chosen route according to the passage plan.		
<b>RANGE STATEMENT</b>	The task will be performed aboard a marine vessel. For successful performance of the task, the following will be required: 1. Navigation charts; 2. Pencil and rubber; 3. Divider; 4. Slide rule; 5. Sextant.		
<b>EVIDENCE REQUIREMENTS</b>			
<b>DIRECT PERFORMANCE</b>		<b>PRACTICAL PERFORMANCE</b>	
<p>The person performing this task must be able do the following:</p> <ol style="list-style-type: none"> <li>1. Draw the course on the chart;</li> <li>2. Set the course according to the chosen route;</li> <li>3. Steer the course;</li> <li>4. Observe rules of the road.</li> </ol>		<p><b>Detailed knowledge about:</b></p> <p><b>1.0. Methods</b> This person performing this task must be able to explain how to:</p> <ol style="list-style-type: none"> <li>1.1. Choose the right chart;</li> <li>1.2. Read navigation charts;</li> <li>1.3. Plot the chosen course;</li> <li>1.4. Steer the course.</li> </ol> <p><b>2.0. Principles</b> The person must be able to explain the principles of:</p> <ol style="list-style-type: none"> <li>2.1. Mapping;</li> <li>2.2. Passage planning.</li> </ol> <p><b>3.0. Theories</b> The person must be able to explain:</p> <ol style="list-style-type: none"> <li>3.1. Coastal navigation;</li> <li>3.2. Vessel traffic navigation scheme.</li> </ol> <p><b>4.0. Essential Skills</b></p> <ol style="list-style-type: none"> <li>4.1. Communication skills;</li> <li>4.2. Interpersonal skills;</li> <li>4.3. Maritime English;</li> <li>4.4. Team work;</li> <li>4.5. Commitment;</li> <li>4.6. Integrity.</li> </ol> <p><b>5.0. Math Skills</b></p> <ol style="list-style-type: none"> <li>5.1. Coordinate geometry;</li> <li>5.2. General arithmetic;</li> <li>5.3. Mathematics for deck officers.</li> </ol>	

<b>DESCRIPTION OF END PRODUCTS/SERVICE</b>	The navigation route chosen is accomplished by applying the appropriate chart.
<b>CIRCUMSTANTIAL KNOWLEDGE</b>	<b>Detailed knowledge about:</b> 1. Probable routes; 2. Oceanography.

<b>OCCUPATION</b>	MARINE NAVIGATION TECHNICIAN	<b>OCCUPATION CODE</b>	
<b>DUTY TITLE</b>	PERFORM CHART WORK DURING NAVIGATIONAL WATCH	<b>DUTY NO.</b>	602
<b>TASK TITLE</b>	MAINTAIN SHIP'S TRACK	<b>TASK NO.</b>	6022
<b>PERFORMANCE CRITERIA</b>	A person carrying out this task must be able to maintain ship's track with the help of land marks, celestial bodies and radar.		
<b>RANGE STATEMENT</b>	The task will be performed aboard a marine vessel. For successful performance of the task, the following will be required: 1. Navigation charts; 2. GPS; 3. Radar; 4. Gyro compass; 5. Pencil and rubber; 6. Slide rule; 7. Divider.		
<b>EVIDENCE REQUIREMENTS</b>			
<b>DIRECT PERFORMANCE</b>		<b>PRACTICAL PERFORMANCE</b>	
<p>The person performing this task must be able do the following:</p> <ol style="list-style-type: none"> <li>1. Set the course according to the chosen route;</li> <li>2. Plot ship's position after every 30 minutes;</li> <li>3. Rectify the course in case of any deviation;</li> <li>4. Steer the course.</li> </ol>		<p><b>Detailed knowledge about:</b></p> <p><b>1.0. Methods</b> This person performing this task must be able to explain how to:</p> <ol style="list-style-type: none"> <li>1.1. Position a ship on the chart;</li> <li>1.2. Calculate the distance covered;</li> <li>1.3. Calculate ship's speed;</li> <li>1.4. Steer the course.</li> </ol> <p><b>2.0. Principles</b> The person must be able to explain the principles of:</p> <ol style="list-style-type: none"> <li>2.2. Magnetism.</li> </ol> <p><b>3.0. Theories</b> The person must be able to explain:</p> <ol style="list-style-type: none"> <li>3.1. Alignment theory;</li> <li>3.2. Compass reading;</li> <li>3.3. Helmsman skills;</li> <li>3.4. Proper steering knowledge.</li> </ol> <p>.</p> <p><b>4.0. Essential Skills</b></p> <ol style="list-style-type: none"> <li>4.1. Communication skills;</li> <li>4.2. Interpersonal skills;</li> <li>4.3. Team work;</li> <li>4.4. Maritime English;</li> <li>4.5. Integrity;</li> <li>4.6. Commitment;</li> <li>4.7. Problem solving.</li> </ol> <p><b>5.0. Math Skills</b></p> <ol style="list-style-type: none"> <li>5.1. Coordinate geometry;</li> <li>5.2. General arithmetic;</li> </ol>	

	5.3. General physics; 5.4. Mathematics for deck officers.
<b>DESCRIPTION OF END PRODUCTS/SERVICE</b>	The vessel is maintained in its track by fixing its position frequently.
<b>CIRCUMSTANTIAL KNOWLEDGE</b>	<b>Detailed knowledge about:</b> 1. Physical geography; 2. Oceanography.

<b>OCCUPATION</b>	MARINE NAVIGATION TECHNICIAN	<b>OCCUPATION CODE</b>	
<b>DUTY TITLE</b>	PERFORM CHART WORK DURING NAVIGATIONAL WATCH	<b>DUTY NO.</b>	602
<b>TASK TITLE</b>	DETERMINE SHIP'S SPEED	<b>TASK NO.</b>	6023
<b>PERFORMANCE CRITERIA</b>	A person carrying out this task must be able to determine ship's speed in order to reach the destination in a specified time if the weather conditions are favourable.		
<b>RANGE STATEMENT</b>	The task will be performed aboard a marine vessel at sea. For successful performance of the task, the following will be required: 1. Respective plotted chart; 2. Main engines; 3. Calculator.		
<b>EVIDENCE REQUIREMENTS</b>			
<b>DIRECT PERFORMANCE</b>	<b>PRACTICAL PERFORMANCE</b>		
The person performing this task must be able do the following: 1. Fix position after every 30 minutes (as required by the voyage plan); 2. Measure distance covered within that interval; 3. Approximate the interval in hourly units; 4. Record the speed in terms knots.	<b>Detailed knowledge about:</b> <b>1.0. Methods</b> This person performing this task must be able to explain how to: 1.1. Position a ship on the chart; 1.2. Calculate the distance covered; 1.3. Calculate ship's speed;  <b>2.0. Principles</b> The person must be able to explain the principles of: 2.1. Setting a telegraph; 2.2. Engine operation; 2.3. Fuel combustion.  <b>3.0. Theories</b> The person must be able to explain: 3.1. Signal transmission; 3.2. Engines cycle; 3.3. Fuel chemistry.  <b>4.0. Essential Skills</b> 4.1. Communication skills; 4.2. Team work; 4.3. Leadership and management by the OOW.  <b>5.0. Math Skills</b> 5.1. Fuel consumption calculations; 5.2. Fuel costs; 5.3. Speed calculations.		
<b>DESCRIPTION OF END PRODUCTS/SERVICE</b>	The speed of the vessel is maintained and the arrival to final destination is timely.		
<b>CIRCUMSTANTIAL KNOWLEDGE</b>	<b>Detailed knowledge about:</b> 1. Main engine operation;		

	2. Fuel oil treatment.
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<b>OCCUPATION</b>	MARINE NAVIGATION TECHNICIAN	<b>OCCUPATION CODE</b>	
<b>DUTY TITLE</b>	PERFORM CHART WORK DURING NAVIGATIONAL WATCH	<b>DUTY NO.</b>	602
<b>TASK TITLE</b>	CHECK WATER DEPTH	<b>TASK NO.</b>	6024
<b>PERFORMANCE CRITERIA</b>	A person carrying out this task must be able to check water depth for the route taken so as to avoid grounding.		
<b>RANGE STATEMENT</b>	The task is carried out at sea on board a sailing marine vessel and during the watch. For successful performance of the task, the following will be required: 1. Echo sounder; 2. Meter recording instrument; 3. Data sheet.		
<b>EVIDENCE REQUIREMENTS</b>			
<b>Direct Performance</b>	<b>Practical Performance</b>		
The person performing this task must be able do the following: 1. Put the echo sounder in operating mode; 2. Take the depth readings using the echo sounder; 3. Record the readings from the echo sounder.	<b>Detailed knowledge about:</b> <b>1.0. Methods:</b> This person performing this task must be able to explain how to: 1.1. Use echo sounder; 1.2. Interpret echo sounder readings.  <b>2.0. Principles:</b> The person must be able to explain the principles of: 2.1. Sound transmission; 2.2. Liquid -solid interface.  <b>3.0. Theories:</b> The person must be able to explain: 3.1. Wave theory; 3.2. Subsonic theory; 3.3. Liquid properties; 3.4. Ability to use echo sounder; 3.5. Ability to interpret echo sounder readings; 3.6. Quick response in order to avoid grounding situations.  <b>4.0. Essential Skills:</b> 4.1. Communication skills; 4.2. Interpersonal skills; 4.3. Maritime English; 4.4. Team work; 4.5. Integrity.  <b>5.0. Math Skills:</b> 5.1. Wave speed calculations; 5.2. Speed calculations; 5.3. Maintenance costs.		
<b>DESCRIPTION OF END</b>	Water depth is checked on regular basis in order to		

<b>PRODUCTS/SERVICE</b>	navigate the vessel in safe waters.
<b>CIRCUMSTANTIAL KNOWLEDGE</b>	<b>Detailed knowledge about:</b> Oceanography.

<b>OCCUPATION</b>	MARINE NAVIGATION TECHNICIAN	<b>OCCUPATION CODE</b>	
<b>DUTY TITLE</b>	MAINTAIN SAFE NAVIGATION	<b>DUTY NO.</b>	603
<b>TASK TITLE</b>	PERFORM LOOK OUT DUTIES DURING THE WATCH	<b>TASK NO.</b>	6031
<b>PERFORMANCE CRITERIA</b>	A person carrying out this task must be able to carry out look out duties in order to avoid collision.		
<b>RANGE STATEMENT</b>	The lookout will be posted at the wing of the bridge. The task is outdoors. For successful performance of the task, the following will be required: 1. Binoculars; 2. Rain coat; 3. Boots/safety shoes; 4. Warm clothing.		
<b>EVIDENCE REQUIREMENTS</b>			
<b>DIRECT PERFORMANCE</b>	<b>PRACTICAL PERFORMANCE</b>		
The person performing this task must be able do the following: 1. Select equipment for carrying out look out functions; 2. Test equipment to determine if it functions well; 3. Sweep the arc of sight from time to time; 4. Report to OOW on the sightings.	<b>Detailed knowledge about:</b> <b>1.0. Methods</b> This person performing this task must be able to explain how to: 1.1. Use binoculars; 1.2. Put on PPE; 1.3. Report sighted objects to OOW. <b>2.0. Principles</b> The person must be able to explain the principles of: 2.1. Watchkeeping. <b>3.0. Theories</b> The person must be able to explain: 3.1. Light theory; 3.2. Principle of the focal lens; 3.3. Weather forecasting; 3.4. Landscape knowledge for coastal navigation. <b>4.0. Essential Skills</b> 4.1. Communication skills; 4.2. Teamwork; 4.3. Interpersonal skills; 4.4. Integrity; 4.5. Commitment. <b>5.0. Math Skills</b> 5.1. Simple arithmetic; 5.2. Angle calculations; 5.3. Determine speed of oncoming object.		
<b>DESCRIPTION OF END</b>	Look out activity is carried out with great alertness for		

<b>PRODUCTS/SERVICE</b>	safe navigation.
<b>CIRCUMSTANTIAL KNOWLEDGE</b>	<b>Detailed knowledge about:</b> Physical geography

<b>OCCUPATION</b>	MARINE NAVIGATION TECHNICIAN	<b>OCCUPATION CODE</b>	
<b>DUTY TITLE</b>	MAINTAIN SAFE NAVIGATION	<b>DUTY NO.</b>	603
<b>TASK TITLE</b>	REPORT ANY INTRUSION IN YOUR AREA OF VISIBILITY THROUGHOUT YOUR WATCH	<b>TASK NO.</b>	6032
<b>PERFORMANCE CRITERIA</b>	A person carrying out this task must be able to carry out duties and report any intrusion in his arc of sight during the watch.		
<b>RANGE STATEMENT</b>	The lookout will be posted at the wing of the bridge. The task is outdoors (at the wing of the bride). For successful performance of the task, the following will be required: 1. Binoculars; 2. Rain coat; 3. Boots/safety shoes; 4. Warm clothing.		
<b>EVIDENCE REQUIREMENTS</b>			
<b>DIRECT PERFORMANCE</b>	<b>PRACTICAL PERFORMANCE</b>		
The person performing this task must be able do the following: 1. Sweep the area of arc of sight at regular intervals; 2. Watch out for intruders (not shown on the navigation chart); 3. Reports back to OOW of any sightings.	<b>Detailed knowledge about:</b> <b>1.0. Methods</b> This person performing this task must be able to explain how to: 1.1. Use binoculars; 1.2. Protect himself from harsh weather; 1.3. Report sighted objects.  <b>2.0. Principles</b> The person must be able to explain the principles of: 2.1. Watchkeeping.  <b>3.0. Theories</b> The person must be able to explain: 3.1. Sight theory; 3.2. Sound theory; 3.3. Collision Regulations; 3.4. Qualities of a lookout.  <b>4.0. Essential Skills</b> 4.1. Communication skills; 4.2. Interpersonal skills; 4.3. Integrity; 4.4. Committed.  <b>5.0. Math Skills</b> 5.1. Simple arithmetic; 5.2. Speed calculations.		
<b>DESCRIPTION OF END PRODUCTS/SERVICE</b>	A lookout will report any sightings in his visibility area to OOW so that proper action can be taken to avoid collision.		
<b>CIRCUMSTANTIAL</b>	<b>Detailed knowledge about:</b>		

**KNOWLEDGE**

1. Landscape knowledge;
2. Safety of life at sea.

<b>OCCUPATION</b>	MARINE NAVIGATION TECHNICIAN	<b>OCCUPATION CODE</b>	
<b>DUTY TITLE</b>	MAINTAIN SAFE NAVIGATION	<b>DUTY NO.</b>	603
<b>TASK TITLE</b>	INITIAL MEASURES TO BE TAKEN AFTER A COLLISION OR STRANDING; INITIAL ASSESSMENT AND CONTROL OF DAMAGE	<b>TASK NO.</b>	6033
<b>PERFORMANCE CRITERIA</b>	A person carrying out this task must be familiar with ship collision or stranding emergency deployment.		
<b>RANGE STATEMENT</b>	The lookout will be posted at the wing of the bridge. The task is outdoors (at the wing of the bride). For successful performance of the task, the following will be required: 1. Sounding weight; 2. Ship-wide alarm system; 3. Life jackets and thermal suits; 4. Leak plugging equipment; 5. Oil spill prevention equipment.		
<b>EVIDENCE REQUIREMENTS</b>			
<b>DIRECT PERFORMANCE</b>		<b>PRACTICAL PERFORMANCE</b>	
<p>The person performing this task must be able to do the following:</p> <ol style="list-style-type: none"> <li>1. Familiar with emergency procedures before and after a ship collision;</li> <li>2. Familiar with emergency procedures for water flooding after ship stranding;</li> <li>3. Emergency procedures for ship abandonment and oil spill prevention.</li> </ol>		<p><b>Detailed knowledge about:</b></p> <p><b>1.0. Methods</b> This person performing this task must be able to explain how to:</p> <ol style="list-style-type: none"> <li>1.1. Use a sounding weight;</li> <li>1.2. Manoeuvre the ship to reduce collision damage;</li> <li>1.3. Prevent the expansion of the ship's oil spill and reduce the ship's water flooding measures.</li> </ol> <p><b>2.0. Principles</b> The person must be able to explain the principles of:</p> <ol style="list-style-type: none"> <li>2.1. Reducing the loss of each ship in a collision or stranding;</li> <li>2.2. Reducing marine pollution caused by oil spills in collisions or stranding.</li> </ol> <p><b>3.0. Theories</b> The person must be able to explain</p> <ol style="list-style-type: none"> <li>3.1. Emergency deployment for ship collision;</li> <li>3.2. Emergency deployment for ship stranding;</li> <li>3.3. Emergency deployment for ship oil spill;</li> <li>3.4. Emergency deployment for ship abandonment.</li> </ol> <p><b>4.0. Essential Skills</b></p> <ol style="list-style-type: none"> <li>4.1. Communication skills;</li> <li>4.2. Interpersonal skills;</li> <li>4.3. Integrity;</li> <li>4.4. Committed.</li> </ol> <p><b>5.0. Math Skills</b></p>	

	5.1. Ability to calculate residual buoyancy; 5.2. Ability to calculate hauling-off pull.
<b>DESCRIPTION OF END PRODUCTS/SERVICE</b>	Ability to effectively minimize ship collision damage and minimize damage caused by a ship stranding.
<b>CIRCUMSTANTIAL KNOWLEDGE</b>	<b>Detailed knowledge about:</b> 1. MAPOL Convention; 2. International Convention for the Safety of Life at Sea.

<b>OCCUPATION</b>	MARINE NAVIGATION TECHNICIAN	<b>OCCUPATION CODE</b>	
<b>DUTY TITLE</b>	UNDERTAKE COMMUNICATION WITH RELEVANT PARTIES WHILE AT SEA	<b>DUTY NO.</b>	604
<b>TASK TITLE</b>	COMMUNICATE WITH SHORE STATIONS	<b>TASK NO.</b>	6041
<b>PERFORMANCE CRITERIA</b>	A person carrying out this task must be able to establish communication with shore stations i.e. port authorities, MRCC, ship's agents and ship's chandlers.		
<b>RANGE STATEMENT</b>	The task will be performed in the bridge. For successful performance of the task, the following will be required: 1. Lights and shapes; 2. VHF radio; 3. SSB radio; 4. Fully charged batteries.		
<b>EVIDENCE REQUIREMENTS</b>			
<b>DIRECT PERFORMANCE</b>		<b>PRACTICAL PERFORMANCE</b>	
<p>The person performing this task must be able do the following:</p> <ol style="list-style-type: none"> <li>1. Switch the radio on;</li> <li>2. Select a proper channel for communication;</li> <li>3. Communicate with shore stations on the matter in question;</li> <li>4. Put on the lights during the night;</li> <li>5. raise the corresponding flags or shape during the day;</li> <li>6. Hand over the watch.</li> </ol>		<p><b>Detailed knowledge about:</b></p> <p><b>1.0. Methods</b> This person performing this task must be able to explain how to:</p> <ol style="list-style-type: none"> <li>1.1. Operate different communication equipment;</li> <li>1.2. Maintain and service different communication equipment;</li> <li>1.3. Keep radio watch to receive and transmit calls.</li> </ol> <p><b>2.0. Principles</b> The person must be able to explain the principles of:</p> <ol style="list-style-type: none"> <li>2.1. Maintain radio discipline;</li> <li>2.2. Respond to callers promptly;</li> <li>2.3. Proficient in Maritime English.</li> </ol> <p><b>3.0. Theories</b> The person must be able to explain</p> <ol style="list-style-type: none"> <li>3.1. Radio waves;</li> <li>3.2. Message coding and encoding;</li> <li>3.3. Morse code signalling;</li> <li>3.4. Radio operation.</li> </ol> <p><b>4.0. Essential Skills</b></p> <ol style="list-style-type: none"> <li>4.1. Communication skills;</li> <li>4.2. Maritime English;</li> <li>4.3. Customer care skills.</li> </ol> <p><b>5.0. Math Skills</b></p> <ol style="list-style-type: none"> <li>5.1. Superposition;</li> <li>5.2. Harmonics.</li> </ol>	

<b>DESCRIPTION OF END PRODUCTS/SERVICE</b>	Communication between the ship and shore is performed as per communication rules.
<b>CIRCUMSTANTIAL KNOWLEDGE</b>	<b>Detailed knowledge about:</b> <ol style="list-style-type: none"> <li>1. Radio transmission;</li> <li>2. Distress signals.</li> </ol>

<b>OCCUPATION</b>	MARINE NAVIGATION TECHNICIAN	<b>OCCUPATION CODE</b>	
<b>DUTY TITLE</b>	UNDERTAKE COMMUNICATION WITH RELEVANT PARTIES WHILE AT SEA	<b>DUTY NO.</b>	604
<b>TASK TITLE</b>	COMMUNICATE WITH SHIP'S AGENCY	<b>TASK NO.</b>	6042
<b>PERFORMANCE CRITERIA</b>	A person carrying out this task must be able to establish communication with ship's agent and request crew change and crew wage on channel 16.		
<b>RANGE STATEMENT</b>	The task will be performed at the bridge. For successful performance of the task, the following will be required: 1. VHF radio; 2. SSB radio; 3. Fully charged batteries.		
<b>EVIDENCE REQUIREMENTS</b>			
<b>DIRECT PERFORMANCE</b>		<b>PRACTICAL PERFORMANCE</b>	
<p>The person performing this task must be able do the following:</p> <ol style="list-style-type: none"> <li>1. Switch the radio on.</li> <li>2. Select channel 16 for communication.</li> <li>3. Send ship's requirements for ship's agent action.</li> <li>4. Maintain communication with radio discipline.</li> <li>5. Maintain radio watch on distress channel.</li> </ol>		<p><b>Detailed knowledge about:</b></p> <p><b>1.0. Methods</b> This person performing this task must be able to explain how to:</p> <ol style="list-style-type: none"> <li>1.1. Operate different communication equipment;</li> <li>1.2. Maintain and service different communication equipment;</li> <li>1.3. Keep radio watch to receive and transmit calls.</li> </ol> <p><b>2.0. Principles</b> The person must be able to explain the principles of:</p> <ol style="list-style-type: none"> <li>2.1. Observing radio discipline;</li> <li>2.2. Observation of code of radio communication;</li> <li>2.3. Respond to callers promptly;</li> <li>2.4. Keeping appropriate watch;</li> <li>2.5. Radio operation.</li> </ol> <p><b>3.0. Theories</b> The person must be able to explain:</p> <ol style="list-style-type: none"> <li>3.1. Radio waves;</li> <li>3.2. Radio tuning.</li> </ol> <p><b>4.0. Essential Skills</b></p> <ol style="list-style-type: none"> <li>4.1. Communication skills;</li> <li>4.2. Maritime English;</li> <li>4.3. Customer care skills;</li> <li>4.4. Radio operation.</li> </ol> <p><b>5.0. Math Skills</b></p> <ol style="list-style-type: none"> <li>5.1. Simple arithmetic;</li> <li>5.2. Harmonics.</li> </ol>	
<b>DESCRIPTION OF END</b>		Communication between the ship and ship's agent is	

<b>PRODUCTS/SERVICE</b>	carried out as per approved rule and regulations.
<b>CIRCUMSTANTIAL KNOWLEDGE</b>	<b>Detailed knowledge about:</b> 1. Radio transmission; 2. Distress signals.

<b>OCCUPATION</b>	MARINE NAVIGATION TECHNICIAN	<b>OCCUPATION CODE</b>	
<b>DUTY TITLE</b>	UNDERTAKE COMMUNICATION WITH RELEVANT PARTIES WHILE AT SEA	<b>DUTY NO.</b>	604
<b>TASK TITLE</b>	COMMUNICATION WITH OTHER VESSELS	<b>TASK NO.</b>	6043
<b>PERFORMANCE CRITERIA</b>	A person carrying out this task must be able to establish communication with other vessels by using appropriate means depending on the time of the day and distance.		
<b>RANGE STATEMENT</b>	The task will be carried out on board a sailing marine vessel. For successful performance of the task, the following will be required: 1. Signal flags; 2. Light bulbs; 3. VHF radio; 4. SSB radio; 5. Fully charged batteries.		
<b>EVIDENCE REQUIREMENTS</b>			
<b>Practical Performance</b>		<b>Underpinning Knowledge</b>	
The person performing this task must be able do the following: 1. Switch the radio on; 2. Select channel 16 for communication; 3. Maintain communication with radio discipline; 4. Maintain radio watch on distress channel; 5. Raise appropriate flag; 6. Turn on appropriate lights.		<b>Detailed knowledge about:</b> <b>1.0. Methods</b> This person performing this task must be able to explain how to: 1.1. Operate different communication equipment; 1.2. Maintain and service different communication equipment; 1.3. Keep radio watch to receive and transmit calls; 1.4. Communicate using flags and lights. <b>2.0. Principles</b> The person must be able to explain the principles of: 2.1. Observing radio discipline; 2.2. Observation of code of radio communication; 2.3. Keep appropriate watch. <b>3.0. Theories</b> The person must be able to explain: 3.1. Radio waves; 3.2. Radio tuning; 3.3. Message coding and decoding; 3.4. Morse code; 3.5. Radio operation. <b>4.0. Essential Skills</b> 4.1. Communication skills; 4.2. Maritime English; 4.3. Customer care skills. <b>5.0. Math Skills</b> 5.1. Simple arithmetic.	

<b>DESCRIPTION OF END PRODUCTS/SERVICE</b>	Radio call communication with other vessels to be maintained on Channel 16.
<b>CIRCUMSTANTIAL KNOWLEDGE</b>	<b>Detailed knowledge about:</b> 1. Radio transmission; 2. Distress signals.

<b>OCCUPATION</b>	MARINE NAVIGATION TECHNICIAN	<b>OCCUPATION CODE</b>	
<b>DUTY TITLE</b>	UNDERTAKE COMMUNICATION WITH RELEVANT PARTIES WHILE AT SEA	<b>DUTY NO.</b>	604
<b>TASK TITLE</b>	IDENTIFY COMMUNICATION MODE DEPENDING ON PARTY TO COMMUNICATE WITH	<b>TASK NO.</b>	6044
<b>PERFORMANCE CRITERIA</b>	A person carrying out this task must be able to identify communication mode depending on party to communicate with as per code of marine signals.		
<b>RANGE STATEMENT</b>	The task will be performed on board a sailing marine vessel for successful performance of the task, the following will be required: 1. Flags; 2. Light bulbs; 3. VHF radio; 4. SSB radio; 5. Fully charged batteries.		
<b>EVIDENCE REQUIREMENTS</b>			
<b>PRACTICAL PERFORMANCE</b>		<b>UNDERPINNING KNOWLEDGE</b>	
The person performing this task must be able do the following: 1. Switch the radio on; 2. Select channel 16 for communication; 3. Maintain communication with radio discipline; 4. Maintain radio watch on distress channel; 5. Raise appropriate flag; 6. Turn on appropriate lights.		<b>Detailed knowledge about:</b> <b>1.0. Methods</b> This person performing this task must be able to explain how to: 1.1. Operate different communication equipment; 1.2. Maintain and service different communication equipment; 1.3. Keep radio watch to receive and transmit calls; 1.4. Communicate using flags and lights.  <b>2.0. Principles</b> The person must be able to explain the principles of: 2.1. Observing radio discipline; 2.2. Observation of code of radio communication; 2.3. Keep appropriate watch.  <b>3.0. Theories</b> The person must be able to explain: 3.1. Radio waves; 3.2. Radio tuning; 3.3. Message coding and decoding; 3.4. Radio operation.  <b>4.0. Essential Skills</b> 4.1. Communication skills; 4.2. Maritime English;	

	4.3. Customer care skills.  <b>5.0. Math Skills:</b> <b>5.1. Simple arithmetic</b>
<b>DESCRIPTION OF END PRODUCTS/SERVICE</b>	Radio call communication with other vessels is maintained on Channel 16.
<b>CIRCUMSTANTIAL KNOWLEDGE</b>	<b>Detailed knowledge about:</b> 1. Radio transmission; 2. Distress signals.

<b>OCCUPATION</b>	MARINE NAVIGATION TECHNICIAN	<b>OCCUPATION CODE</b>	
<b>DUTY TITLE</b>	UNDERTAKE COMMUNICATION WITH RELEVANT PARTIES WHILE AT SEA	<b>DUTY NO.</b>	604
<b>TASK TITLE</b>	CONVEY RELEVANT INFORMATION TO CONCERNED PARTIES	<b>TASK NO.</b>	6045
<b>PERFORMANCE CRITERIA</b>	A person carrying out this task must be able to convey relevant information to concerned parties by determining the mode of communication as per code of marine signals.		
<b>RANGE STATEMENT</b>	This task is performed aboard sailing marine vessel. For successful performance of the task, the following will be required: 1. Flags; 2. Light bulbs; 3. VHF radio; 4. SSB radio; 5. Fully charged batteries.		
<b>EVIDENCE REQUIREMENTS</b>			
<b>PRACTICAL PERFORMANCE</b>		<b>UNDERPINNING KNOWLEDGE</b>	
The person performing this task must be able do the following: 1. Tune radio; 2. Choose frequency; 3. Test radio performance and reception; 4. Maintain communication with radio discipline; 5. Maintain radio watch on distress channel; 6. Raise appropriate flag; 7. Turn on appropriate lights.		<b>Detailed knowledge about:</b> <b>1.0. Methods</b> This person performing this task must be able to explain how to: 1.1. Operate different communication equipment; 1.2. Maintain and service different communication equipment; 1.3. Keep radio watch to receive and transmit calls; 1.4. Communicate using flags and lights.  <b>2.0. Principles</b> The person must be able to explain the principles of: 2.1. Observing radio discipline; 2.2. Observing of code of radio communication; 2.3. Maritime English proficiency; 2.4. Keeping appropriate watch.  <b>3.0. Theories</b> The person must be able to explain: 3.1. Radio waves; 3.2. Radio tuning; 3.3. Message coding and decoding; 3.4. Radio operation.  <b>4.0. Essential Skills</b> 4.1. Communication skills; 4.2. Maritime English;	

	4.3. Customer care skills.  <b>5.0. Math Skills</b> 5.1. Simple arithmetic.
<b>DESCRIPTION OF END PRODUCTS/SERVICE</b>	Radio call communication with other vessels is maintained Channel 16.
<b>CIRCUMSTANTIAL KNOWLEDGE</b>	<b>Detailed knowledge about:</b> 1. Radio transmission; 2. Distress signals.

<b>OCCUPATION</b>	MARINE NAVIGATION TECHNICIAN	<b>OCCUPATION CODE</b>	
<b>DUTY TITLE</b>	UNDERTAKE COMMUNICATION WITH RELEVANT PARTIES WHILE AT SEA	<b>DUTY NO.</b>	604
<b>TASK TITLE</b>	RESCUE OF PERSONS OVERBOARD, ASSISTANCE TO SHIPS IN DISTRESS, EMERGENCY RESPONSE IN PORT	<b>TASK NO.</b>	6046
<b>PERFORMANCE CRITERIA</b>	A person carrying out this task must be knowledgeable about rescue maneuvers when people are overboard and when rescuing people from a ship in distress.		
<b>RANGE STATEMENT</b>	The task will be performed on board a sailing marine vessel for successful performance of the task, the following will be required: 1. VHF radio; 2. MHF radios; 3. Satellite phone.		
<b>EVIDENCE REQUIREMENTS</b>			
<b>PRACTICAL PERFORMANCE</b>	<b>UNDERPINNING KNOWLEDGE</b>		
The person performing this task must be able to do the following: 1. Tune the radio equipment; 2. Select frequencies; 3. Test radio performance and reception; 4. Maintain radio communication; 5. Maintain radio watch on distress channels; 6. Satellite phone and network communication operations.	<p><b>Detailed knowledge about:</b></p> <p><b>1.0. Methods</b> This person performing this task must be able to explain how to: 1.1. Operate different communication equipment; 1.2. Maintain and service different communication equipment; 1.3. Keep radio watch to receive and transmit calls; 1.4. Use satellite phones and networks to communicate; 1.5. Ship maneuvering issues for rescuers.</p> <p><b>2.0. Principles</b> The person must be able to explain the principles of: 2.1. Observing radio discipline; 2.2. Observation of code of radio communication; 2.3. Maritime English; 2.4. Maintain proper marine watch.</p> <p><b>3.0. Theories</b> The person must be able to explain: 3.1. Radio waves; 3.2. MHF and VHF distress relay calls; 3.3. Search and rescue maneuvers of rescue vessels.</p> <p><b>4.0. Essential Skills</b> 4.1. Communication skills; 4.2. Maritime English.</p>		

	<b>5.0. Math Skills:</b> <b>5.1. Simple arithmetic.</b>
<b>DESCRIPTION OF END PRODUCTS/SERVICE</b>	1. Maintain radio communication with other vessels on different equipment; 2. Master the maneuvering of rescuing people overboard.
<b>CIRCUMSTANTIAL KNOWLEDGE</b>	<b>Detailed knowledge about:</b> 1. Medical knowledge of rescuing people overboard; 2. Rescue boat release and maneuvering; 3. Coordinated air and sea search.

<b>OCCUPATION</b>	MARINE NAVIGATION TECHNICIAN	<b>OCCUPATION CODE</b>	
<b>DUTY TITLE</b>	CARRY OUT CARGO WORK DUTIES IN PORT	<b>DUTY NO.</b>	605
<b>TASK TITLE</b>	PREPARE DECK CREW FOR OPENING CARGO HOLDS	<b>TASK NO.</b>	6051
<b>PERFORMANCE CRITERIA</b>	A person carrying out this task must be able to prepare deck crew for opening cargo holds as per agreement with stevedoring company.		
<b>RANGE STATEMENT</b>	The task will be performed while the ship is alongside the quay. For successful performance of the task, the following will be required: 1. Cargo gears depending on the type cargo; 2. Mooring equipment.		
<b>EVIDENCE REQUIREMENTS</b>			
<b>Practical Performance</b>	<b>Underpinning Knowledge</b>		
The person performing this task must be able do the following: 1. Choose appropriate method of cargo discharge; 2. Agree with stevedore company on cargo holds; 3. Make ready cargo gear; 4. Observe weather conditions; 5. Open hatches; 6. Observe safety and health regulations.	<b>Detailed knowledge about:</b> <b>1.0. Methods</b> This person performing this task must be able to explain how to: 1.1. Select the cargo hold to be opened; 1.2. Select appropriate cargo handling method; 1.3. Select appropriate cargo handling gear; 1.4. Communicate with stevedore company.  <b>2.0. Principles</b> The person must be able to explain the principles of: 2.1. Observe weather condition; 2.2. Distinguishing cargo type; 2.3. Task allocation deck crew.  <b>3.0. Theories</b> The person must be able to explain: 3.1. Crew competency; 3.2. Knowledge of cargo holds capacity; 3.3. Knowledge of cargo gears; 3.4. Cargo handling skills; 3.5. Knowledge of cargo characteristics.  <b>4.0. Essential Skills</b> 4.1. Communication skills; 4.2. Maritime English; 4.3. Interpersonal skills; 4.4. Team work; 4.5. Customer care.  <b>5.0. Math Skills</b>		

	<b>5.1. Simple arithmetic.</b>
<b>DESCRIPTION OF END PRODUCTS/SERVICE</b>	Deck crew for opening cargo holds prepared as per agreement with stevedoring company
<b>CIRCUMSTANTIAL KNOWLEDGE</b>	<b>Detailed knowledge about:</b> 1. Operation principles of cargo handling gears; 2. Weather forecasting.

<b>OCCUPATION</b>	MARINE NAVIGATION TECHNICIAN	<b>OCCUPATION CODE</b>	
<b>DUTY TITLE</b>	CARRY OUT CARGO WORK DUTIES IN PORT	<b>DUTY NO.</b>	605
<b>TASK TITLE</b>	PERFORM LOADING/DISCHARGING OF CARGO IN PORT	<b>TASK NO.</b>	6052
<b>PERFORMANCE CRITERIA</b>	A person carrying out this task must be able to perform loading/discharging of cargo in port in accordance with code of safe working practice.		
<b>RANGE STATEMENT</b>	The task will be performed while the ship is alongside the quay. For successful performance of the task, the following will be required: 1. Cargo gears depending on the type cargo; 2. Mooring equipment; 3. Good weather condition.		
<b>EVIDENCE REQUIREMENTS</b>			
<b>PRACTICAL PERFORMANCE</b>	<b>UNDERPINNING KNOWLEDGE</b>		
<p>The person performing this task must be able do the following:</p> <ol style="list-style-type: none"> <li>1. Choose appropriate method of cargo discharge;</li> <li>2. Obtain equipment to open cargo holds;</li> <li>3. Agree with stevedore company on cargo holds to be worked;</li> <li>4. Make ready cargo gear;</li> <li>5. Supply electric power on the deck;</li> <li>6. Assemble the crew to open the hatches;</li> <li>7. Observe safety and health precautions;</li> <li>8. Open hatches;</li> <li>9. Open cargo holds;</li> <li>10. Connect discharging pipes;</li> <li>11. Loading and unloading cargo;</li> <li>12. Store equipment after the task.</li> </ol>	<p><b>Detailed knowledge about:</b></p> <p><b>1.0. Methods</b> This person performing this task must be able to explain how to: 1.1. Select cargo holds to be opened; 1.2. Connect loading/discharging pipes; 1.3. Loading /unloading cargo.</p> <p><b>2.0. Principles</b> The person must be able to explain the principles of: 2.1. Observing weather condition; 2.2. Determining task allocation; 2.3. Operating cargo handling gears.</p> <p><b>3.0. Theories</b> The person must be able to explain: 3.1. Ship stability; 3.2. Code of safe work practice; 3.3. Load lines; 3.4. Cargo handling skills; 3.5. Knowledge of cargo characteristics; 3.6. Competency in pump operation; 3.7. Knowledge of cargo type.</p> <p><b>4.0. Essential Skills</b> 4.1. Communication skills; 4.2. Maritime English; 4.3. Interpersonal skills; 4.4. Customer care; 4.5. Team work.</p> <p><b>5.0. Math Skills</b></p>		

	<p>5.1. Ship stability calculation;</p> <p>5.2. Determination of cargo stowage;</p> <p>5.3. Determination of ship displacement at sea, in fresh water, in a river estuary and in port.</p>
<b>DESCRIPTION OF END PRODUCTS/SERVICE</b>	<p>Loading/discharging pipes for liquid and dry bulk cargo is connected as per safety standards.</p>
<b>CIRCUMSTANTIAL KNOWLEDGE</b>	<p><b>Detailed knowledge about:</b></p> <ol style="list-style-type: none"> <li>1. Weather forecasting;</li> <li>2. Merchant Shipping Act;</li> <li>3. SOLAS 74;</li> <li>4. MARPOL 73/78;</li> <li>5. Observing the use of proper PPE.</li> </ol>

<b>OCCUPATION</b>	MARINE NAVIGATION TECHNICIAN	<b>OCCUPATION CODE</b>	
<b>DUTY TITLE</b>	CARRY OUT CARGO WORK DUTIES IN PORT	<b>DUTY NO.</b>	605
<b>TASK TITLE</b>	MAINTAIN SHIP STABILITY	<b>TASK NO.</b>	6053
<b>PERFORMANCE CRITERIA</b>	A person carrying out this task must be able to maintain ship stability in accordance to stability booklet.		
<b>RANGE STATEMENT</b>	The task will be performed while the ship is alongside the quay. For successful performance of the task, the following will be required: <ol style="list-style-type: none"> <li>1. Cargo gears depending on the type cargo;</li> <li>2. Mooring equipment;</li> <li>3. Good weather condition;</li> <li>4. Ballast tanks;</li> <li>5. Pumps.</li> </ol>		
<b>EVIDENCE REQUIREMENTS</b>			
<b>PRACTICAL PERFORMANCE</b>	<b>UNDERPINNING KNOWLEDGE</b>		
The person performing this task must be able do the following: <ol style="list-style-type: none"> <li>1. Follow instructions by stability booklet to maintain stability;</li> <li>2. Keep ship with positive “G”.</li> </ol>	<p><b>Detailed knowledge about:</b></p> <p><b>1.0. Methods</b> This person performing this task must be able to explain how to:</p> <ol style="list-style-type: none"> <li>1.1. Proper loading/unloading;</li> <li>1.2. Maintain ship on even keel, avoid listing or trimming along the water line;</li> <li>1.3. Perform ballasting/de-ballasting of tanks.</li> </ol> <p><b>2.0. Principles</b> The person must be able to explain the principles of:</p> <ol style="list-style-type: none"> <li>2.1. Maintaining ship stability;</li> <li>2.2. Cargo stowage.</li> </ol> <p><b>3.0. Theories</b> The person must be able to explain:</p> <ol style="list-style-type: none"> <li>3.1. Ship stability;</li> <li>3.2. Load lines;</li> <li>3.3. ISM Code;</li> <li>3.4. IMDG Code;</li> <li>3.5. Safety code;</li> <li>3.6. Competence in the compliance with safety requirements;</li> <li>3.7. Knowledge of cargo characteristics;</li> <li>3.8. Competency in pump operation.</li> </ol> <p><b>4.0. Essential Skills</b></p> <ol style="list-style-type: none"> <li>4.1. Communication skills;</li> <li>4.2. Maritime English;</li> <li>4.3. Interpersonal skills;</li> <li>4.4. Team work;</li> <li>4.5. Integrity.</li> </ol>		

	<p><b>5.0. Math Skills</b></p> <p>5.1. Ullage calculations;</p> <p>5.2. Ship stability calculation;</p> <p>5.3. Determination of cargo stowage;</p> <p>5.4. Determination of ship displacement at sea, in fresh water, in a river estuary and in port.</p>
<b>DESCRIPTION OF END PRODUCTS/SERVICE</b>	Stability of the ship is maintained as per instructions in stability booklet.
<b>CIRCUMSTANTIAL KNOWLEDGE</b>	<p><b>Detailed knowledge about:</b></p> <ol style="list-style-type: none"> <li>1. Operation principles of cargo handling gears;</li> <li>2. Weather forecasting;</li> <li>3. Merchant Shipping Act;</li> <li>4. SOLAS 74;</li> <li>5. MARPOL 73/78;</li> <li>6. Safety requirements.</li> </ol>

<b>OCCUPATION</b>	MARINE NAVIGATION TECHNICIAN	<b>OCCUPATION CODE</b>	
<b>DUTY TITLE</b>	CARRY OUT CARGO WORK DUTIES IN PORT	<b>DUTY NO.</b>	605
<b>TASK TITLE</b>	PERFORM MOORING	<b>TASK NO.</b>	6054
<b>PERFORMANCE CRITERIA</b>	A person carrying out this task must be able to carry out mooring activities as per safety regulations		
<b>RANGE STATEMENT</b>	The task will be performed while the ship is alongside the quay. For successful performance of the task, the following will be required: 1. Mooring equipment; 2. Mooring ropes; 3. Hawse pipe; 4. Capstan.		
<b>EVIDENCE REQUIREMENTS</b>			
<b>PRACTICAL PERFORMANCE</b>	<b>UNDERPINNING KNOWLEDGE</b>		
The person performing this task must be able do the following: 1. Slacken/tighten of mooring ropes depending on tides; 2. Position rat guards; 3. Maintain watch at the forecastle deck; 4. Keep an eye on water marks to maintain stability.	<p><b>Detailed knowledge about:</b></p> <p><b>1.0. Methods</b> This person performing this task must be able to explain how to: 1.1. Slacken the mooring ropes; 1.2. Stow the cargo; 1.3. Perform ballasting/deballasting of tanks.</p> <p><b>2.0. Principles</b> The person must be able to explain the principles of: 2.1. Maintain ship stability; 2.2. Principle of mooring; 2.3. Cargo stowage.</p> <p><b>3.0. Theories</b> The person must be able to explain: 3.1. Ocean current; 3.2. Wind current; 3.3. Effects of back springs; 3.4. Team work; 3.5. Rope work; 3.6. Tides knowledge.</p> <p><b>4.0. Essential Skills</b> 4.1. Communication skills; 4.2. Maritime English; 4.3. Team work; 4.4. Interpersonal skills;</p> <p><b>5.0. Math Skills</b></p>		

	<p>5.1. Simple arithmetic;</p> <p>5.2. Tide calculations;</p> <p>5.3. Determination of cargo stowage;</p> <p>5.4. Strength of material.</p>
<b>DESCRIPTION OF END PRODUCTS/SERVICE</b>	Mooring ropes are controlled to keep the ship alongside the quay during loading and unloading of the cargo
<b>CIRCUMSTANTIAL KNOWLEDGE</b>	<p><b>Detailed knowledge about:</b></p> <ol style="list-style-type: none"> <li>1. Weather forecasting;</li> <li>2. Tide knowledge;</li> <li>3. Wind effects on the vessel;</li> </ol>

<b>OCCUPATION</b>	MARINE NAVIGATION TECHNICIAN	<b>OCCUPATION CODE</b>	
<b>DUTY TITLE</b>	CARRY OUT CARGO WORK DUTIES IN PORT	<b>DUTY NO.</b>	605
<b>TASK TITLE</b>	MAINTAIN SHIP SAFETY AND SECURITY	<b>TASK NO.</b>	6055
<b>PERFORMANCE CRITERIA</b>	A person carrying out this task must be able to maintain ship safety and security as per relevant code (ISPS Code).		
<b>RANGE STATEMENT</b>	The task is undertaken aboard docked ship. For successful performance of the task, the following will be required: 1. Crew on watch; 2. Flashlight; 3. PPE; 4. Whistle.		
<b>EVIDENCE REQUIREMENTS</b>			
<b>PRACTICAL PERFORMANCE</b>	<b>UNDERPINNING KNOWLEDGE</b>		
The person performing this task must be able do the following: 1. Verification of identity cards; 2. Handling emergencies; 3. Control crew/visitors' movement; 4. Rig the gangway; 5. Report unusual incidents to OOW.	<p><b>Detailed knowledge about:</b></p> <p><b>1.0. Methods</b> This person performing this task must be able to explain how to: 1.1. Keep watch; 1.2. Implement necessary codes/guidelines.</p> <p><b>2.0. Principles</b> The person must be able to explain the principles of: 2.1. gangway rigging.</p> <p><b>3.0. Theories</b> The person must be able to explain 3.1. ISPS Code; 3.2. IMO Guidelines; 3.3. Company policy; 3.4. National and International regulations on ship safety security (LRIT and Automatic identification system); 3.5. Master's standing order.</p> <p><b>4.0. Essential Skills</b> 4.1. Communication skills; 4.2. Maritime English; 4.3. Interpersonal skills; 4.4. Integrity.</p> <p><b>5.0. Math Skills</b> <b>5.1. Not Applicable.</b></p>		
<b>DESCRIPTION OF END PRODUCTS/SERVICE</b>	Ship safety and security is maintained as per rules and regulations		
<b>CIRCUMSTANTIAL</b>	<b>Detailed knowledge about:</b>		

**KNOWLEDGE**

1. International and International laws;
2. Master's standing orders.

<b>OCCUPATION</b>	MARINE NAVIGATION TECHNICIAN	<b>OCCUPATION CODE</b>	
<b>DUTY TITLE</b>	PERFORM ANCHORING	<b>DUTY NO.</b>	606
<b>TASK TITLE</b>	PERFORM NORMAL ANCHORING	<b>TASK NO.</b>	6061
<b>PERFORMANCE CRITERIA</b>	A person carrying out this task must be able to perform normal anchoring of marine vessel as per approved standards.		
<b>RANGE STATEMENT</b>	The task is undertaken on board ship when the ship is at outer anchorage. For successful performance of the task, the following will be required: 1. Anchor; 2. Anchor gear; 3. Anchor chain; 4. Anchor brakes; 5. Anchor fastenings.		
<b>EVIDENCE REQUIREMENTS</b>			
<b>PRACTICAL PERFORMANCE</b>	<b>UNDERPINNING KNOWLEDGE</b>		
The person performing this task must be able do the following: 1. Send anchor team to focsle station; 2. Provide power on deck; 3. Remove brake to brake to chain; 4. Engage gear; 5. Apply anchor brakes; 6. Let go of the anchor after Master's order; 7. Secure anchor.	<b>Detailed knowledge about:</b> <b>1.0. Methods</b> This person performing this task must be able to explain how to: 1.1. Choose point of anchorage; 1.2. Operate the hydraulic system; 1.3. Perform anchoring. <b>2.0. Principles</b> The person must be able to explain the principles of: 2.1. Procedures in lowering and heaving the anchor; 2.2. Hydraulic transmission. <b>3.0. Theories</b> The person must be able to explain: 3.1. Anchor positioning; 3.2. Ocean current; 3.3. Wind current; 3.4. Safety of life at sea; 3.5. Anchor handling skills. <b>4.0. Essential Skills</b> 4.1. Communication skills; 4.2. Team work; 4.3. Obedience. <b>5.0. Math Skills</b> 5.1. Coordinate geometry; 5.2. Simple arithmetic.		
<b>DESCRIPTION OF END</b>	The ship is anchored at the right position		

<b>PRODUCTS/SERVICE</b>	
<b>CIRCUMSTANTIAL KNOWLEDGE</b>	<b>Detailed knowledge about:</b> Fluid mechanics

<b>OCCUPATION</b>	MARINE NAVIGATION TECHNICIAN	<b>OCCUPATION CODE</b>	
<b>DUTY TITLE</b>	PERFORM ANCHORING	<b>DUTY NO.</b>	606
<b>TASK TITLE</b>	PERFORM EMERGENCY ANCHORING	<b>TASK NO.</b>	6062
<b>PERFORMANCE CRITERIA</b>	A person carrying out this task must be able to perform emergency anchoring as per marine safety codes.		
<b>RANGE STATEMENT</b>	The task is undertaken on board ship when the ship has an emergency. For successful performance of the task, the following will be required: 1. Anchor; 2. Anchor gear; 3. Anchor chain; 4. Anchor brakes; 5. Anchor fastenings; 6. Radio.		
<b>EVIDENCE REQUIREMENTS</b>			
<b>PRACTICAL PERFORMANCE</b>	<b>UNDERPINNING KNOWLEDGE</b>		
The person performing this task must be able do the following: 1. Fix ship's position; 2. Inform port of arrival agent and request for berthing instructions; 3. Provide power on deck; 4. Proceed with anchoring procedures.	<b>Detailed knowledge about:</b> <b>1.0. Methods</b> This person performing this task must be able to explain how to: 1.1. Choose point of anchorage; 1.2. Operate the hydraulic system; 1.3. Perform anchoring.  <b>2.0. Principles</b> The person must be able to explain the principles of: 2.1. Procedures in lowering and heaving the anchor; 2.2. Hydraulic transmission.  <b>3.0. Theories</b> The person must be able to explain: 3.1. Anchor positioning; 3.2. Ocean current; 3.3. Wind current; 3.4. Safety of life at sea; 3.5. Anchor handling skills.  <b>4.0. Essential Skills</b> 4.1. Communication skills; 4.2. Team work; 4.3. Obedience.  <b>5.0. Math Skills</b> 5.1. Coordinate geometry; 5.2. Simple arithmetic.		
<b>DESCRIPTION OF END</b>	Emergency anchoring of the ship is performed as		

<b>PRODUCTS/SERVICE</b>	per marine safety codes
<b>CIRCUMSTANTIAL KNOWLEDGE</b>	<b>Detailed knowledge about:</b> 1. Fluid mechanics; 2. Marine safety codes.

<b>OCCUPATION</b>	MARINE NAVIGATION TECHNICIAN	<b>OCCUPATION CODE</b>	
<b>DUTY TITLE</b>	PERFORM ANCHORING	<b>DUTY NO.</b>	606
<b>TASK TITLE</b>	KEEP AN ANCHOR WATCH	<b>TASK NO.</b>	6063
<b>PERFORMANCE CRITERIA</b>	A person carrying out this task must be able to keep an anchor as watchkeeping standards.		
<b>RANGE STATEMENT</b>	The task is undertaken on board ship when the ship is at outer anchorage. For successful performance of the task, the following will be required: 1. Radio; 2. PPE.		

**EVIDENCE REQUIREMENTS**

<b>PRACTICAL PERFORMANCE</b>	<b>UNDERPINNING KNOWLEDGE</b>
<p>The person performing this task must be able do the following:</p> <ol style="list-style-type: none"> <li>1. Watch for ship drifting;</li> <li>2. Report if anchor chain breaks;</li> <li>3. Keep hawse pipe on close watch;</li> <li>4. Report any suspicion along the anchor chain.</li> </ol>	<p><b>Detailed knowledge about:</b></p> <p><b>1.0. Methods</b> This person performing this task must be able to explain how to:</p> <ol style="list-style-type: none"> <li>1.1. Keep watch at anchorage;</li> <li>1.2. Report any unusual incident;</li> <li>1.3. Report of chain loss.</li> </ol> <p><b>2.0. Principles</b> The person must be able to explain the principles of:</p> <ol style="list-style-type: none"> <li>2.1. Watchkeeping at anchor.</li> </ol> <p><b>3.0. Theories</b> The person must be able to explain</p> <ol style="list-style-type: none"> <li>3.1. Anchor positioning;</li> <li>3.2. Ocean current;</li> <li>3.3. Wind current;</li> <li>3.4. Safety of life at sea.</li> </ol> <p><b>4.0. Essential Skills</b></p> <ol style="list-style-type: none"> <li>4.1. Communication skills;</li> <li>4.2. Obedience;</li> <li>4.3. Integrity;</li> <li>4.4. Interpersonal skills.</li> </ol> <p><b>5.0. Math Skills</b></p> <ol style="list-style-type: none"> <li>5.1. Coordinate geometry;</li> <li>5.2. Simple arithmetic.</li> </ol>
<b>DESCRIPTION OF END PRODUCTS/SERVICE</b>	The safety and security of the ship is maintained by anchor watch
<b>CIRCUMSTANTIAL KNOWLEDGE</b>	<b>Detailed knowledge about:</b> Codes governing safety and security at sea

<b>OCCUPATION</b>	MARINE NAVIGATION TECHNICIAN	<b>OCCUPATION CODE</b>	
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<b>DUTY TITLE</b>	PERFORM BERTHING	<b>DUTY NO.</b>	6067
<b>TASK TITLE</b>	PREPARE PILOT'S LADDER	<b>TASK NO.</b>	6071
<b>PERFORMANCE CRITERIA</b>	A person carrying out this task must be able to prepare the pilot's ladder for the pilot to access the ship.		
<b>RANGE STATEMENT</b>	<p>The task is undertaken on board ship when the ship is at outer anchorage. For successful performance of the task, the following will be required:</p> <ol style="list-style-type: none"> <li>1. Pilot's ladder;</li> <li>2. Manropes;</li> <li>3. Staging ladder;</li> <li>4. Stanchions;</li> <li>5. Lifeline;</li> <li>6. Lifebuoy;</li> <li>7. G – flag.</li> </ol>		
<b>EVIDENCE REQUIREMENTS</b>			
<b>PRACTICAL PERFORMANCE</b>	<b>UNDERPINNING KNOWLEDGE</b>		
<p>The person performing this task must be able do the following:</p> <ol style="list-style-type: none"> <li>1. Get ladder from store;</li> <li>2. Check if it is in good condition;</li> <li>3. Fasten the ladder on ship side using manropes;</li> <li>4. Fix staging ladder and stanchions;</li> <li>5. Fix lifebuoy attached to lifeline;</li> <li>6. Test the pilot ladder rigging.</li> </ol>	<p><b>Detailed knowledge about:</b></p> <p><b>1.0. Methods</b> This person performing this task must be able to explain how to:</p> <ol style="list-style-type: none"> <li>1.1. Fasten pilot's ladder;</li> <li>1.2. Fasten man ropes;</li> <li>1.3. Put lifebuoy attached with lifeline;</li> <li>1.4. Test rigging.</li> </ol> <p><b>2.0. Principles</b> The person must be able to explain the principles of fixing of pilot ladder</p> <p><b>3.0. Theories</b> The person must be able to explain:</p> <ol style="list-style-type: none"> <li>3.1. Safety requirements of fixing pilot ladder;</li> <li>3.2. Survival technique;</li> <li>3.3. Pilot duties;</li> <li>3.4. Rescue operations;</li> <li>3.5. Ladder rigging.</li> </ol> <p><b>4.0. Essential Skills</b></p> <ol style="list-style-type: none"> <li>4.1. Communication skills;</li> <li>4.2. Maritime English;</li> <li>4.3. Interpersonal skills;</li> <li>4.4. Integrity.</li> </ol> <p><b>5.0. Math Skills</b></p> <p><b>5.1. Not Applicable</b></p>		
<b>DESCRIPTION OF END PRODUCTS/SERVICE</b>	The pilot ladder is fixed as per safety marine codes and technical specifications.		
<b>CIRCUMSTANTIAL</b>	<b>Detailed knowledge about:</b> Codes governing safety		

<b>KNOWLEDGE</b>
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and security at sea
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<b>OCCUPATION</b>	MARINE NAVIGATION TECHNICIAN	<b>OCCUPATION CODE</b>	
<b>DUTY TITLE</b>	PERFORM BERTHING	<b>DUTY NO.</b>	6067
<b>TASK TITLE</b>	ORGANISE FOR PILOT SERVICE	<b>TASK NO.</b>	6072
<b>PERFORMANCE CRITERIA</b>	A person carrying out this task must be able to be to organise for pilot services.		
<b>RANGE STATEMENT</b>	The task is undertaken on board ship when the ship is at outer anchorage. For successful performance of the task, the following will be required: 1. Radio; 2. Pilot's ladder; 3. Manropes; 4. Staging ladder; 5. Stanchions; 6. Lifeline; 7. Lifebuoy; 8. G – flag; 9. H – flag.		
<b>EVIDENCE REQUIREMENTS</b>			
<b>PRACTICAL PERFORMANCE</b>	<b>UNDERPINNING KNOWLEDGE</b>		
The person performing this task must be able do the following: 1. Communicate with pilot station; 2. Raise the G – flag; 3. Send an officer to stand by the pilot ladder; 4. Receive pilot; 5. Lower the G – flag; 6. Raise the H – flag; 7. Arrange the meeting between the Master and the pilot.	<b>Detailed knowledge about:</b> <b>1.0. Methods</b> This person performing this task must be able to explain how to: 1.1. Communicate via VHF radio; 1.2. Hoist the G – flag and H – flag.  <b>2.0. Principles</b> The person must be able to explain the principles of 2.1. Marine communication.  <b>3.0. Theories</b> The person must be able to explain: 3.1. Survival technique; 3.2. Pilot duties; 3.3. Rescue operations; 3.4. Radio operation; 3.5. Communication using flags.  <b>4.0. Essential Skills</b> 4.1. Communication skills; 4.2. Maritime English; 4.3. Interpersonal skills.  <b>Math Skills:</b> Not Applicable		
<b>DESCRIPTION OF END PRODUCTS/SERVICE</b>	Pilot services is organized as per approved port regulations.		
<b>CIRCUMSTANTIAL</b>	<b>Detailed knowledge about:</b>		

<b>KNOWLEDGE</b>	<ol style="list-style-type: none"><li>1. Radio communication;</li><li>2. Signalling.</li></ol>
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<b>OCCUPATION</b>	MARINE NAVIGATION TECHNICIAN	<b>OCCUPATION CODE</b>	
<b>DUTY TITLE</b>	PERFORM BERTHING	<b>DUTY NO.</b>	607
<b>TASK TITLE</b>	MOOR THE SHIP	<b>TASK NO.</b>	6073
<b>PERFORMANCE CRITERIA</b>	A person carrying out this task must be able to moor the ship to quay as per port regulations.		
<b>RANGE STATEMENT</b>	<p>The task is undertaken on board ship when the ship is proceeding towards the port. For successful performance of the task, the following will be required:</p> <ol style="list-style-type: none"> <li>1. Harbour pilot;</li> <li>2. Master of the ship;</li> <li>3. Helmsman;</li> <li>4. VHF radio;</li> <li>5. Tugs;</li> <li>6. Mooring ropes;</li> <li>7. Mooring gang.</li> </ol>		
<b>EVIDENCE REQUIREMENTS</b>			
<b>PRACTICAL PERFORMANCE</b>	<b>UNDERPINNING KNOWLEDGE</b>		
<p>The person performing this task must be able do the following:</p> <ol style="list-style-type: none"> <li>1. Take vessel into buoyed channel;</li> <li>2. Navigate ship through channel;</li> <li>3. Take tugs if necessary;</li> <li>4. Moor the ship alongside the quay.</li> </ol>	<p><b>Detailed knowledge about:</b></p> <p><b>1.0. Methods</b> This person performing this task must be able to explain how to:</p> <ol style="list-style-type: none"> <li>1.1. Moor the ropes to bollard;</li> <li>1.2. Secure the vessel to the berth.</li> </ol> <p><b>2.0. Principles</b> The person must be able to explain the principles of:</p> <ol style="list-style-type: none"> <li>2.1. Mooring;</li> <li>2.2. Berthing.</li> </ol> <p><b>3.0. Theories</b> The person must be able to explain:</p> <ol style="list-style-type: none"> <li>3.1. Use of spring ropes;</li> <li>3.2. Berthing skills;</li> <li>3.3. Mooring skills.</li> </ol> <p><b>4.0. Essential Skills</b></p> <ol style="list-style-type: none"> <li>4.1. Communication skills;</li> <li>4.2. Interpersonal skills;</li> <li>4.3. Maritime English.</li> </ol> <p><b>5.0. Math Skills</b></p> <ol style="list-style-type: none"> <li>5.1. Mathematics for deck officers;</li> <li>5.2. Simple arithmetic.</li> </ol>		
<b>DESCRIPTION OF END PRODUCTS/SERVICE</b>	Mooring of the ship is performed as per port regulations.		
<b>CIRCUMSTANTIAL</b>	<b>Detailed knowledge about:</b>		

<b>KNOWLEDGE</b>	<ol style="list-style-type: none"><li>1. Radio communication;</li><li>2. Signalling.</li></ol>
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<b>OCCUPATION</b>	MARINE NAVIGATION TECHNICIAN	<b>OCCUPATION CODE</b>	
<b>DUTY TITLE</b>	PERFORM BERTHING	<b>DUTY NO.</b>	607
<b>TASK TITLE</b>	PREPARE PILOT DISEMBARKATION	<b>TASK NO.</b>	6074
<b>PERFORMANCE CRITERIA</b>	A person carrying out this task must be able to prepare the pilot for disembarkation as per port regulations.		
<b>RANGE STATEMENT</b>	The task is undertaken on board ship when the ship is alongside the berth. For successful performance of the task the rigged gangway will be required.		
<b>EVIDENCE REQUIREMENTS</b>			
<b>PRACTICAL PERFORMANCE</b>		<b>UNDERPINNING KNOWLEDGE</b>	
<p>The person performing this task must be able to do the following:</p> <ol style="list-style-type: none"> <li>1. Fasten the gangway to the ship;</li> <li>2. Fasten the mooring ropes;</li> <li>3. Allow the pilot to disembark;</li> <li>4. Lower the H – flag.</li> </ol>		<p><b>Detailed knowledge about:</b></p> <p><b>1.0. Methods</b> This person performing this task must be able to explain how to:</p> <ol style="list-style-type: none"> <li>1.1. Rig the gangway;</li> <li>1.2. Tighten mooring ropes.</li> </ol> <p><b>2.0. Principles</b> The person must be able to explain the principles of:</p> <ol style="list-style-type: none"> <li>2.1. Mooring principle;</li> <li>2.2. Berthing principles.</li> </ol> <p><b>3.0. Theories</b> The person must be able to explain:</p> <ol style="list-style-type: none"> <li>3.1. Use of spring ropes;</li> <li>3.2. Berthing skills;</li> <li>3.3. Mooring skills.</li> </ol> <p><b>4.0. Essential Skills</b></p> <ol style="list-style-type: none"> <li>4.1. Communication skills;</li> <li>4.2. Maritime English;</li> <li>4.3. Interpersonal skills.</li> </ol> <p><b>5.0. Math Skills:</b> Not Applicable</p>	
<b>DESCRIPTION OF END PRODUCTS/SERVICE</b>		The pilot disembarks the ship as per port regulations.	
<b>CIRCUMSTANTIAL KNOWLEDGE</b>		<p><b>Detailed knowledge about:</b></p> <ol style="list-style-type: none"> <li>1. Radio communication;</li> <li>2. Signalling.</li> </ol>	

<b>OCCUPATION</b>	MARINE NAVIGATION TECHNICIAN	<b>OCCUPATION CODE</b>	
<b>DUTY TITLE</b>	PERFORM BERTHING	<b>DUTY NO.</b>	607
<b>TASK TITLE</b>	PREPARE CREW DISEMBARKATION FROM THE VESSEL	<b>TASK NO.</b>	6075
<b>PERFORMANCE CRITERIA</b>	The person performing this task must be able to organize the crew disembarkation at the berth as per port regulations.		
<b>RANGE STATEMENT</b>	The task is undertaken on board ship when the ship is alongside the berth. For successful performance of the task the rigged gangway will be required.		
<b>EVIDENCE REQUIREMENTS</b>			
<b>PRACTICAL PERFORMANCE</b>	<b>UNDERPINNING KNOWLEDGE</b>		
The person performing this task must be able do the following: 1. Moor the ship; 2. Rig the gangway; 3. Allow the entry of port health, custom and immigration officials for clearance; 4. Allow crew to disembark.	<p><b>Detailed knowledge about:</b></p> <p><b>1.0. Methods</b> This person performing this task must be able to explain how to: 1.1. Proceed with port health officials; 1.2. Proceed with custom officials; 1.3. Proceed with immigration officials.</p> <p><b>2.0. Principles</b> The person must be able to explain the principles of: 2.1. Governing national laws with respect to health, customs and immigration issues.</p> <p><b>3.0. Theories</b> The person must be able to explain: 3.1. Disease control/epidemic control; 3.2. Control of invasive species; 3.3. Knowledge of national laws in regard of health, customs and immigration.</p> <p><b>4.0. Essential Skills</b> 4.1. Communication skills; 4.2. Interpersonal skills; 4.3. Maritime English.</p> <p><b>Math Skills:</b> Not Applicable</p>		
<b>DESCRIPTION OF END PRODUCTS/SERVICE</b>	Disembarkation of the crew is performed as per port regulations		
<b>CIRCUMSTANTIAL KNOWLEDGE</b>	<b>Detailed knowledge about:</b> National legislations – health, customs and immigration.		

**TABLE 1: DACUM CHARTS FOR MARINE NAVIGATION TECHNICIANS – LEVEL**

## LEVEL 6

DUTIES	TASKS	ENABLERS
<p><b>1.0.</b> Perform Watchkeeping duties onboard ship</p>	<p>1.1. Respond to radio signals and other communication.            1.2. Set course.            1.3. Maintain course.            1.4. Maintain speed.            1.5. Maintain ship's safety.            1.6. Apply rules of the road during navigation.            1.7. Precautions for passenger protection and safety in emergency situations.</p>	<p><b>Generic Knowledge and Skills</b></p> <ul style="list-style-type: none"> <li>• Knowledge in radio operations;</li> <li>• Knowledge of radio frequencies;</li> <li>• Skills in the use of radio transmission;</li> <li>• Knowledge of the importance of radio signals;</li> <li>• Knowledge of action to be taken depending on the radio signal received;</li> <li>• Knowledge of types navigational chart and their application;</li> <li>• Knowledge and skills in chartwork;</li> <li>• proficiency in chartwork;</li> <li>• Proficiency in marine navigation;</li> <li>• Proficiency in voyage execution;</li> <li>• General knowledge in engine operation and performance;</li> <li>• Adequate knowledge of ISM code and company policy;</li> <li>• Proficiency in ship's safety procedures;</li> <li>• Proficiency in safety procedures for crew members and passengers;</li> <li>• Knowledge of rules of the road and collision regulations;</li> <li>• Proficiency in radio operation (radio, alarm systems, etc.);</li> <li>• Proficiency in the use of navigational lights and shapes;</li> <li>• Knowledge and proficiency in the use of rules of the road;</li> <li>• Knowledge and proficiency in the use of collision regulations (COLREGS);</li> <li>• Proficiency in communication using different communication modes.</li> </ul> <p><b>Tools and equipment</b></p>

DUTIES	TASKS	ENABLERS
		<ul style="list-style-type: none"> <li>• Chartwork tools (parallel rules);</li> <li>• Electronic charts;</li> <li>• Echo sounder;</li> <li>• Communication;</li> <li>• Equipment (radio, morse lights and shapes);</li> <li>• Communication flags.</li> </ul> <p><b>Workers behaviour</b></p> <ul style="list-style-type: none"> <li>• Teamwork spirit;</li> <li>• Honesty;</li> <li>• Obediency to seniors;</li> </ul>
<p><b>2.0.</b> Perform Chart work during navigational watch</p>	<p>2.1. Apply the appropriate chart during navigational watch.</p> <p>2.2. Maintain ship's track.</p> <p>2.3. Determine ship's speed.</p> <p>2.4. Check water depth.</p>	<p><b>Generic Knowledge and skills</b></p> <ul style="list-style-type: none"> <li>• Proficiency in chartwork;</li> <li>• Knowledge in position fixing;</li> <li>• Proficiency in Marine navigation;</li> <li>• Knowledge of chartwork tools including electronic charts;</li> <li>• Knowledge of landmarks use in position fixing;</li> <li>• Proficiency in the use of celestial bodies in position fixing;</li> <li>• Proficiency in radar plotting;</li> <li>• Knowledge of position fixing;</li> <li>• Knowledge and proficiency in determining ship's speed;</li> <li>• Proficiency in the use of echosounder.</li> </ul> <p><b>Tools and equipment</b></p> <ul style="list-style-type: none"> <li>• Parallel rule, divders, pencil, protractor etc.) for fixing shipsposition. For ECDIS use as directed.</li> </ul> <p><b>Workers behaviour</b></p> <ul style="list-style-type: none"> <li>• Teamwork spirit;</li> <li>• Honesty;</li> <li>• Obediency to seniors.</li> </ul>
<p><b>3.0.</b> Maintain Safe Navigation</p>	<p>3.1. Perform Look Out Duties during the watch.</p> <p>3.2. Report any intrusion in</p>	<p><b>Generic Knowledge and skills</b></p> <ul style="list-style-type: none"> <li>• Watchkeeping knowledge;</li> <li>• Ship's crew capability;</li> </ul>

DUTIES	TASKS	ENABLERS
	<p>your area of visibility throughout your watch.</p> <p>3.3. Initial measures to be taken after a collision or stranding; initial assessment and control of damage.</p>	<ul style="list-style-type: none"> <li>• Proficiency on deck crew management;</li> <li>• Knowledge of maritime English;</li> <li>• Ship collision and stranding disposal measures.</li> </ul> <p><b>Tools and equipment</b></p> <ul style="list-style-type: none"> <li>• Binoculars;</li> <li>• Communication equipment;</li> <li>• Lights and shapes;</li> <li>• Radio;</li> <li>• Walkie-talkie;</li> <li>• Sounding weight;</li> <li>• Leak plugging equipment;</li> <li>• Oil spill prevention equipment.</li> </ul>
<p><b>4.0.</b> Undertake Communication with relevant parties while at sea</p>	<p>4.1. Communicate with shore stations.</p> <p>4.2. Communicate with ship's agency.</p> <p>4.3. Communicate with other vessels.</p> <p>4.4. Identify communication mode depending on party to communicate with.</p> <p>4.5. Convey relevant information to concerned parties.</p> <p>4.6. Rescue of persons overboard, assistance to ships in distress, emergency response in port.</p>	<p><b>Generic Knowledge and Skills</b></p> <ul style="list-style-type: none"> <li>• Knowledge different form of communication;</li> <li>• Proficiency in communication skills;</li> <li>• Proficiency in the use of communication equipment;</li> <li>• Maritime English;</li> <li>• Communicate using morse codes;</li> <li>• Communicate using lights and shapes;</li> <li>• Communicate using flags;</li> <li>• Communicate using sound signals;</li> <li>• Procedures for assisting and rescuing people in the water.</li> </ul> <p><b>Communicate using</b></p> <ul style="list-style-type: none"> <li>• Distress signals.</li> </ul> <p><b>Tools and equipment</b></p> <ul style="list-style-type: none"> <li>• Radio;</li> <li>• Lights and shapes;</li> <li>• Walkie-talkie.</li> </ul> <p><b>Workers behaviour</b></p> <ul style="list-style-type: none"> <li>• Teamwork spirit;</li> <li>• Honesty;</li> <li>• Obediency to seniors.</li> </ul>

DUTIES	TASKS	ENABLERS
<p><b>5.0.</b> Carry out Cargo work duties in port</p>	<p>5.1. Prepare deck crew for opening cargo holds (weather permitting).            5.2. Perform loading/discharging of cargo in port.            5.3. Maintain ship stability.            5.4. Perform moorings.            5.5. Maintaining ship's safety and security.</p>	<p><b>Generic knowledge and Skills</b></p> <ul style="list-style-type: none"> <li>• Knowledge of cargo holds;</li> <li>• Knowledge of cargo holds capacity;</li> <li>• Knowledge of stevedoring operations;</li> <li>• Knowledge of type of cargo e.g. dry bulk, liquid bulk, general cargo, LPG/LNG, Gas carrier, fruit concentrate etc.).</li> <li>• Knowledge of cargo stowage;</li> <li>• Knowledge of ship stability;</li> <li>• Knowledge of the load line types;</li> <li>• Knowledge of the cargo characteristics;</li> <li>• Number of deck crew needed;</li> <li>• Crew competency;</li> <li>• Knowledge of cargo gear required;</li> <li>• Availability of cargo gears;</li> <li>• Performance of cargo piping system;</li> <li>• Knowledge of piping system;</li> <li>• Knowledge of cargo pumps;</li> <li>• Competency in the operation of cargo pumps and piping system;</li> <li>• Knowledge/Competency in the safety process of the operation;</li> <li>• Knowledge of of relevant codes(e.g. IMDG Code, ISM Code and Code of safe working practice.);</li> <li>• Competency in the compliance with safety requirement;</li> <li>• Knowledge of cargo supplier safety manual;</li> <li>• Knowledge of ship stability;</li> <li>• Knowledge of ballast tanks;</li> <li>• Competence in loading and unloading;</li> <li>• Competence in cargo stowage;</li> <li>• Competence in ballasting avoid free surface effect;</li> </ul>

<b>DUTIES</b>	<b>TASKS</b>	<b>ENABLERS</b>
		<ul style="list-style-type: none"> <li>• Knowledge of mooring;</li> <li>• Competence in mooring;</li> <li>• Competence in moorings adjustment during cargo work;</li> <li>• Knowledge of tides behaviour;</li> <li>• Competence in maintaining vessel contact to the quay;</li> <li>• Knowledge of the International Ship and Port Facility Security (ISPS) Code;</li> <li>• Knowledge of Company Policy on ship's safety and Security;</li> <li>• Knowledge of the International Maritime Organisation (IMO) on ships' safety and security;</li> <li>• Knowledge of Master's standing orders;</li> <li>• Knowledge of gangway rigging;</li> <li>• Knowledge of gangway safety;</li> <li>• Identification of trespassers;</li> <li>• Competence in handling emergencies;</li> <li>• Proficiency in safety issues.</li> </ul> <p><b>Tools and equipment</b></p> <ul style="list-style-type: none"> <li>• Cargo handling equipment (shore cranes, davits, onboard cargo handling gear etc.);</li> <li>• Mooring ropes.</li> </ul> <p><b>Workers behaviour</b></p> <ul style="list-style-type: none"> <li>• Teamwork spirit;</li> <li>• Honesty;</li> <li>• Obedience to seniors;</li> <li>• Integrity.</li> </ul>
<p><b>6.0. Perform anchoring</b></p>	<p>6.1. Perform normal anchoring. 6.2. Perform emergency anchoring. 6.3. Keep an anchor watch.</p>	<p><b>Generic Knowledge and Skills</b></p> <ul style="list-style-type: none"> <li>• Knowledge of anchoring;</li> <li>• Proficiency in anchor handling;</li> <li>• Hydraulic lift.</li> </ul> <p><b>Tools and equipment</b></p> <ul style="list-style-type: none"> <li>• Anchor;</li> <li>• Anchor gear;</li> <li>• Anchor chain;</li> <li>• Anchor brakes;</li> </ul>

DUTIES	TASKS	ENABLERS
		<ul style="list-style-type: none"> <li>• Anchor fastenings.</li> </ul> <p><b>Workers behaviour</b></p> <ul style="list-style-type: none"> <li>• Teamwork spirit;</li> <li>• Honesty;</li> <li>• Obediency to seniors;</li> <li>• Integrity.</li> </ul>
<p><b>7.0.</b> Perform berthing</p>	<p>7.1. Prepare the pilot’s ladder.  7.2. Organise for pilot service.  7.3. Moor the ship.  7.4. Prepare for the pilot’s disembarkation.  7.5. Prepare crew disembarkation from the vessel.</p>	<p><b>Generic Knowledge and Skills</b></p> <ul style="list-style-type: none"> <li>• Knowledge of berthing;</li> <li>• Proficiency in berthing;</li> <li>• Proficiency in pilot’s ladder securing arrangement;</li> <li>• Proficiency in pilot duties;</li> <li>• Proficiency in communication skill;</li> <li>• Proficiency in channel navigation;</li> <li>• Proficiency in mooring;</li> <li>• Proficiency in pilotage;</li> <li>• Proficiency in embarkation and disembarkation of pilots code/SOLAS 74 as amended;</li> <li>• Proficiency in port health regulation;</li> <li>• Proficiency in immigration regulation;</li> <li>• Proficiency in customs regulation;</li> <li>• Proficiency in crew welfare;</li> <li>• Proficiency in cargo work operations;</li> </ul> <p><b>Tools and Equipment</b></p> <ul style="list-style-type: none"> <li>• Pilot’s ladder;</li> <li>• Manropes;</li> <li>• Staging ladder;</li> <li>• Stanchions;</li> <li>• Lifeline;</li> <li>• Lifebuoy;</li> <li>• G-flag;</li> <li>• H-flag;</li> <li>• Mooring ropes.</li> </ul> <p><b>Workers Behaviour</b></p> <ul style="list-style-type: none"> <li>• Teamwork spirit;</li> </ul>

<b>DUTIES</b>	<b>TASKS</b>	<b>ENABLERS</b>
		<ul style="list-style-type: none"><li>• Honesty;</li><li>• Obediency to seniors;</li><li>• Integrity.</li></ul>