

QUALIFICATIONS PACK - OCCUPATIONAL STANDARDS FOR LOGISTICS SECTOR

What are Occupational Standards(OS)?

- OS describe what individuals need to do, know and understand in order to carry out a particular job role or function
- OS are performance standards that individuals must achieve when carrying out functions in the workplace, together with specifications of the underpinning knowledge and understanding

Contact Us:

Logistics Skill Council (LSC)
'Temple Towers',
Ground Floor, No 476
Anna Salai, Nandanam,
Chennai 600 035
Email: dhanab@lsc-india.com



Contents

1. Introduction and Contacts.....	P1
2. Qualifications Pack.....	P3
3. Glossary of Key Terms	P5
4. OS Units.....	P8
5. Nomenclature for QP & OS.....	P75
6. Assessment Criteria for each NOS....	P77

Introduction

Qualifications Pack: Vessel Operator Grade 2 (Elective – Deck Operations/ Engine Operations) (Options – Tug Vessel Operations/ Profit Management/ Ship and Yard Planning)

Sector: LOGISTICS

SUB-SECTOR: Inland Waterways

OCCUPATION: - Deck Operations, Engine Operations, Navigation and Planning

REFERENCE ID: LSC/Q4102

ALIGNED TO: Currently N/a, available only for sea faring vessels

Brief Job Description: The individual navigates the vessel, supervises of loading and unloading of cargo, performs advanced preventive and corrective maintenance, reports potential waterway hazards and manages the vessel crew

Electives

Elective 1: Deck Operations

The unit is about planning of deck maintenance schedule, vessel handling, storage and inventory, and providing on-board training to deck crew

Elective 2: Engine Operations

The unit is about supervision of engine operation, overhauling of engine and related equipment's, undertaking preventive maintenance and undertake troubleshooting

Options

Option 1: Tug Vessel Operations

The unit is about oversea load planning, route mapping and operating within the limitations of tug vessel

Option 2: Profit Management

The unit is about assessing the profit and loss and cost accounting of an activity or operation

Option 3: Ship and Yard Planning

The unit is about supervising cargo handling and storage operations in the port terminal, Inland Container Depots (ICD) or Container Freight Stations (CFS)

Personal Attributes: The job holder should have normal or corrected eyesight and be physically fit and should have attention to details, and adaptability. The individual should be pro-active, organised and should be able to multitask.

Job Details

Qualifications Pack Code	LSC/Q4102		
Job Role	Vessel Operator Grade 2		
Credits(NSQF)	TBD	Version number	1.0
Sector	Logistics	Drafted on	30/06/2018
Sub-sector	Inland waterways	Last reviewed on	04/05/2019
Occupation	Deck Operations, Engine Operations, Navigation and Planning	Next review date	04/05/2022
NSQC Clearance on	DD/MM/YYYY		
Effective from date	DD/MM/YYYY		

Job Role	Vessel Operator Grade 2
Role Description	The individual navigates the vessel, supervises of loading and unloading of cargo, performs advanced preventive and corrective maintenance, reports potential waterway hazards and manages the vessel crew
NSQF	4
Minimum Educational Qualifications	Diploma / Class XII pass with relevant experience
Maximum Educational Qualifications	-
Prerequisite License or Training	Not Applicable for License. Should be proficient and cleared Level 3
Minimum Job Entry Age	18 years
Experience	1.5 years of apprentice/work experience as Vessel Operator Grade 1
Applicable National Occupational Standards (NOS)	<p>Compulsory:</p> <ol style="list-style-type: none"> LSC/N4104 Perform navigation LSC/N4005 Repair and maintenance of vessel LSC/N4006 Perform welding, cutting and machining LSC/N3531 Allocate resources and manage stores LSC/N9904 Maintain integrity and ethics in operations LSC/N4102 Follow health and safety procedures in vessels <p>Electives (Mandatory to select atleast one):</p> <p>Elective 1: Advanced Deck Operations</p> <ol style="list-style-type: none"> 1.1 LSC/N4105 Vessel handling and steering 1.2 LSC/N4007 Cargo facilitation during loading and discharge 1.3 LSC/N4008 Onboard training of crew members for deck operations <p>Elective 2: Advanced Engine Operations</p>

Qualifications Pack for Vessel Operator Grade 2

	<p>2.1 LSC/N4204 Supervise engine operation and troubleshooting</p> <p>2.2 LSC/N4203 Assist in over hauling of engine and auxiliary equipment</p> <p>2.3 LSC/N4205 Onboard training of crew members for engine operations</p> <p>Options (Not mandatory):</p> <p>Option 1: Tug vessel operations 1.1 LSC/N4106 Manage tug vessel operations</p> <p>Option 2: Profit management 2.1 LSC/N9603 Profit and Loss Account Management and Cost Accounting</p> <p>Option 3: Ship and yard planning 3.1 LSC/N3511 Perform Ship and Yard Planning</p>
Performance Criteria	As described in the relevant OS units

Keywords /Terms	Description
Core Skills/Generic Skills	Core Skills or Generic Skills are a group of skills that are key to learning and working in today's world. These skills are typically needed in any work environment. In the context of the NOS, these include communication related skills that are applicable to most job roles.
Function	Function is an activity necessary for achieving the key purpose of the sector, occupation, or area of work, which can be carried out by a person or a group of persons. Functions are identified through functional analysis and form the basis of NOS.
Job role	Job role defines a unique set of functions that together form a unique employment opportunity in an organization.
Knowledge and Understanding	Knowledge and understanding are statements which together specify the technical, generic, professional and organizational specific knowledge that an individual needs in order to perform to the required standard.
National Occupational Standards (NOS)	NOS are Occupational Standards which apply uniquely in the Indian context
Occupation	Occupation is a set of job roles, which perform similar/related set of functions in an industry.
Organisational Context	Organisational Context includes the way the organization is structured and how it operates, including the extent of operative knowledge managers have of their relevant areas of responsibility.
Performance Criteria	Performance Criteria are statements that together specify the standard of performance required when carrying out a task.
Qualifications Pack(QP)	Qualifications Pack comprises the set of NOS, together with the educational, training and other criteria required to perform a job role. A Qualifications Pack is assigned a unique qualification pack code.
Electives	Electives are NOS/set of NOS that are identified by the sector as contributive to specialization in a job role. There may be multiple electives within a QP for each specialized job role. Trainees must select at least one elective for the successful completion of a QP with Electives.
Options	Options are NOS/set of NOS that are identified by the sector as additional skills. There may be multiple options within a QP. It is not mandatory to select any of the options to complete a QP with Options.
Unit Code	Unit code is a unique identifier for an Occupational Standard, which is denoted by an 'N'
Unit Title	Unit title gives a clear overall statement about what the incumbent should be able to do.
Qualifications Pack Code	Qualifications Pack Code is a unique reference code that identifies a qualifications pack.
Scope	Scope is the set of statements specifying the range of variables that an individual may have to deal with in carrying out the function which have a

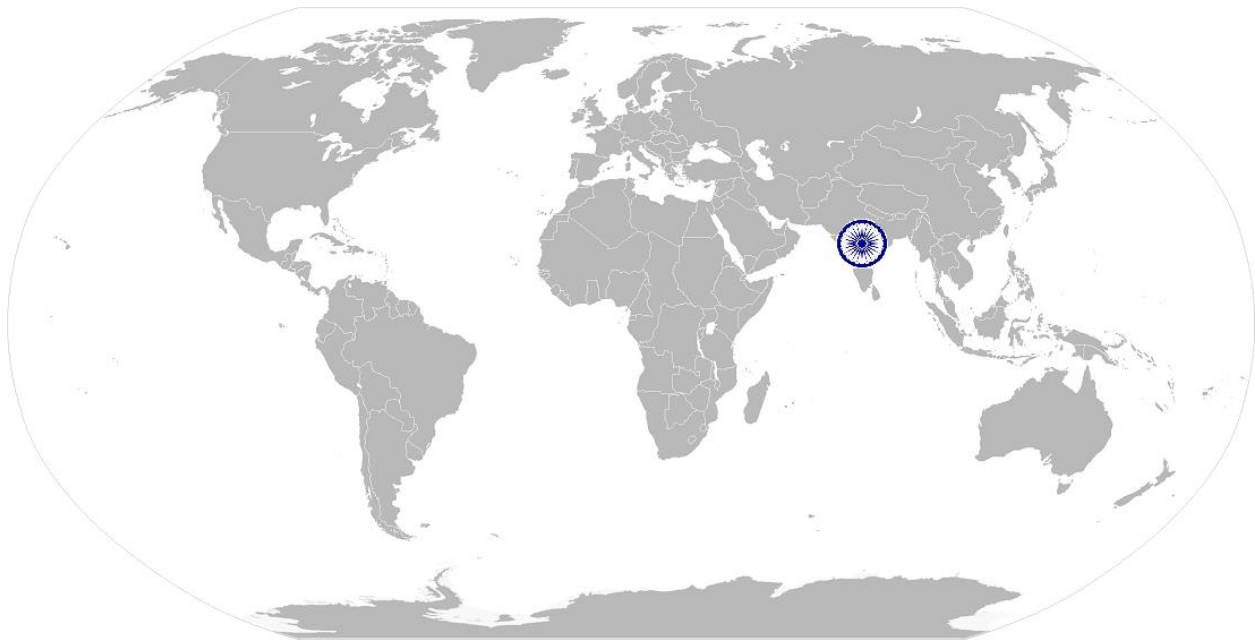
Qualifications Pack for Vessel Operator Grade 2

	critical impact on the quality of performance required.
Sector	Sector is a conglomeration of different business operations having similar businesses and interests. It may also be defined as a distinct subset of the economy whose components share similar characteristics and interests.
Sub-Sector	Sub-sector is derived from a further breakdown based on the characteristics and interests of its components.
Sub-functions	Sub-functions are sub-activities essential to fulfil the achieving the objectives of the function.
Technical Knowledge	Technical Knowledge is the specific knowledge needed to accomplish specific designated responsibilities.

Acronyms

Keywords /Terms	Description
BP	Bollard Pull
CFS	Container Freight Stations
CSS	Cargo Stowage and Securing
ERP	Enterprise Resource Planning
ETA	Expected Time of Arrival
GPS	Global Positioning System
HR	Human Resources
ICD	Inland Container Depots
IMDG	International Maritime Dangerous Goods
MHEs	Material Handling Equipment
MIS	Management information system
NOS	National Occupational Standards
NSQC	National Skills Qualifications Committee
NSQF	National Skills Qualifications Framework
OS	Occupational Standards
OSHA	Occupational Safety and Health Administration
PMS	Planned maintenance system
PPE	Personal Protective Equipment
QP	Qualifications Pack
RFID	Radio-Frequency Identification
SOEP	Shipboard oil pollution emergency plan
SOP	Standard Operating Procedures
SWL	Safe Working Load
VHF	Very High Frequency
WWL	Working Load Limit

National Occupational Standard



Overview

This unit is about performing detailed navigation activities

LSC/N4104

Perform detailed navigation

National Occupational Standard	Unit Code	LSC/N4104
	Unit Title (Task)	Perform detailed navigation
	Description	This unit is about performing in-depth navigation
	Scope	<p>This unit/task covers the following:</p> <ul style="list-style-type: none"> Navigation planning Carry out navigation and maneuvering <p>Range: Vessel, maps & charts, navigation aids, compass, Global Positioning System (GPS), worksheets, stationery, computer, projector etc.</p>
	Performance Criteria(PC) w.r.t. the Scope	
	Element	Performance Criteria
	Navigation planning	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. check map for available routes</p> <p>PC2. check weather and sea condition forecasts</p> <p>PC3. develop vessel's sailing plan and direction</p> <p>PC4. advise on the path and estimated time to the destination</p> <p>PC5. calculate expected time of arrival (ETA)</p> <p>PC6. communicate and update the port on the progress of the vessel</p>
	Carry out navigation and maneuvering	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC7. follow the planned route</p> <p>PC8. use tide tables and charts to determine tidal effects and ocean current effects on water levels and vessel</p> <p>PC9. maintain general surveillance of the ship</p> <p>PC10. record vessel's movement to avoid collision</p> <p>PC11. maintain nautical charts, publications and equipment</p> <p>PC12. prepare and share weather reports to stakeholders</p> <p>PC13. monitor the progress of the ship against the plan</p> <p>PC14. handover the required details to the reliever</p> <p>PC15. assist the master in devising a plan of action based on ship's elements</p> <p>PC16. record minimum depth of water, wind's force, tide, current and general condition of the berth</p> <p>PC17. prepare contingency plan for any change in circumstances</p> <p>PC18. engage in manual steering if required</p> <p>PC19. listen to the instructions as given by the pilot about the course of action</p> <p>PC20. note down all navigational marks in the ship maneuvering book</p>
	Knowledge and understanding (K)	
	A. Organizational context	<p>The individual on the job needs to know and understand:</p> <p>KA1. organizational procedures and policy on quality, use of Personal Protective Equipment (PPEs), use of equipment, Material Handling Equipment (MHEs), documentation, etc.</p>

LSC/N4104

Perform detailed navigation

	<p>KA2. company's reporting structure to support and expedite project activities</p> <p>KA3. company's policy and work instructions on quality standards</p> <p>KA4. importance of the individual's role in the workflow</p> <p>KA5. occupational health and safety standards and security procedures to be followed</p> <p>KA6. procedures for dealing with loss or damage to goods</p> <p>KA7. risk and impact of not following defined work, safety and security procedures</p> <p>KA8. coding system followed to label items</p>
<p>B. Technical knowledge</p>	<p>The individual on the job needs to know and understand:</p> <p>KB1. navigation terms</p> <p>KB2. sea and port watch systems</p> <p>KB3. mercator chart and navigational charts and their scales</p> <p>KB4. meteorological instruments such as Stevenson screen, Psychrometer, Barometer, Barograph, Anemometer, magnetic compass, GPS</p> <p>KB5. international code of signal and flags</p> <p>KB6. hazard identification and avoidance</p> <p>KB7. warning and safety signs</p> <p>KB8. emergency evacuation procedure</p> <p>KB9. handling of fuel spillage</p> <p>KB10. mooring and maneuvering of the vessel</p>
<p>Skills (S)</p>	
<p>A. Core skills/ generic skills</p>	<p>Reading skills</p> <p>The user/individual on the job needs to know how to read:</p> <p>SA1. written instructions over communication networks, etc.</p> <p>SA2. map and navigational charts</p> <p>Writing skills</p> <p>The user/individual on the job needs to know how to write:</p> <p>SA3. daily reports including damages and accidents</p> <p>SA4. navigation and maneuvering log books</p> <p>Oral communication (listening and speaking skills)</p> <p>The user/individual on the job needs to know how to:</p> <p>SA5. communicate in clear and concise manner with the pilot and master</p>
<p>B. Professional Skills</p>	<p>Decision making</p> <p>The user/individual on the job needs to know how to:</p> <p>SB1. identify the most efficient route</p> <p>SB2. decide on vessel speed and direction while navigating</p> <p>SB3. identify activities or orders that need to be prioritised as per instructions</p> <p>Plan and organize</p> <p>The user/individual on the job needs to know how to:</p>

LSC/N4104

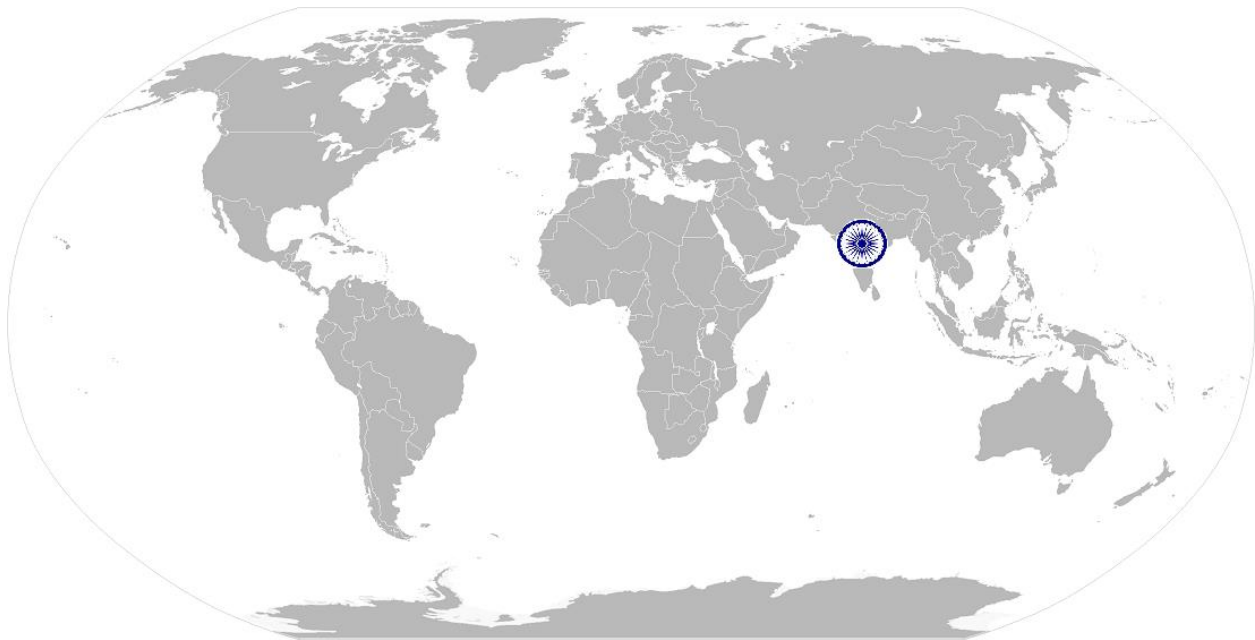
Perform detailed navigation

	SB4. plan and estimate the time for each activity
	SB5. respond to the supervisor in a timely manner
	SB6. prioritize and execute tasks based on instructions
	Customer centricity
	The user/individual on the job needs to know and understand:
	SB7. importance of given timelines
	SB8. urgency of priority requests as per the instructions
	Problem solving
The user/individual on the job needs to know how to:	
SB9. make route corrections to avoid collisions and adverse weathers	
Analytical thinking	
The user/individual on the job needs to know how to:	
SB10. analyse obstacles and weather and devise revisions in navigation plans	
Critical thinking	
The user/individual on the job needs to know how to:	
SB11. observe adverse weathers, bridge communications and take required action while navigating	
SB12. follow orders and SOPs while mooring, berthing and manuevering	
SB13. focus on task at hand ad complete it without errors and delays	

NOS Version Control

NOS Code	LSC/N4104		
Credits(NSQF)	TBD	Version number	1.0
Industry	Logistics	Drafted on	30/06/2018
Industry Sub-sector	Inland waterways	Last reviewed on	15/10/2018
Occupation	Deck operations (Cargo handling, maintenance), Navigation & Planning	Next review date	15/10/2021

National Occupational Standard



Overview

This unit is about performing advanced preventive maintenance

LSC/N4005

Repair and maintenance of vessel

National Occupational Standard

Unit Code	LSC/N4005
Unit Title (Task)	Repair and maintenance of vessel
Description	This unit is about performing advanced preventive maintenance
Scope	<p>This unit/task covers the following:</p> <ul style="list-style-type: none"> • Maintain deck equipment, winches, capstans and hatches • Carry out maintenance <p>Range: Vessel and engine room equipment, tools and tackles, cranes and winches, welding equipment, fitting tools, Standard Operating Procedures (SOP), computer, work bench, worksheets, projector, etc</p>
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
Maintain deck equipment, winches, and hatches	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. perform basic check of cranes, derricks, winches and related equipment</p> <p>PC2. ensure safe working load (SWL) or working load limit (WWL) of equipment</p> <p>PC3. inspect the friction brake lining regularly in the capstan and replace whenever necessary</p> <p>PC4. check wire cable in case if they are broken or rust</p> <p>PC5. inspect winch drums for deterioration of friction</p> <p>PC6. examine hatch cover and hatch beams for corrosion, cleanliness, cracks and material failure</p> <p>PC7. lubricate the working parts and record the wear and tear</p> <p>PC8. take step to prevent oil or grease from accumulating on the brake surface</p> <p>PC9. replace rubber gasket immediately in case found missing or broken</p> <p>PC10. report to the officer in case of any failure, damage or malfunction</p> <p>PC11. move different type of cargo and loads using equipment - slings, lifts and in a secure and safe manner</p>
	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC12. check for the load limit on scaffolding</p> <p>PC13. take necessary precautions like fix the safety harness and connect the fall arrester device, wear Personal Protective Equipment (PPEs), have standby emergency support personnel, secure ladder and stage for working, etc. prior to working</p> <p>PC14. setup and use scaffolding by securing the scaffolding platform using guardrails, mid-rails and toe boards</p> <p>PC15. take due precautions when climbing portable ladders</p> <p>PC16. perform routine maintenance work aloft using various equipment related to greasing, oiling or basic fitting and carpentry</p> <p>PC17. perform maintenance working over-side the vessel on the working stage rigged via ladders</p>
Carry out maintenance	

LSC/N4005

Repair and maintenance of vessel

	<p>PC18. keep the necessary equipment – hand-tools, drills, paint and paint brush, chisel and hammers, etc. in a tightly rigged bucket alongside to work</p> <p>PC19. use donning and breathing equipment to perform maintenance in enclosed spaces strictly as per SOP</p> <p>PC20. use chemicals and strong detergents with due precautions and PPEs for cleaning and maintenance activities</p> <p>PC21. pour chemical in water container for dilution</p> <p>PC22. check that the area is well ventilated</p> <p>PC23. report to master or officer in case of any accidents, injuries, damages and malfunction of equipment</p>
Knowledge and understanding (K)	
<p>A. Organizational Context</p>	<p>The individual on the job needs to know and understand:</p> <p>KA1. organizational procedures and policy on quality, use of PPEs, use of equipment, Material Handling Equipment (MHEs), documentation, etc.</p> <p>KA2. company’s reporting structure to support and expedite project activities</p> <p>KA3. company’s policy and work instructions on quality standards</p> <p>KA4. importance of the individual’s role in the workflow</p> <p>KA5. occupational health and safety standards and security procedures to be followed</p> <p>KA6. procedures for dealing with loss or damage to goods</p> <p>KA7. risk and impact of not following defined work, safety and security procedures</p> <p>KA8. coding system followed to label machineries</p>
<p>B. Technical knowledge</p>	<p>The individual on the job needs to know and understand:</p> <p>KB1. various hazards related to the vessel cleaning and maintenance operations in in various parts of the ship</p> <p>KB2. emergency response and basic first aid response</p> <p>KB3. various types of PPEs and their usage</p> <p>KB4. electrical shock and precautions to be observed to prevent shock</p> <p>KB5. types of power tools and equipment for different activities – electrical checks, carpentry, fitting, welding, painting, etc.</p> <p>KB6. operation of various vessel and engine room equipment</p> <p>KB7. emergency procedure of dealing with pumps and valves</p> <p>KB8. functions of various kinds of equipment such as hoists, cranes and booms</p> <p>KB9. various signs and signals</p> <p>KB10. functions of capstan and winches</p> <p>KB11. donning and using breathing apparatus</p> <p>KB12. use of electrical equipment</p>
Skills (S)	
<p>C. Core Skills/</p>	<p>Reading skills</p>

LSC/N4005

Repair and maintenance of vessel

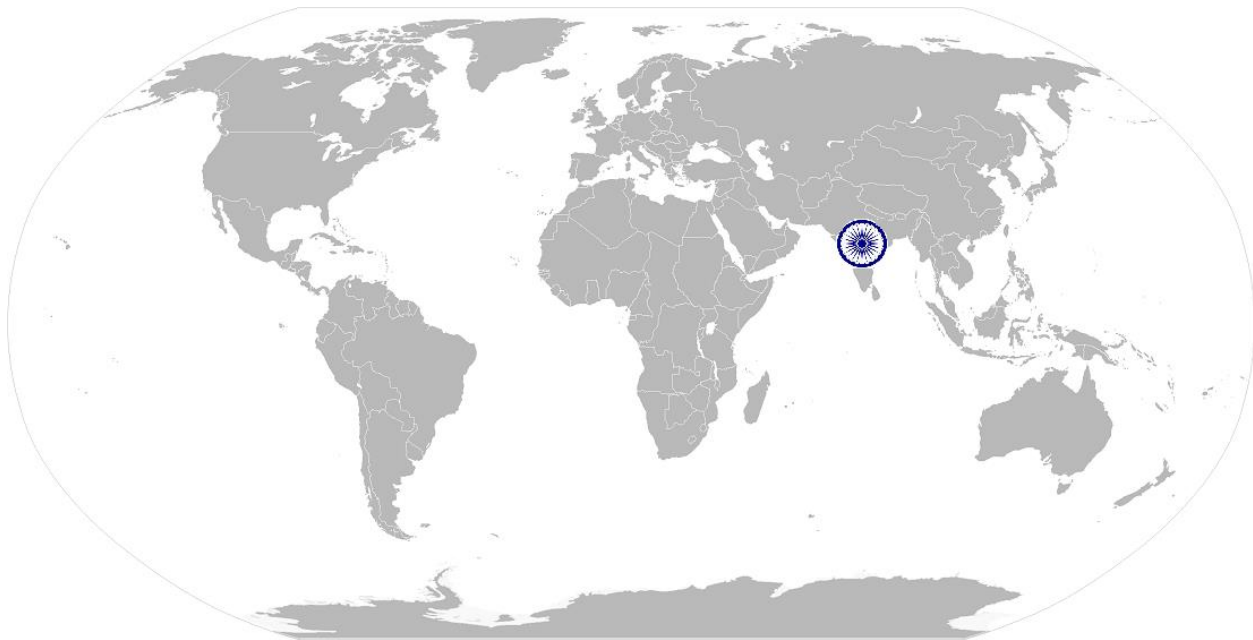
Generic Skills	The user/individual on the job needs to know how to read: SA1. written instructions SA2. read maintenance schedule
	Writing skills
	The user/individual on the job needs to know how to write: SA3. daily report including damages, injuries, accidents, etc. SA4. maintenance log book for various equipment and vessel parts
	Oral communication (listening and speaking skills)
	The user/individual on the job needs to know how to: SA5. communicate with masters, officers and co-workers SA6. collect information from masters
D. Professional Skills	Decision making
	The user/individual on the job needs to know how to: SB1. identify the equipment is fit for use SB2. decide the necessary precautions for a maintenance activity
	Plan and organize
	The user/individual on the job needs to know how to: SB3. maintain punctuality SB4. should respond to the supervisor in a timely manner SB5. prioritize and execute tasks based on instructions
	Customer centricity
	The user/individual on the job needs to know and understand: SB6. importance of assigned timelines SB7. urgency as per the instructions
	Problem solving
	The user/individual on the job needs to know how to: SB8. take measures to prevent an accident while working in hazardous environment SB9. suggest measures for safe discharge of maintenance duties aboard the ship
	Analytical thinking
	The user/individual on the job needs to know how to: SB10. identify common mistakes with regards to maintenance and safety and avoid them
	Critical thinking
	The user/individual on the job needs to know how to: SB11. recognize and report electrical hazards and unsafe equipment SB12. take necessary precautions and strictly follow SOP when working in hazardous environment

LSC/N4005

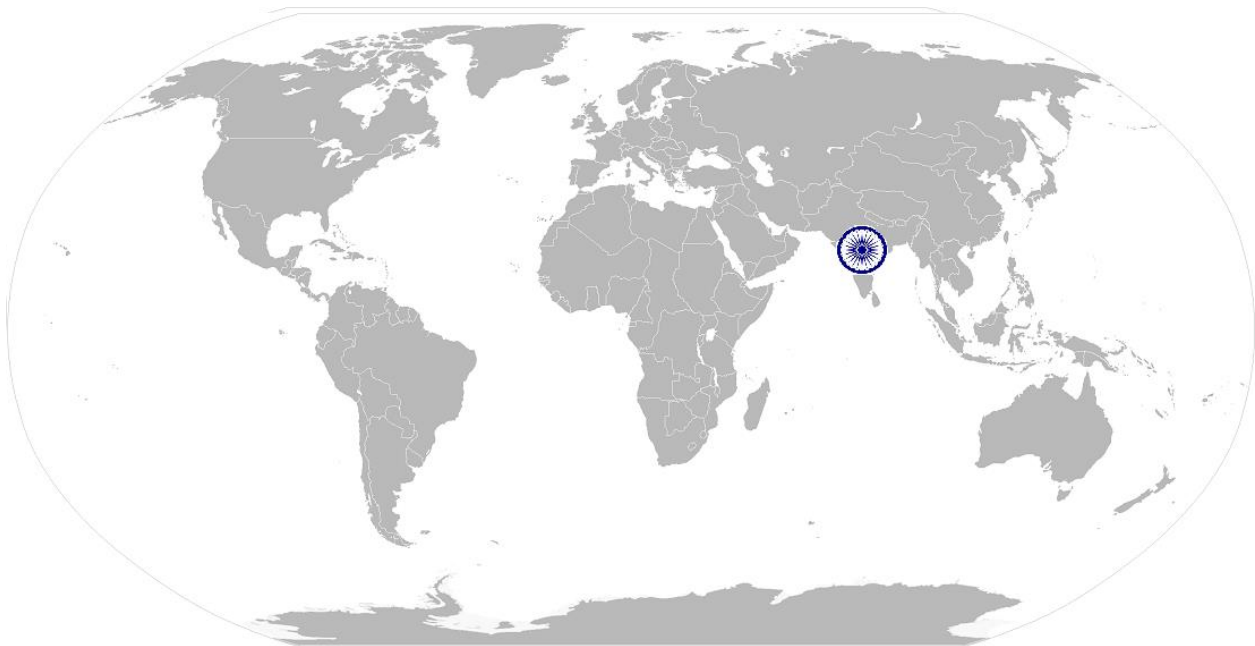
Repair and maintenance of vessel

NOS Version Control

NOS Code	LSC/N4005		
Credits(NSQF)	TBD	Version number	1.0
Industry	Logistics	Drafted on	30/06/2018
Industry Sub-sector	Inland waterways	Last reviewed on	15/10/2018
Occupation	Deck operations (maintenance)	Next review date	15/10/2021



National Occupational Standard



Overview

This unit is about performing welding, cutting and machining work

LSC/N4006
Perform welding, cutting and machining

Unit Title (Task)	Perform welding, cutting and machining
Description	This unit is about performing welding, cutting and machining work
Scope	This unit/task covers the following: <ul style="list-style-type: none"> • Perform arc welding • Undertake basic lathe work • Carry out valve operations and plumbing repairs Range: Vessel equipment, tools and tackles, welding equipment, consumables, work bench, cranes and winches, stationery, work sheets, Standard Operating Procedures (SOP), computer, projector, etc.
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
Perform arc welding	To be competent, the user/individual on the job must be able to: <ul style="list-style-type: none"> PC1. remove dust, dirt, grease, oil, etc. from the metal piece to be weld with the help of wire brush or power wire PC2. insert a suitable electrode in the electrode holder at an angle of 60° to 80° PC3. wear the necessary Personal Protective Equipment (PPE) and face shield to protect the eyes and face from harmful ultraviolet and infrared radiation PC4. select proper current and polarity PC5. contact the electrode with the metal and separate it at proper distance to produce an arc PC6. brush off the slag after the joint has cooled with the chipping hammer PC7. take out the electrode holder to break arc PC8. switch off the supply of current and shut off acetylene valve and the oxygen PC9. check that filled in gas cylinders and empty gas cylinders are kept separate
Undertake basic lathe work	To be competent, the user/individual on the job must be able to: <ul style="list-style-type: none"> PC10. check lathe for any damage or missing part PC11. wear protective eyewear and PPE PC12. clamp the work piece tightly to the lathe PC13. ensure that cutting of the work piece with the lathe is done as recommended by the manufacturer PC14. follow safety procedure while fabrication PC15. clean the area after using lathe
Carry out valve operations and plumbing repairs	To be competent, the user/individual on the job must be able to: <ul style="list-style-type: none"> PC16. open and close valves as per procedure PC17. inspect pipes at regular intervals as described in the ship's maintenance

LSC/N4006

Perform welding, cutting and machining

	<p>schedule</p> <p>PC18. inspect for leakages, switch off the relevant pump and investigate the source of leakage</p> <p>PC19. make temporary repair by binding or clamping</p> <p>PC20. inspect the inside of the pipes looking for cause of erosion and corrosion</p> <p>PC21. repair all leaks as per procedure</p>
Knowledge and understanding (K)	
A. Organizational Context	<p>The individual on the job needs to know:</p> <p>KA1. organizational procedures and SOPs for tasks at hand, documentation policy and emergency responses, internal communication over network</p> <p>KA2. security and safety procedures to be followed</p> <p>KA3. reporting structure of the organization for escalation of issues</p> <p>KA4. risk and impact of not following defined procedures/work instructions</p> <p>KA5. coding system followed to communicate using flags, hand signals and sound signals</p>
B. Technical knowledge	<p>The individual on the job needs to know and understand:</p> <p>KB1. hazards involved in using welding equipment</p> <p>KB2. PPE used for welding, cutting and machining operations</p> <p>KB3. components, tools and accessories of a welding machine</p> <p>KB4. do's and don'ts of dealing with gas cylinders</p> <p>KB5. types and colors of hose pipe</p> <p>KB6. lathe and welding operation manuals and SOPs</p> <p>KB7. fluid mechanics and working of pipelines</p> <p>KB8. rust, corrosion and other damages to pipelines</p> <p>KB9. use of hand-tools and power-tools</p>
Skills (S)	
E. Core Skills/ Generic Skills	Reading skills
	The user/individual on the job needs to know how to read:
	SA1. written instructions
	Writing skills
	The user/individual on the job needs to know how to write:
	SA2. daily reports indicating damages, accidents and injuries
	SA3. maintenance and usage logs of equipments
	Oral communication (listening and speaking skills)
	The user/individual on the job needs to know how to:
	SA4. communicate with officers, masters and co-workers
	SA5. collect information from master
F. Professional Skills	Decision making
	The user/individual on the job needs to know how to:
	SB1. identify the welding requirement based on the view of the equipment,

LSC/N4006

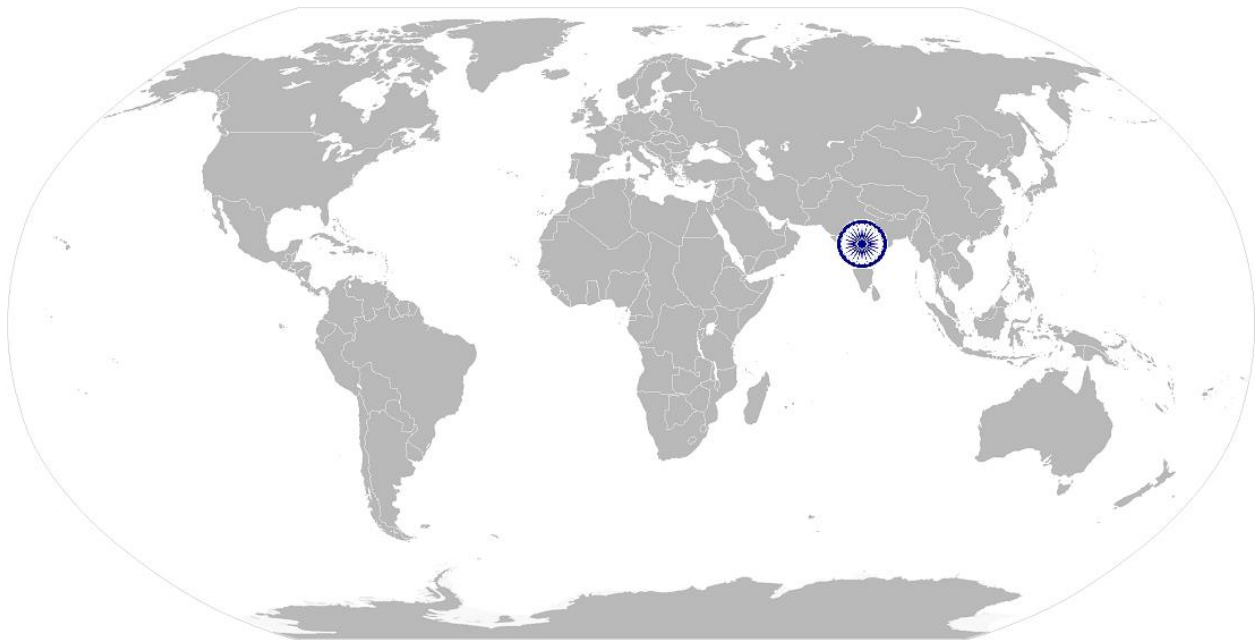
Perform welding, cutting and machining

	<p>item</p> <p>SB2. Identify the damage in the pipeline</p> <p>SB3. decide if a problem can be resolved onboard the vessel</p>
	<p>Plan and organize</p> <p>The user/individual on the job needs to know how to:</p> <p>SB4. plan and estimate the time for each activity</p> <p>SB5. prioritize and execute tasks based on instructions</p>
	<p>Customer centricity</p> <p>The user/individual on the job needs to know and understand:</p> <p>SB6. importance of assigned timelines</p> <p>SB7. urgency of priorities as per the instructions</p>
	<p>Problem solving</p> <p>The user/individual on the job needs to know how to:</p> <p>SB8. inform the master regarding delays, issue in equipment, safety hazards not yet catered, etc.</p>
	<p>Analytical thinking</p> <p>The user/individual on the job needs to know how to:</p> <p>SB9. analyse hazards involved in working with welding equipment</p> <p>SB10. carryout risk assessment prior to starting the assignment</p>
	<p>Critical thinking</p> <p>The user/individual on the job needs to know how to:</p> <p>SB11. identify leakage and damages to the pipe</p> <p>SB12. Identify leakage of gas from welding cylinder</p> <p>SB13. close all valves and regulators after use of welding equipment</p> <p>SB14. Strictly follow SOP during storage and use of welding and lathe</p>

NOS Version Control

NOS Code	LSC/N4006		
Credits(NSQF)	TBD	Version number	1.0
Industry	Logistics	Drafted on	30/06/2018
Industry Sub-sector	Inland waterways	Last reviewed on	15/10/2018
Occupation	Deck Operations (Maintenance)	Next review date	15/10/2021

National Occupational Standard



Overview

This unit is about allocating resources and manage stores in a vessel

LSC/N3531

Allocate resources and manage stores in a vessel

National Occupational Standard

Unit Code	LSC/N3531
Unit Title (Task)	Allocate resources and manage stores in a vessel
Description	This unit is about allocating resources and streamlining operations in an inland waterways vessel
Scope	<p>This unit/task covers the following:</p> <ul style="list-style-type: none"> • Prepare maintenance plan and allocate resources • Resolve escalated issues • Monitor daily operations • Storage and inventory <p>Range: Standard Operating Procedures (SOP), route plans, communication equipment, inventory models, computer, projector, worksheets, etc.</p>
Performance Criteria(PC) w.r.t. the scope	
Element	Performance Criteria
Prepare maintenance plan and allocate resources	<p>To be competent, the user/ individual must be able to:</p> <p>PC1. obtain details of vessel route and prepare tasks for workforce to complete various maintenance activities</p> <p>PC2. prepare schedule for maintenance of deck and engine room equipment and machineries</p> <p>PC3. get the work plan approved from the vessel chief officer/ master</p> <p>PC4. allocate tasks to crew along with necessary equipment</p>
Resolve escalated issues	<p>To be competent, the user/ individual must be able to:</p> <p>PC5. identify priorities and allocate adequate resources to address various tasks</p> <p>PC6. provide guidance to assistants and workers if required and suggest ways to resolve issues</p> <p>PC7. escalate the matter to chief officer/ master for any external technical support</p> <p>PC8. liaise with officers to streamline vessel operations</p>
Monitor daily operations	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC9. conduct inspection of vessel for safety, security of cargo and vessel, cleanliness, marking of cargo areas, fitness of equipment and emergency systems, etc.</p> <p>PC10. prepare daily reports on task performed by crew</p> <p>PC11. escalate issues with respect to operations, cargo handling, damages, injuries, service requirements, etc. to chief officer/ master</p>
Storage and inventory	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC12. maintain stock of inventory in the ship of different items – cargo handling tools, food items, clothing and linen, spare parts, etc.</p> <p>PC13. maintain stores under lock and key</p>

LSC/N3531

Allocate resources and manage stores in a vessel

	<p>PC14. check cleanliness and hygiene of stock including rodent prevention, waste segregation, etc.</p> <p>PC15. provide items from stores as per authorized approvals</p> <p>PC16. keep a daily count of inventory and update the count register</p> <p>PC17. identify the items to be quarantines or disposed and take necessary approvals for action</p> <p>PC18. inform the chief officer/ master regarding re-placements and shortages</p>
Knowledge and understanding (K)	
<p>A. Organizational context (Knowledge of the company / organization and its processes)</p>	<p>The individual on the job needs to know:</p> <p>KA1. organizational procedures and SOPs for tasks at hand, documentation policy and emergency responses, internal communication over network</p> <p>KA2. security and safety procedures to be followed</p> <p>KA3. reporting structure of the organization for escalation of issues</p> <p>KA4. risk and impact of not following defined procedures/work instructions</p> <p>KA5. coding system followed to communicate using flags, hand signals and sound signals</p>
<p>B. Technical knowledge</p>	<p>The individual on the job needs to know and understand:</p> <p>KB1. basics of operations in a port terminal, Container Freight Stations (CFS), Inland Container Depots (ICD)</p> <p>KB2. use of various cargo handling equipment</p> <p>KB3. use of rope , flags and other manual equipment</p> <p>KB4. vessel layout and loading and unloading activities</p> <p>KB5. procedures of tank cleaning, cargo movement</p> <p>KB6. requirements regarding handling of cargo</p> <p>KB7. different type of vessels and cargo and container sizes</p> <p>KB8. different type of cranes and Material Handling Equipment (MHEs) – their capacities, constraints and usage</p> <p>KB9. handling of hazardous and non-hazardous cargo – – International Maritime Dangerous Goods (IMDG) code</p> <p>KB10. marking of material and people movement areas</p> <p>KB11. stuffing and de-stuffing norms with respect to different cargo</p> <p>KB12. special characteristics and handling requirements of shipments, if any</p>
Skills (S)	
<p>A. Core skills/ generic skills</p>	<p>Reading skills</p> <p>The user/individual on the job needs to know how to read:</p> <p>SA1. written instructions</p> <p>SA2. shipping manifest, Bill of lading shipping bills and related documents</p> <p>SA3. Enterprise Resource Planning (ERP) and computer generated reports</p> <p>SA4. cargo stowage plans and vessel plans</p> <p>SA5. SOPs and safety regulation manuals</p>

LSC/N3531

Allocate resources and manage stores in a vessel

B. Professional skills	Writing skills
	The user/individual on the job needs to know how to write: SA6. work-orders and instructions SA7. daily reports
	Oral communication (listening and speaking skills)
	The user/individual on the job needs to know how to: SA8. communicate with customers, fireght operators, transporters, shipping companies, other supervisors and port authorities SA9. guide cargo handlers for smooth operations
	Decision making
	The user/individual on the job needs to know how to: SB1. decide on required workforce and equipment for performing a particular task SB2. assess the environmental condition and type of cargo to assess if it is safe for loading/ discharge operations SB3. decide on deployment of alternate resources when required
	Plan and organize
	The user/individual on the job needs to know how to: SB4. plan and estimate the co-ordination required for resolving a query. SB5. maintain punctuality and respond to the queries in a timely manner SB6. prioritize and execute tasks based on client requirements SB7. make work plans and resource allocation plans SB8. be a team player and achieve joint goals
	Customer centricity
	The user/individual on the job needs to know how to: SB9. adhere to the assigned timelines SB10. address the urgency regarding priority requests
Problem solving	
The user/individual on the job needs to know how to: SB11. make adjustment to working requirements for difficult weathers and hazardous goods SB12. co-ordinate and handle major issues with different departments SB13. identify bottlenecks and operational problems and suggest remedial action	
Analytical thinking	
The user/individual on the job needs to know how to: SB14. assess the resource requirement for a particular task at hand SB15. assess and prepare for backup resources in case of delays SB16. plan for cargo movement so that the resources and stroage space is optimally utilised	

LSC/N3531

Allocate resources and manage stores in a vessel

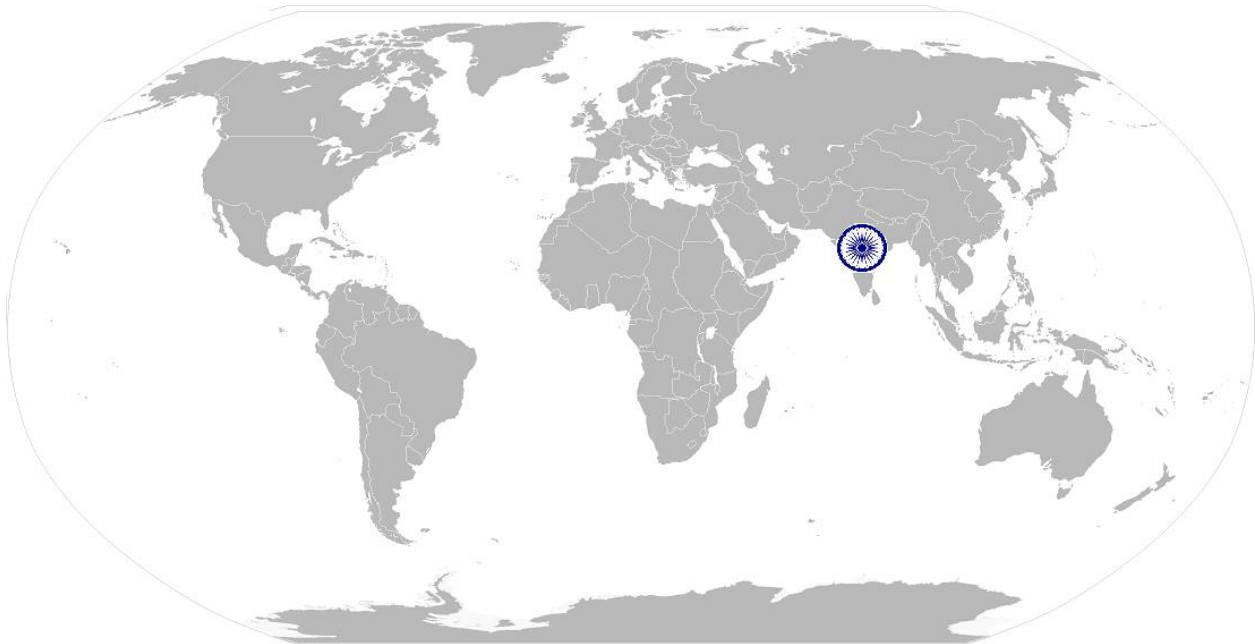
	Critical thinking
	The user/individual on the job needs to know and understand how to: SB17. develop work plans factoring in external weather and vessel factors SB18. check that all security measures and safety protocols are followed at all times

NOS Version Control

NOS Code	LSC/N3531		
Credits(NSQF)	TBD	Version number	1.0
Industry	Logistics	Drafted on	30/06/2018
Industry Sub-sector	Inland waterways	Last reviewed on	15/10/2018
Occupation	Port Operation & Management (cargo handling, yard planning, vessel planning)	Next review date	15/10/2021



National Occupational Standard



Overview

This unit is about maintaining integrity, ensuring data security, and professional and ethical practices.

LSC/N9904

Maintain integrity and ethics in operation

National Occupational Standard

Unit Code	LSC/N9904
Unit Title (Task)	Maintain integrity and ethics in operation
Description	This unit is about maintaining integrity, ensuring data security, and professional and ethical practices
Scope	<p>This unit/task covers the following:</p> <ul style="list-style-type: none"> • Maintain integrity and ensure data security • Professional and ethical practices • Ensure regulatory compliance <p>Range: Standard Operating Procedures (SOP), worksheets, computer, projector, stationery etc.</p>
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
Maintain integrity ensuring data security	<p>To be competent, the user/ individual must be able to:</p> <p>PC1. refrain from indulging in corrupt practices</p> <p>PC2. avoid using company's funds, property or resources for undertaking personal activities</p> <p>PC3. protect customer's information and ensure it is not misused</p> <p>PC4. protect data and information related to business or commercial decisions</p>
Professional and ethical practices	<p>To be competent, the user/ individual must be able to:</p> <p>PC5. avoid acceptance of cash or kind from vendors for support or contract negotiations</p> <p>PC6. demonstrate and practice ethics in day-to-day processes and dealings with customers and colleagues</p> <p>PC7. avoid nepotism</p> <p>PC8. consult supervisor or senior management when in situations that may require differentiating between ethical and unethical</p> <p>PC9. report promptly all violations of code of ethics</p> <p>PC10. dress up and conduct in a professional manner</p> <p>PC11. communicate with clients and stakeholders in a soft and polite manner</p> <p>PC12. follow etiquettes in accordance to the place</p>
Ensure regulatory compliance	<p>To be competent, the user/ individual must be able to:</p> <p>PC13. check for regulatory documentation and compliances for the shop floor as per information from the supervisor</p> <p>PC14. perform activities considering the regulatory requirements</p> <p>PC15. use PPEs in accordance to regulatory requirements</p> <p>PC16. identify the different types of dangerous goods and handling methodologies</p> <p>PC17. follow the SOP for handling of different types of dangerous goods</p>

LSC/N9904

Maintain integrity and ethics in operation

	<p>PC18. consult supervisor or senior management when in situations that may require differentiating between ethical and unethical</p> <p>PC19. promptly report all regulatory violations</p>
Knowledge and understanding (K)	
<p>A. Organizational context (Knowledge of the company / organization and its processes)</p>	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. company's policies on use of language</p> <p>KA2. company's Human Resources policies</p> <p>KA3. company's code of ethics</p> <p>KA4. company's whistle blower policy</p> <p>KA5. company's rules related to sexual harassment</p> <p>KA6. company's reporting structure</p> <p>KA7. company's documentation policy</p>
<p>B. Technical knowledge</p>	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. principles of code of ethics and business ethics</p> <p>KB2. various regulatory requirements</p> <p>KB3. documentary compliance for various regulations</p> <p>KB4. different dangerous shipment</p> <p>KB5. regulations w.r.t dangerous shipment</p>
Skills (S)	
<p>A. Core skills/ generic skills</p>	Reading Skills
	<p>The individual on the job needs to know how to read:</p> <p>SA1. company policy documents and work-related documents</p> <p>SA2. emails and written instructions</p>
	Writing Skills
	<p>The individual on the job needs to know how to fill:</p> <p>SA3. documentation pertaining to ethics and regulatory requirement</p>
	Oral Communication (Listening and Speaking skills)
<p>The individual on the job needs to know how to communicate with:</p> <p>SA4. team members to work efficiently</p> <p>SA5. peers and subordinates about information security and building trust</p>	
<p>B. Professional skills</p>	Decision making
	<p>The individual on the job needs to know how to:</p> <p>SB1. identify a shipment as dangerous goods</p> <p>SB2. assess if the situation needs to be reported regarding regulations</p>
	Plan and Organize
	<p>The individual on the job needs to know how to:</p> <p>SB3. plan and organise actions as per company's guidelines</p>
	Customer centricity
<p>The individual on the job needs to know how to:</p>	

LSC/N9904

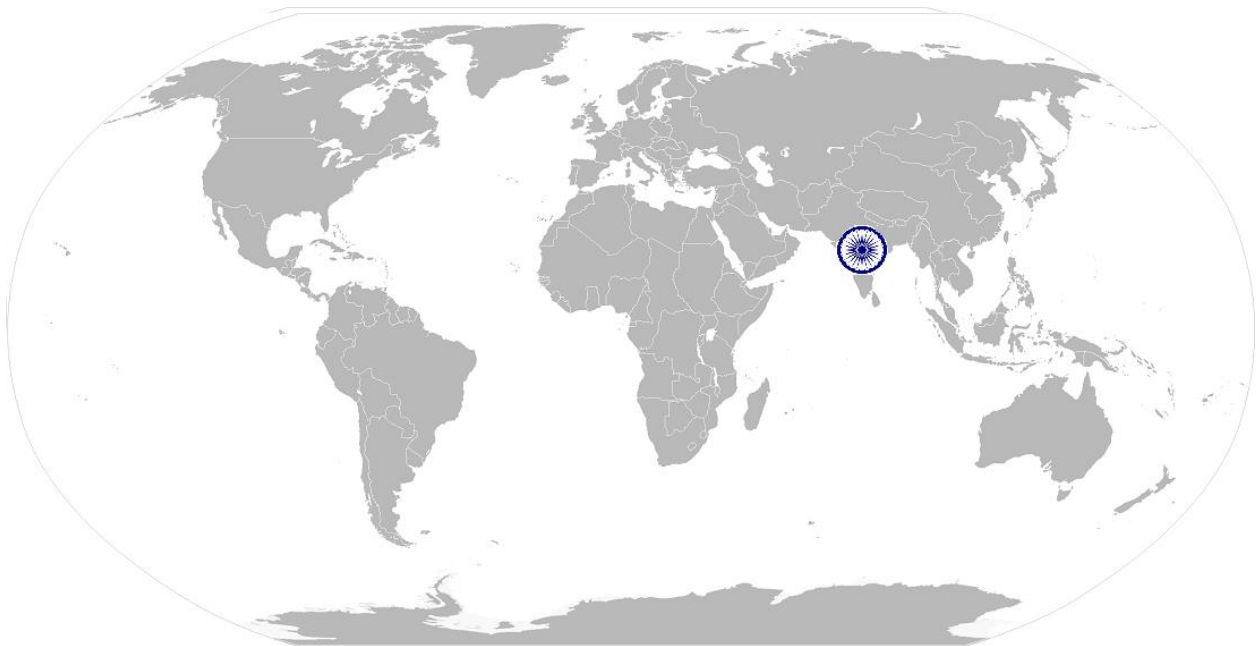
Maintain integrity and ethics in operation

	SB4. prevent company and customer information leakage
	Problem solving
	The individual on the job needs to know how to: SB5. advise colleagues regarding sensitive issues pertaining to conduct and regulations
	Analytical Thinking
	The individual on the job needs to know how to: SB6. provide professional services diligently and with integrity
	Critical Thinking
	The individual on the job needs to know how to: SB7. avoid defaming company's name by indulging into pilferage or fiddling with quality or quantity of shipment SB8. be fair and reasonable in profession and disclose conflict of interests

NOS Version Control

NOS Code	LSC/N9904		
Credits(NSQF)	TBD	Version number	1.0
Industry	Logistics	Drafted on	30/06/2018
Sub-Sector	Generic	Last reviewed on	15/10/2018
Occupation	Generic	Next review date	15/10/2021

National Occupational Standard



Overview

This unit is about ensuring compliance with health, safety and security procedures at the workplace

LSC/N4102

Follow and monitor health, safety and security procedures on vessel

National Occupational Standard

Unit Code	LSC/N4102
Unit Title (Task)	Follow and monitor health, safety and security procedures on vessel
Description	This unit is about ensuring compliance with health, safety and security procedures at the workplace.
Scope	<p>This unit/task covers the following:</p> <ul style="list-style-type: none"> • Survival Techniques • First aid • Fire prevention and fire fighting • Personal safety and social responsibility • Security procedures <p>Range: Personal Protective Equipment (PPE), first aid kit, fire safety equipment, Standard Operating Procedures (SOP), worksheets, computer, projector, stationery etc.</p>
Performance Criteria(PC) w.r.t. the scope	
Element	Performance Criteria
Survival techniques	<p>To be competent, the user/ individual must be able to:</p> <p>PC1. wear a life jacket and immersion suit</p> <p>PC2. safely jump from a height into the water</p> <p>PC3. swim while wearing lifejacket</p> <p>PC4. right an inverted life raft while wearing life jacket</p> <p>PC5. board a life raft or survival vessel from the vessel or the water while wearing life jacket</p> <p>PC6. keep afloat without life jacket</p> <p>PC7. operate survival craft, life raft and its equipment and communication devices</p>
First Aid	<p>To be competent, the user/ individual must be able to:</p> <p>PC8. assess the casualty and immediate medical needs and threat to own safety</p> <p>PC9. position casualty and apply resuscitation techniques</p> <p>PC10. apply measures to control bleeding, cover and secure burn injuries using bandages and emergency medical kit</p> <p>PC11. apply measures for basic shock management</p> <p>PC12. assist in rescue and transport of the casualty</p>
Fire prevention and fire fighting	<p>To be competent, the user/ individual must be able to:</p> <p>PC13. take due precautions like – segregate and store, ensure proximity to firefighting equipment, etc. while storing inflammable materials on-board the vessel</p> <p>PC14. regularly monitor the inflammable material and cargo for fire hazards</p> <p>PC15. organise and maintain the firefighting equipment to make it easily accessible and operable during emergencies</p>

LSC/N4102

Follow and monitor health, safety and security procedures on vessel

	<p>PC16. check fire and smoke alarms for functionality</p> <p>PC17. keep the emergency response routes and escape routes clear</p> <p>PC18. use different protective equipment and high pressure breathing equipment</p> <p>PC19. use different type of firefighting equipment to extinguish a fire, when required</p> <p>PC20. participate in fire and emergency drills</p>
Personal safety and social responsibilities	<p>To be competent, the user/ individual must be able to:</p> <p>PC21. inform and take appropriate action when discovering a potential emergency</p> <p>PC22. recognize the emergency signal and respond as per the emergency plan</p> <p>PC23. follow the designated escape routes</p> <p>PC24. follow safe and environmental friendly working practices</p> <p>PC25. follow precautions while entering closed areas and hazardous areas on-board the vessel</p> <p>PC26. maintain effective communications in person and while using vessel communication devices and systems</p>
Security procedures	<p>To be competent, the user/ individual must be able to:</p> <p>PC27. follow vessel security plan</p> <p>PC28. identify security risks and threats, communicate and initiate action as per vessel security plan</p> <p>PC29. undertake regular vessel inspection with respect to vessel and cargo security</p> <p>PC30. check that all cargo containers, holds and hatches are secured</p> <p>PC31. check security equipment and system for functionality and maintenance</p>
Knowledge and understanding (K)	
A. Organizational context (Knowledge of the company / organization and its processes)	<p>The individual on the job needs to know:</p> <p>KA1. organizational procedures and SOPs for tasks at hand, documentation policy and emergency responses, internal communication over network</p> <p>KA2. security and safety procedures to be followed</p> <p>KA3. reporting structure of the organization for escalation of issues</p> <p>KA4. risk and impact of not following defined procedures/work instructions</p> <p>KA5. coding system followed to communicate using flags, hand signals and sound signals</p>
B. Technical knowledge	<p>The individual on the job needs to know and understand:</p> <p>KB1. various nautical terms related to navigation – hulls, shipside, engine room, etc.</p> <p>KB2. various parts and components of the ship</p> <p>KB3. map reading and identification of location in the globe</p> <p>KB4. different type of vessels and their functions and cargo</p> <p>KB5. different type of cargo and their handling requirement</p> <p>KB6. basics of Occupational Safety and Health Administration (OSHA)</p> <p>KB7. necessary security procedures and vessel security plan and contingency plan</p>

LSC/N4102

Follow and monitor health, safety and security procedures on vessel

	<p>KB8. layout of firefighting and first aid on the vessel</p> <p>KB9. safety and security procedures for different operations and equipment</p> <p>KB10. handling procedure for hazardous / fragile cargo</p> <p>KB11. security procedures for dangerous / hazardous goods – International Maritime Dangerous Goods (IMDG) cargo</p> <p>KB12. different personal protective equipment (PPE), their usage and purpose</p> <p>KB13. various survival techniques</p>
Skills (S)	
A. Core skills/ generic skills	Reading skills
	<p>The user/individual on the job needs to know how to read:</p> <p>SA1. procedures and standards related to health, safety and security of vessel and cargo</p> <p>SA2. vessel security and emergency plan</p> <p>SA3. emergency equipment layout</p> <p>SA4. various documents related to security and movement of cargo</p>
	Writing skills
	<p>The user/individual on the job needs to know how to:</p> <p>SA5. fill forms related to health, safety and security procedures</p>
	Oral communication (listening and speaking skills)
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SA6. communicate clearly with colleagues regarding safety procedures</p> <p>SA7. share experience and provide guidance to peers</p>
	B. Professional skills
<p>The user/individual on the job needs to know how to:</p> <p>SB1. identify threats to security and emergency situations</p> <p>SB2. decide the right equipment to be used in case of fire and threat emergency</p> <p>SB3. decide the first aid required upon seeing casualty</p>	
Plan and organize	
<p>The user/individual on the job needs to know how to:</p> <p>SB4. plan actions in case of security threat or emergency</p> <p>SB5. prioritize and execute tasks as per contingency plan</p>	
Customer centricity	
<p>The user/individual on the job needs to know and understand how to:</p> <p>SB6. follow instructions as per vessel contingency plan</p>	
Problem solving	
<p>The user/individual on the job needs to know and understand how to:</p> <p>SB7. identify any threats on personal health, safety, security, etc. and take appropriate actions</p> <p>SB8. identify risks aboard the vessel and inform superiors</p>	

LSC/N4102

Follow and monitor health, safety and security procedures on vessel

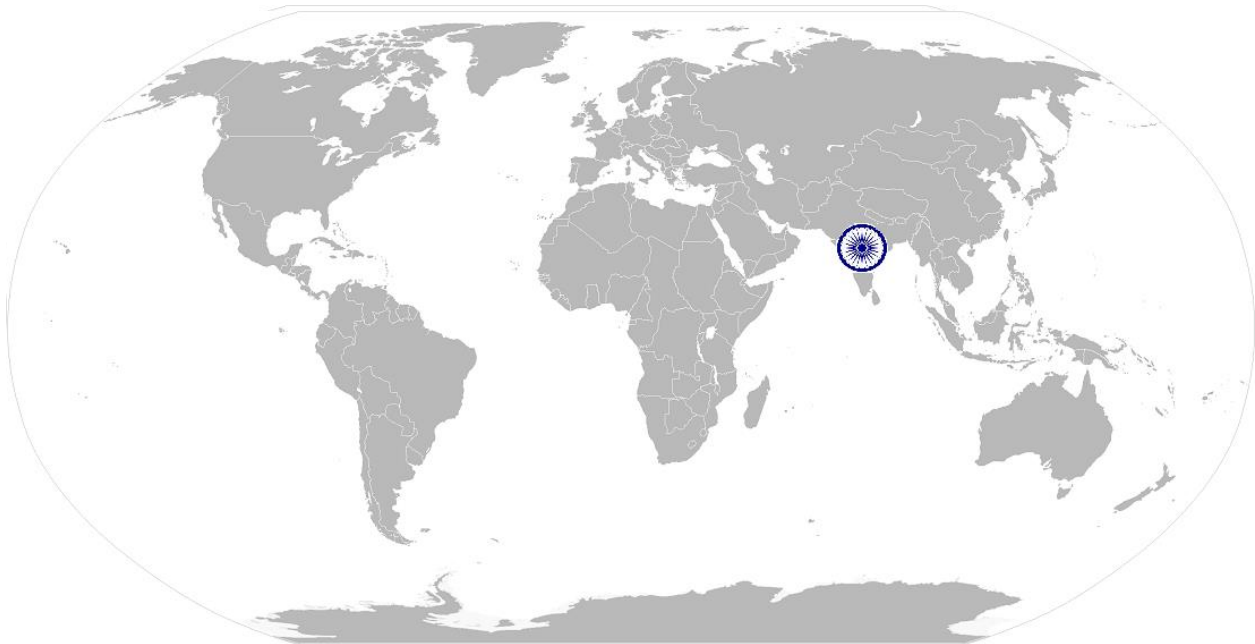
	Analytical thinking
	The user/individual on the job needs to know and understand how to: SB9. analyse situations to assess threats or risks
	Critical thinking
	The user/individual on the job needs to know and understand how to: SB10. ensure right safety measures and security protocols are followed at all times

NOS Version Control

NOS Code	LSC/N4102		
Credits(NSQF)	TBD	Version number	1.0
Industry	Logistics	Drafted on	30/06/2018
Industry Sub-sector	Inland waterways	Last reviewed on	15/10/2018
Occupation	Vessel Operations	Next review date	15/10/2021



National Occupational Standard



Overview

This unit is about performing vessel handling and steering activities

LSC/N4105

Vessel handling and steering

National Occupational Standard

Unit Code	LSC/N4105
Unit Title (Task)	Vessel handling and steering
Description	This unit is about performing vessel handling and steering activities
Scope	<p>This unit/task covers the following:</p> <ul style="list-style-type: none"> • Perform vessel handling duties • Steer the vessel <p>Range: Maps, charts, Global Positioning System (GPS), compass, other navigation aids, vessel, simulator, Standard Operating Procedures (SOP), computer, projector, worksheets, stationery etc.</p>
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
Perform vessel handling duties	<p>To be competent, the user/ individual must be able to:</p> <p>PC1. prepare vessel coastal berthing schedule based on input from officer and port/ terminal, factoring in tides</p> <p>PC2. prepare vessel route map in inland waterways and identify key landmarks and markers for navigation</p> <p>PC3. check with deck staff regarding mooring lines and cargo clearance prior to berthing and drafting</p> <p>PC4. read and report observations in gyro compass and magnetic compass</p> <p>PC5. identify the cardinal, inter-cardinal points and by points</p>
Steer the vessel	<p>To be competent, the user/ individual must be able to:</p> <p>PC6. convert reading of degrees to points and vice versa</p> <p>PC7. repeat helm orders and take action per the helm orders given</p> <p>PC8. confirm that the helm orders are carried out</p> <p>PC9. change from automatic steering to manual steering and vice versa when required</p> <p>PC10. steer a steady course with smooth alternation in course with utmost regard for area of navigation</p> <p>PC11. keep a look out for various landmarks and mile marks in the inland rivers and estuaries to keep track of course</p> <p>PC12. steer safely in bending and narrow channels factoring current, bank cushions, bank suction,</p> <p>PC13. take precautions while steering with regarding currents when performing staying the bend and hugging the point and heading into current</p>
Knowledge and understanding (K)	
A. Organizational context	<p>The individual on the job needs to know:</p> <p>KA1. organizational procedures and SOPs for tasks at hand, documentation policy and emergency responses, internal communication over network</p>

LSC/N4105

Vessel handling and steering

<p>(Knowledge of the company / organization and its processes)</p>	<p>KA2. security and safety procedures to be followed KA3. reporting structure of the organization for escalation of issues KA4. risk and impact of not following defined procedures/work instructions KA5. coding system followed to communicate using flags, hand signals and sound signals</p>
<p>B. Technical knowledge</p>	<p>The individual on the job needs to know and understand: KB1. nautical terms and parts of ship KB2. capacities of various holds and cargo types for different vessels KB3. loading and discharge procedure for cargo handling in different type of vessels KB4. reading various navigational devices like gyrometer, magnetic compass, GPS KB5. navigation aids like maps, charts, instruments etc. KB6. ocean currents and their effects on the vessel, starboard side and port side KB7. navigation through narrow channels, shallow channels, coastal areas, etc. KB8. basic of steering wheels, degrees and points</p>
<p>Skills (S)</p>	
<p>C. Core skills/ generic skills</p>	<p>Reading skills The user/individual on the job needs to know how to read: SA1. written instructions SA2. maps and routes</p> <p>Writing skills The user/individual on the job needs to know how to: SA3. write instructions based on observation SA4. daily reports indicating damages, injuries, etc.</p> <p>Oral communication (listening and speaking skills) The user/individual on the job needs to know how to: SA5. communicate with officers, master, terminal authorities and co-workers SA6. collect information from masters and officers</p>
<p>D. Professional skills</p>	<p>Decision making The user/individual on the job needs to know how to: SB1. decide the speed and rudder requirement for a certain navigational course SB2. decide based on observation if an obstacle can be avoided or a course correction is required SB3. Decide on course corrections based on visible landmarks and mile marks</p> <p>Plan and organize The user/individual on the job needs to know how to: SB4. plan and estimate the time for each activity SB5. maintain punctuality and should respond to the queries in a timely manner SB6. prioritize and execute tasks based on instructions SB7. be a team player and achieve joint goals</p>

LSC/N4105

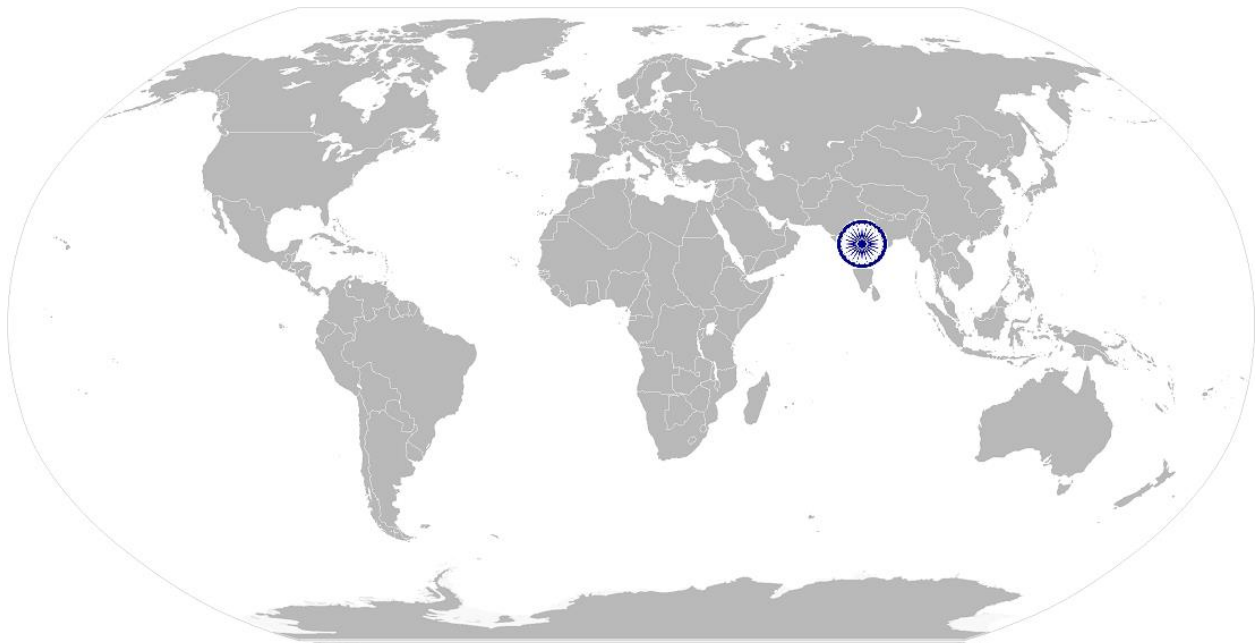
Vessel handling and steering

	Customer centricity
	The user/individual on the job needs to know and understand: SB8. importance of timely circulation of information SB9. urgency of priority requests as per the instructions
	Problem solving
	The user/individual on the job needs to know how to: SB10. inform the ranking in-charge regarding course correction, adverse observations, etc. SB11. suggest route correction to avoid collision, based on navigational buoys, etc.
	Analytical thinking
	The user/individual on the job needs to know how to: SB12. analyse the effect of currents and water levels SB13. assess the speed and torque requirement based on navigational routes
	Critical thinking
The user/individual on the job needs to know how to: SB14. observe and make course corrections based on adverse weathers, unfavourable currents, obstacles, dangerous operations, etc. SB15. observe effect of environment and make speed and rudder corrections SB16. focus on task at hand and complete it without errors and delays	

NOS Version Control

NOS Code	LSC/N4105		
Credits(NSQF)	TBD	Version number	1.0
Industry	Logistics	Drafted on	30/06/2018
Sub-Sector	Inland waterways	Last reviewed on	15/10/2018
Occupation	Vessel Operations (Navigation, vessel planning, route planning)	Next review date	15/10/2021

National Occupational Standard



Overview

This unit is about facilitating loading and discharge of cargo as well as monitoring of cargo

LSC/N4007

Cargo facilitation during loading and discharge

National Occupational Standard

Unit Code	LSC/N4007
Unit Title (Task)	Cargo facilitation during loading and discharge
Description	This unit is about facilitating loading and discharge of cargo as well as monitoring of cargo
Scope	<p>This unit/task covers the following:</p> <ul style="list-style-type: none"> Undertake stowing of cargo Ensure cargo safety and security after storage <p>Range: Vessel, sample cargo, Material Handling Equipment (MHE), Personal Protective Equipment (PPE), safety equipment, cargo documentation, computer, projector, worksheets etc.</p>
Performance Criteria(PC) w.r.t. the scope	
Element	Performance Criteria
Undertake stowing of cargo	<p>To be competent, the user/ individual must be able to:</p> <p>PC1. provide details of capacities of cargo from the manifest to the chief officer</p> <p>PC2. assist chief officer in preparing the loading plan, based on details of cargo to be discharged and loaded as per cargo manifest</p> <p>PC3. assist chief officer in carrying out vessel stability assessment</p> <p>PC4. check that the cargo does not infringe load-line regulation while on passage</p> <p>PC5. check that heavy cargo is stored beneath the light cargo</p> <p>PC6. inspect the cargo space for cleanliness, damage and presence of lighting and ventilation</p> <p>PC7. check that the cargo does not touch the spar ceiling</p> <p>PC8. clean the dunnage</p> <p>PC9. stow the cargo with the help of rigged derrick, hoist or cranes as required</p> <p>PC10. get approval on documents of specific cargoes such as hazardous, livestock, etc. from the chief officer</p> <p>PC11. stow all the cargo and securely lash it using wire ropes and chains</p> <p>PC12. document details of damaged cargo and highlight to master</p>
Ensure cargo safety and security after storage	<p>To be competent, the user/ individual must be able to:</p> <p>PC13. check that all listed cargo are loaded/ discharges</p> <p>PC14. do an inventory count of cargo and give a sign off to the master/ chief officer</p> <p>PC15. check that all cargo are tightly secured and lashed from all sides</p> <p>PC16. check that cargo containers, boxes, etc. do not move during operations</p> <p>PC17. check that hazardous cargo is kept segregated with all necessary precautions</p> <p>PC18. perform regular monitoring of cargo during voyage for damages, displacements, thefts, etc.</p>
Knowledge and understanding (K)	
A. Organizational	The individual on the job needs to know:

LSC/N4007

Cargo facilitation during loading and discharge

<p>context (Knowledge of the company / organization and its processes)</p>	<p>KA1. organizational procedures and Standard Operating Procedures (SOPs) for tasks at hand, documentation policy and emergency responses, internal communication over network</p> <p>KA2. security and safety procedures to be followed</p> <p>KA3. reporting structure of the organization for escalation of issues</p> <p>KA4. risk and impact of not following defined procedures/work instructions</p> <p>KA5. coding system followed to communicate using flags, hand signals and sound signals</p>
<p>B. Technical knowledge</p>	<p>The individual on the job needs to know and understand:</p> <p>KB1. detailed information contained in Code of Safe Practice for Cargo Stowage and Securing (CSS Code)</p> <p>KB2. basic operation of Material Handling Equipment (MHEs) in vessel and port</p> <p>KB3. usage of communication equipment such as Very High Frequency (VHF) radio etc.</p> <p>KB4. blocking, lashing, shoring, chocking and tombing of cargo</p> <p>KB5. use of different material handling equipment and their uses</p> <p>KB6. method of securing heavy load</p> <p>KB7. method of stowing vehicles and trailers</p> <p>KB8. safe loading/ discharging of ro-ro cargoes</p> <p>KB9. limitation of lifting gear and knowledge of limit switches</p> <p>KB10. capacities of various holds and cargo types for different vessels</p> <p>KB11. loading and discharge procedure for cargo handling in different type of vessels</p>
<p>Skills (S)</p>	
<p>C. Core skills/ generic skills</p>	<p>Reading skills</p> <p>The user/individual on the job needs to know how to read:</p> <p>SA1. written instructions</p> <p>SA2. shipping manifest, shipping bills, cargo documentation, etc.</p> <p>SA3. cargo labels and markings</p> <p>SA4. maps and routes</p> <p>Writing skills</p> <p>The user/individual on the job needs to know how to:</p> <p>SA5. write instructions</p> <p>SA6. daily reports indicating damages, injuries, accidents, cargo thefts, etc.</p> <p>Oral communication (listening and speaking skills)</p> <p>The user/individual on the job needs to know how to:</p> <p>SA7. communicate with masters, port loading authorities and co-workers</p> <p>SA8. collect information from masters and officers</p>
<p>D. Professional</p>	<p>Decision making</p> <p>The user/individual on the job needs to know how to:</p>

LSC/N4007

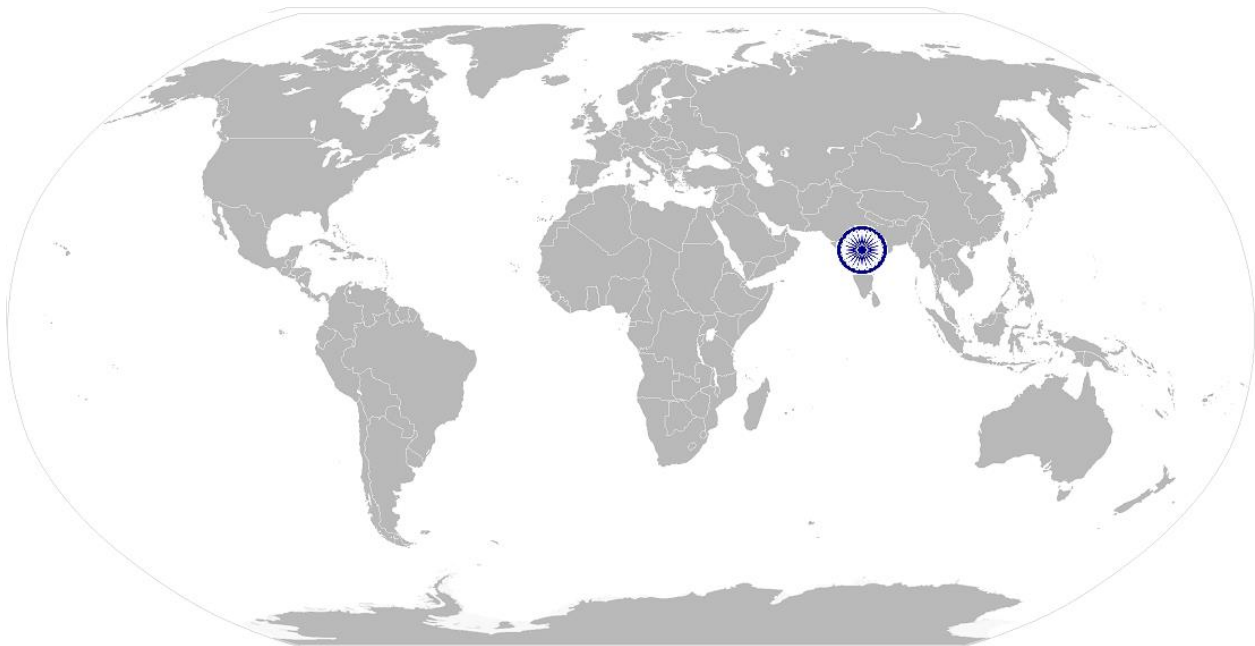
Cargo facilitation during loading and discharge

skills	SB1. identify faulty rigs, ladders, loading and unloading equipment
	SB2. decide the loading procedure for the cargo
	SB3. identify damaged cargo and containers
	Plan and organize
	The user/individual on the job needs to know how to:
	SB4. plan and estimate the time for each activity
	SB5. maintain punctuality and respond in a timely manner
	SB6. prioritize and execute tasks based on instructions
	SB7. be a team player and achieve joint goals
	Customer centricity
The user/individual on the job needs to know and understand:	
SB8. importance of timely circulation of information	
SB9. urgency of priority requests as per the instructions	
Problem solving	
The user/individual on the job needs to know how to:	
SB10. inform the ranking in-charge in case of damaged cargo	
SB11. suggest methods for safe stowage and lashing of cargo	
Analytical thinking	
The user/individual on the job needs to know how to:	
SB12. analyse common mistakes during cargo operations and take due precautions	
SB13. analyse commonly carried cargo trend and make deck adjustments for easier loading	
Critical thinking	
The user/individual on the job needs to know how to:	
SB14. observe and communicate regarding damaged cargo	
SB15. ensure safety during cargo operations	
SB16. focus on task at hand and complete it without errors and delays	

NOS Version Control

NOS Code	LSC/N4007		
Credits(NSQF)	TBD	Version number	1.0
Industry	Logistics	Drafted on	30/06/2018
Industry Sub-sector	Inland waterways	Last reviewed on	15/10/2018
Occupation	Deck operations (Cargo handling)	Next review date	15/10/2021

National Occupational Standard



Overview

This unit is about on-board training of crew members for deck operations

LSC/N4008

On-board training of crew members for deck operations

National Occupational Standard

Unit Code	LSC/N4008
Unit Title (Task)	On-board training of crew members for deck operations
Description	This unit is about on-board training of crew members for deck operations
Scope	<p>This unit/task covers the following:</p> <ul style="list-style-type: none"> • Training for navigation • Training for store handling • Check cargo organisation and security <p>Range: Navigation charts and aids, Personal Protective Equipment (PPE), Standard Operating Procedures (SOP), Management information system (MIS) reports, computer, projector, stationery, worksheets etc.</p>
Performance Criteria(PC) w.r.t. the scope	
Element	Performance Criteria
Training for navigation	<p>To be competent, the user/ individual must be able to guide the deck crew to:</p> <p>PC1. take watch and report from bridge</p> <p>PC2. use different hand signals and flag signals</p> <p>PC3. understand and comprehend navigational terms</p> <p>PC4. read gyro and magnetic compass and adjust for errors</p> <p>PC5. take helm orders and steer the ship using degrees and points</p> <p>PC6. take necessary precautions while steering and watch regarding weathers, obstacles, currents, landmarks, etc.</p> <p>PC7. mooring and docking the vessel at terminals</p>
Training for store handling	<p>To be competent, the user/ individual must be able to guide the deck crew to:</p> <p>PC8. take precautions and measures to keep store rodent free</p> <p>PC9. appropriately store different items – food, water, liquids, spares, equipment, cash, etc.</p> <p>PC10. inspect store, take inventory count and update</p> <p>PC11. manage cold storage and store equipment</p> <p>PC12. track threshold levels for raising replacement/ shortage requests</p> <p>PC13. check document prior to releasing an item from store</p>
Check cargo organisation and security	<p>To be competent, the user/ individual must be able to guide the deck crew to:</p> <p>PC14. check that all listed cargo are loaded/ discharged and do inventory counts</p> <p>PC15. check storage pattern and lashing of cargo</p> <p>PC16. check that hatches and holds are secured</p> <p>PC17. take precautions while handling cargo particularly hazardous cargo</p> <p>PC18. check for damage to cargo during transit and loading operations</p>
Knowledge and understanding (K)	
A. Organizational context	The individual on the job needs to know:

LSC/N4008

On-board training of crew members for deck operations

<p>(Knowledge of the company / organization and its processes)</p>	<p>KA1. organizational procedures and SOPs for tasks at hand, documentation policy and emergency responses, internal communication over network</p> <p>KA2. security and safety procedures to be followed</p> <p>KA3. reporting structure of the organization for escalation of issues</p> <p>KA4. risk and impact of not following defined procedures/work instructions</p> <p>KA5. coding system followed to communicate using flags, hand signals and sound signals</p>
<p>B. Technical knowledge</p>	<p>The individual on the job needs to know and understand:</p> <p>KB1. detailed information contained in Code of Safe Practice for Cargo Stowage and Securing (CSS Code)</p> <p>KB2. blocking, lashing, shoring, chocking and tombing of cargo</p> <p>KB3. use of different material handling equipment and their uses</p> <p>KB4. method of securing heavy load</p> <p>KB5. method of stowing vehicles and trailers and loading and discharge of ro-ro cargo</p> <p>KB6. performing watch duty and cargo handling on the vessel</p> <p>KB7. handling and steering of vessel</p> <p>KB8. maintaining of stores and inventory onboard the vessel</p> <p>KB9. loading and discharge procedure for cargo handling in different type of vessels</p>
<p>Skills (S)</p>	
<p>C. Core skills/ generic skills</p>	<p>Reading skills</p> <p>The user/individual on the job needs to know how to read:</p> <p>SA1. written instructions</p> <p>SA2. maps and routes</p> <p>SA3. shipment manifest, shipping bills, cargo documentation, etc</p> <p>SA4. inventory counts and records</p> <p>Writing skills</p> <p>The user/individual on the job needs to know how to:</p> <p>SA5. write instructions</p> <p>SA6. deliver presentations and classes</p> <p>SA7. write daily reports</p> <p>Oral communication (listening and speaking skills)</p> <p>The user/individual on the job needs to know how to:</p> <p>SA8. communicate with officers, masters and co-workers</p> <p>SA9. collect information from masters</p>
<p>D. Professional skills</p>	<p>Decision making</p> <p>The user/individual on the job needs to know how to:</p> <p>SB1. decide on cases and specific instances that needs to be highlighted during training</p>

LSC/N4008

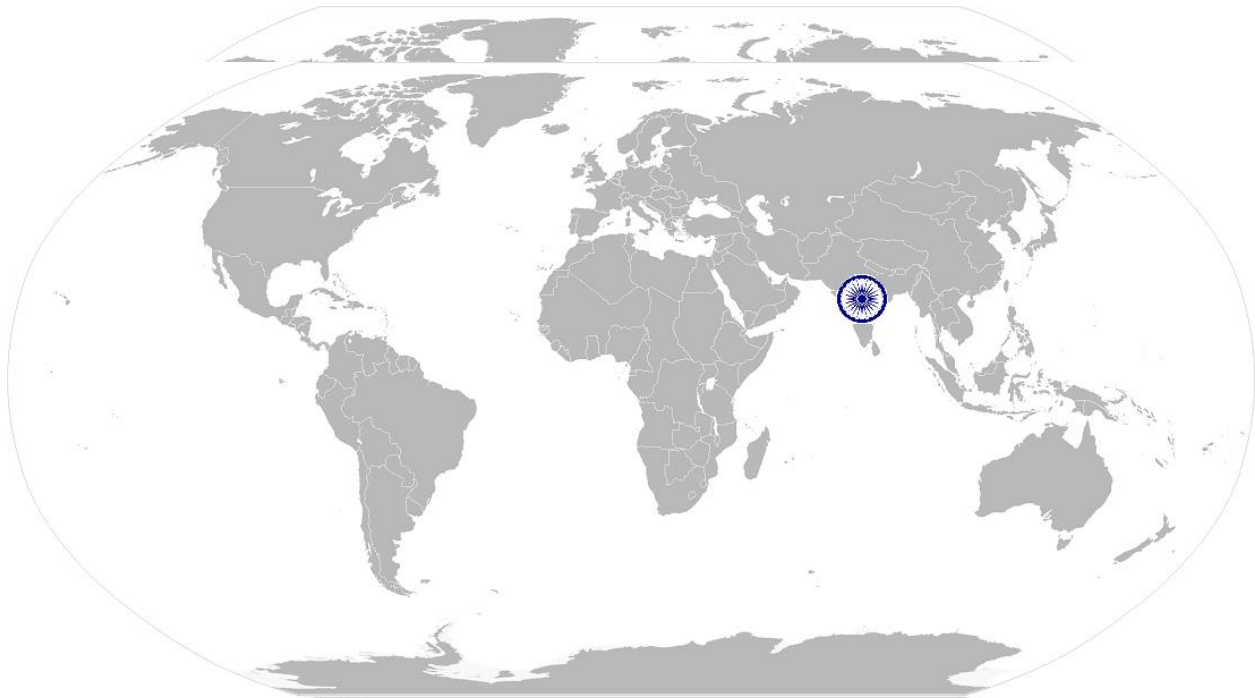
On-board training of crew members for deck operations

	SB2. decide basic precautions that need to be emphasized during training
	SB3. identify order of activities for training
	Plan and organize
	The user/individual on the job needs to know how to:
	SB4. plan and estimate the time for each activity
	SB5. maintain punctuality and respond in a timely manner
	SB6. prioritize and execute tasks based on instructions
	SB7. be a team player and achieve joint goals
	Customer centricity
	The user/individual on the job needs to know and understand:
SB8. importance of timely circulation of information	
SB9. catering to urgencies and priority requests as per the instructions	
Problem solving	
The user/individual on the job needs to know how to:	
SB10. identify new and innovative ways for on job training	
SB11. suggest interactive methods and tasks for enforcing learning	
Analytical thinking	
The user/individual on the job needs to know how to:	
SB12. analyse the usual challenges in learning based on past experience and provide higher focus on the same	
Critical thinking	
The user/individual on the job needs to know how to:	
SB13. adjust based on the intellect of each deck hand to provide effective learning	
SB14. explain precautions and risks of not following the same onboard the vessel	

NOS Version Control

NOS Code	LSC/N4008		
Credits(NSQF)	TBD	Version number	1.0
Industry	Logistics	Drafted on	30/06/2018
Industry Sub-sector	Inland waterways	Last reviewed on	15/10/2018
Occupation	Deck Operations	Next review date	15/10/2021

National Occupational Standard



Overview

This unit is about supervising engine operations and troubleshooting

LSC/N4204

Supervise engine operation and troubleshooting

National Occupational Standard

Unit Code	LSC/N4204
Unit Title (Task)	Supervise engine operation and troubleshooting
Description	This unit is about engaging into basic deck operations and assistance
Scope	<p>This unit/task covers the following:</p> <ul style="list-style-type: none"> Supervise engine room operations Undertake troubleshooting duties Perform documentation <p>Range: Engine equipment, simulator, tools and tackles, equipment manuals, Standard Operating Procedures (SOP), computer, projector, stationery, worksheets etc.</p>
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
Supervise engine room operations	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. carry out orders given by duty engineer</p> <p>PC2. assign duties and manage the engine room staff</p> <p>PC3. monitor the safe running of the machinery with respect to various operational parameters</p> <p>PC4. check that instruments and their reading to see functioning of the main and auxiliary engines</p> <p>PC5. prepare for hot and cold start</p> <p>PC6. follow SOPs and safety precautions for operating the generator and main engine during different weather conditions and operations</p> <p>PC7. record all tank parameters for sludge and bilge system</p> <p>PC8. implement Planned maintenance system (PMS)</p> <p>PC9. conduct regular inspection of engine and auxiliary machinery for fitness and maintenance needs</p> <p>PC10. inspect equipment in SOEP (Shipboard oil pollution emergency plan) locker for functionality and fitness</p> <p>PC11. supervise engine crew during routine maintenance and basic repairs as instructed by duty engineer/ master</p> <p>PC12. keep the engine room bilge clean of oil and oily water</p> <p>PC13. take precautions to prevent oil spills and accidents during bunkering of fuel and oil</p> <p>PC14. store all spares properly and maintain the record in the spares inventory</p>
Undertake troubleshooting duties	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC15. assist the crew with maintenance and repair duties bunkering of fuel and oil</p> <p>PC16. check all fuel rack incase engine rpm is fluctuating</p> <p>PC17. check the temperature of the airline for any leakage from air valve</p> <p>PC18. overhaul and test pressure of fuel valve in case there is deviation in temperature of fuel system</p> <p>PC19. frequently clean exhaust gas boiler to avoid sparks in the main engine</p>

LSC/N4204

Supervise engine operation and troubleshooting

	<p>PC20. use cooling to prevent overheating of engine block</p> <p>PC21. replace faulty gauges, that are not working due to lose connections</p> <p>PC22. fabricate engine replacement parts such as valves, stay rods, bolts using metal and working machinery</p> <p>PC23. repair engine, electric motor, pumps and other mechanical and electrical equipment</p>
<p>Perform documentation</p>	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC24. record data in the log book, bell book, weekly routine book</p> <p>PC25. maintain and update inventory count of spares for the engine room like pumps, auxiliary engine, etc. regularly</p> <p>PC26. record details of quantity of oil in the tanks for machinery operation like lube oil, fuel or diesel in the oil record book</p> <p>PC27. make record of the next bunker order</p> <p>PC28. update and maintain Planned Maintenance System (PMS) book</p>
<p>Knowledge and understanding (K)</p>	
<p>A. Organizational context</p>	<p>The individual on the job needs to know:</p> <p>KA1. organizational procedures and SOPs for tasks at hand, documentation policy and emergency responses, internal communication over network</p> <p>KA2. security and safety procedures to be followed</p> <p>KA3. reporting structure of the organization for escalation of issues</p> <p>KA4. risk and impact of not following defined procedures/work instructions</p> <p>KA5. coding system followed to communicate using flags, hand signals and sound signals</p>
<p>B. Technical knowledge</p>	<p>The individual on the job needs to know and understand:</p> <p>KB1. various types of valves and the major components of engine and auxiliary units</p> <p>KB2. safe operating procedure for opening and closing of valve</p> <p>KB3. types of pumps in engine room</p> <p>KB4. precaution before starting a pump and during its operation</p> <p>KB5. types of joints used for pipeline</p> <p>KB6. precaution to be taken before commencing repair work</p> <p>KB7. different types of oil and air filters used on board and their cleaning and maintenance SOPs</p> <p>KB8. hazards of cleaning filter on a running machinery</p> <p>KB9. PPEs, safety precautions, emergency plans, escape routes, etc.</p> <p>KB10. use of propelling and shafting</p> <p>KB11. different type of fuel systems and engine room machineries</p> <p>KB12. preservation of equipment in good condition</p> <p>KB13. preparation needed for starting an auxiliary diesel engine</p> <p>KB14. checks to made on an operating auxiliary engine</p> <p>KB15. risk involved in working with compressed air for auxiliary purpose</p>

LSC/N4204

Supervise engine operation and troubleshooting

Skills (S)	
C. Core skills/ generic skills	Reading skills
	The user/individual on the job needs to know how to read: SA1. written instructions SA2. vessel layout and operating procedures SA3. SOPs and engine operations manual and tool books SA4. pressure gauges and level gauges
	Writing skills
	The user/individual on the job needs to know how to write: SA5. daily reports including inventory, damages, repairs, maintenance, accidents, etc. SA6. instructions for crew
	Oral communication (listening and speaking skills)
D. Professional skills	The user/individual on the job needs to know how to: SA7. communicate with officers, masters and co-workers SA8. collect information from officers and masters
	Decision making
	The user/individual on the job needs to know how to: SB1. identify if there is a need for repair or servicing of engine SB2. identify issues in operation based on reading of various parameters, listening to noise and abrupt movements SB3. decide if there is need for shutting down the engine and overhauling
	Plan and organize
	The user/individual on the job needs to know how to: SB4. plan and estimate the time for each activity SB5. maintain punctuality and respond to queries in a timely manner SB6. prioritize and execute tasks based on instructions SB7. be a team player and achieve joint goals
	Customer centricity
	The user/individual on the job needs to know and understand: SB8. importance of given timelines SB9. urgency of priority requests as per the instructions
	Problem solving
	The user/individual on the job needs to know how to: SB10. check and ensure proper functioning of various engine and auxiliary units SB11. identify need for basic troubleshooting or engine overhauling SB12. perform basic repairs, fitting, etc on engine components
	Analytical thinking
The user/individual on the job needs to know how to:	

LSC/N4204

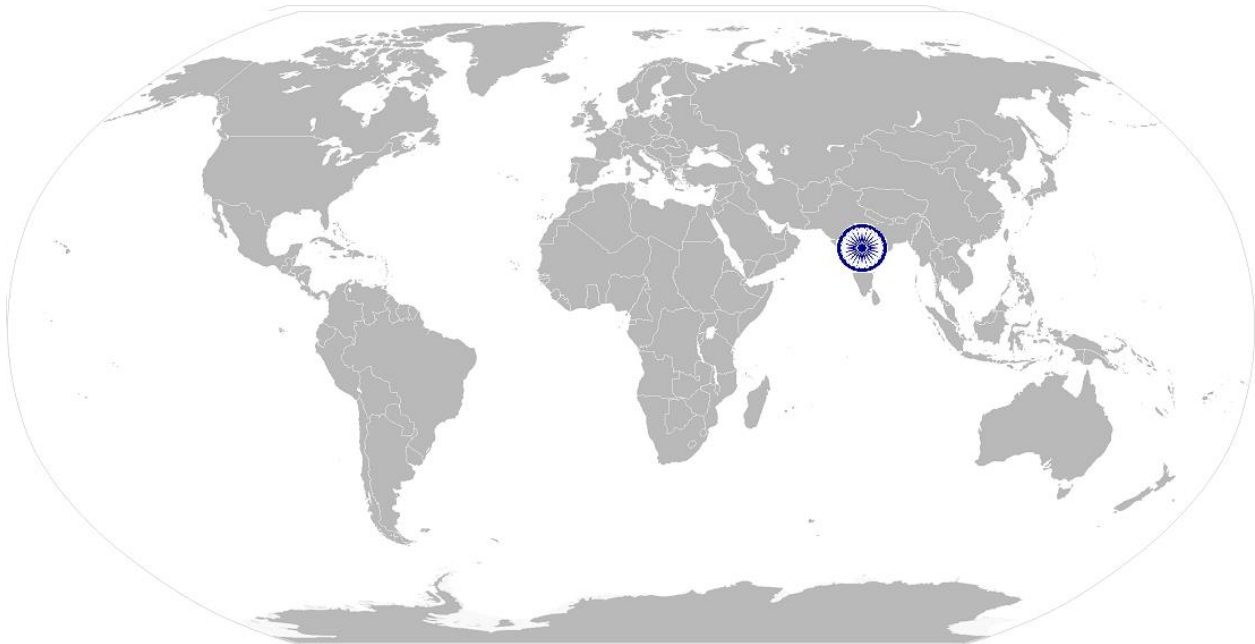
Supervise engine operation and troubleshooting

	SB13. verify the authenticity of the spare parts by conducting basic checks
	SB14. analyse common issues with engine and take precautions
	Critical thinking
	The user/individual on the job needs to know how to:
	SB15. focus on task at hand and complete it without errors and delays
	SB16. check for compliance regarding filling forms for replacement or servicing of equipment
	SB17. check and identify problems in engine functioning
	SB18. identify hazardous situations and initiate appropriate action
	SB19. ensure proper precautions are taken during overhauling

NOS Version Control

NOS Code	LSC/N4204		
Credits(NSQF)	TBD	Version number	1.0
Industry	Logistics	Drafted on	30/06/2018
Industry Sub-sector	Inland waterways	Last reviewed on	15/10/2018
Occupation	Engine operations (including overhauling)	Next review date	15/10/2021

National Occupational Standard



Overview

This unit is about overhauling main engine and other engine related equipment

LSC/N4203

Assist in overhauling of engine and auxiliary equipment

National Occupational Standard

Unit Code	LSC/N4203
Unit Title (Task)	Assist in overhauling of engine and auxiliary equipment
Description	This unit is about overhauling main engine and other auxiliary equipment
Scope	<p>This unit/task covers the following:</p> <ul style="list-style-type: none"> Assist in overhauling of main engine Assist in overhauling of auxiliary equipment <p>Range: Engine and associated equipment, tools and tackles, maintenance equipment, equipment manual, Standard Operating Procedures (SOP), computer, projector, stationery, worksheets etc.</p>
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
Assist in overhauling of main engine	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. check for safety devices on the main engine and the auxiliary engine</p> <p>PC2. check for issues with respect to noise, various measuring gauges, moving parts to identify the need for repair and overhaul</p> <p>PC3. inform the master or officer on duty regarding need for overhauling and get permission</p> <p>PC4. check that the main engine is shut off and secured from hazards with respect to fuel leak, oil leak, heat, etc. prior to overhauling</p> <p>PC5. check that the SOP and necessary precautions are followed for overhauling of engine</p> <p>PC6. continually monitor the engine readings during overhauling operations by the technical team</p> <p>PC7. assist the technical team to clarify doubts</p>
Assist in overhauling of auxiliary equipment	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC8. open and close valves for operation using tools like wheel spanner, etc. as per SOPs</p> <p>PC9. use drain valves and drain cocks draining fluids from air bottles, oil and fuel tanks, pipes, etc.</p> <p>PC10. check tanks and level gauges</p> <p>PC11. open pumps, valves and pipes as per SOP</p> <p>PC12. safely open ballast system of vessel when required</p> <p>PC13. perform basic pumping system cleaning and trouble shooting</p> <p>PC14. open auxiliary units like filters, centrifugal separators, joints and glade packing, etc. for cleaning and overhauling</p> <p>PC15. perform basic maintenance and troubleshooting when required as per the overhauling SOP</p>
Knowledge and understanding (K)	
A. Organizational context	<p>The individual on the job needs to know:</p> <p>KA1. organizational procedures and SOPs for tasks at hand, documentation policy and emergency responses, internal communication over network</p>

LSC/N4203

Assist in overhauling of engine and auxiliary equipment

	<p>KA2. security and safety procedures to be followed</p> <p>KA3. reporting structure of the organization for escalation of issues</p> <p>KA4. risk and impact of not following defined procedures/work instructions</p> <p>KA5. coding system followed to communicate using flags, hand signals and sound signals</p>
<p>B. Technical knowledge</p>	<p>The individual on the job needs to know and understand:</p> <p>KB1. various types of valves and the major components</p> <p>KB2. safe operating procedure for opening and closing of valve</p> <p>KB3. identify various types of valves, pumps and cocks used for shipboard application, their components, usage and SOP for overhauling</p> <p>KB4. types of pumps in engine room</p> <p>KB5. precaution before starting a pump</p> <p>KB6. types of joints used for pipeline</p> <p>KB7. precaution to be taken before commencing repair work</p> <p>KB8. different types of oil and air filters used on board</p> <p>KB9. hazards of cleaning filter on a running machinery</p> <p>KB10. PPE to be worn during cleaning or repairing various equipment</p> <p>KB11. checks to be made on a filter during cleaning</p> <p>KB12. use of propelling and shafting</p> <p>KB13. preservation of equipment in good condition</p> <p>KB14. preparation needed for starting an auxiliary diesel engine</p> <p>KB15. checks to made on an operating auxiliary engine</p> <p>KB16. components of main engine</p> <p>KB17. risk involved in working with compressed air for auxiliary purpose</p>
<p>Skills (S)</p>	
<p>A. Core skills/ generic skills</p>	<p>Reading skills</p> <p>The user/individual on the job needs to know how to read:</p> <p>SA1. written instructions</p> <p>SA2. vessel layout and operating procedures</p> <p>SA3. SOPs and engine operations manual and tool books</p> <p>SA4. pressure gauges and level gauges</p> <p>Writing skills</p> <p>The user/individual on the job needs to know how to write:</p> <p>SA5. daily reports including inventory, damages, repairs, maintenance, accidents, etc.</p> <p>SA6. instructions for crew</p> <p>Oral communication (listening and speaking skills)</p> <p>The user/individual on the job needs to know how to:</p> <p>SA7. communicate with officers, masters and co-workers</p> <p>SA8. collect information from officers and masters</p>
<p>B. Professional</p>	<p>Decision making</p> <p>The user/individual on the job needs to know how to:</p>

LSC/N4203

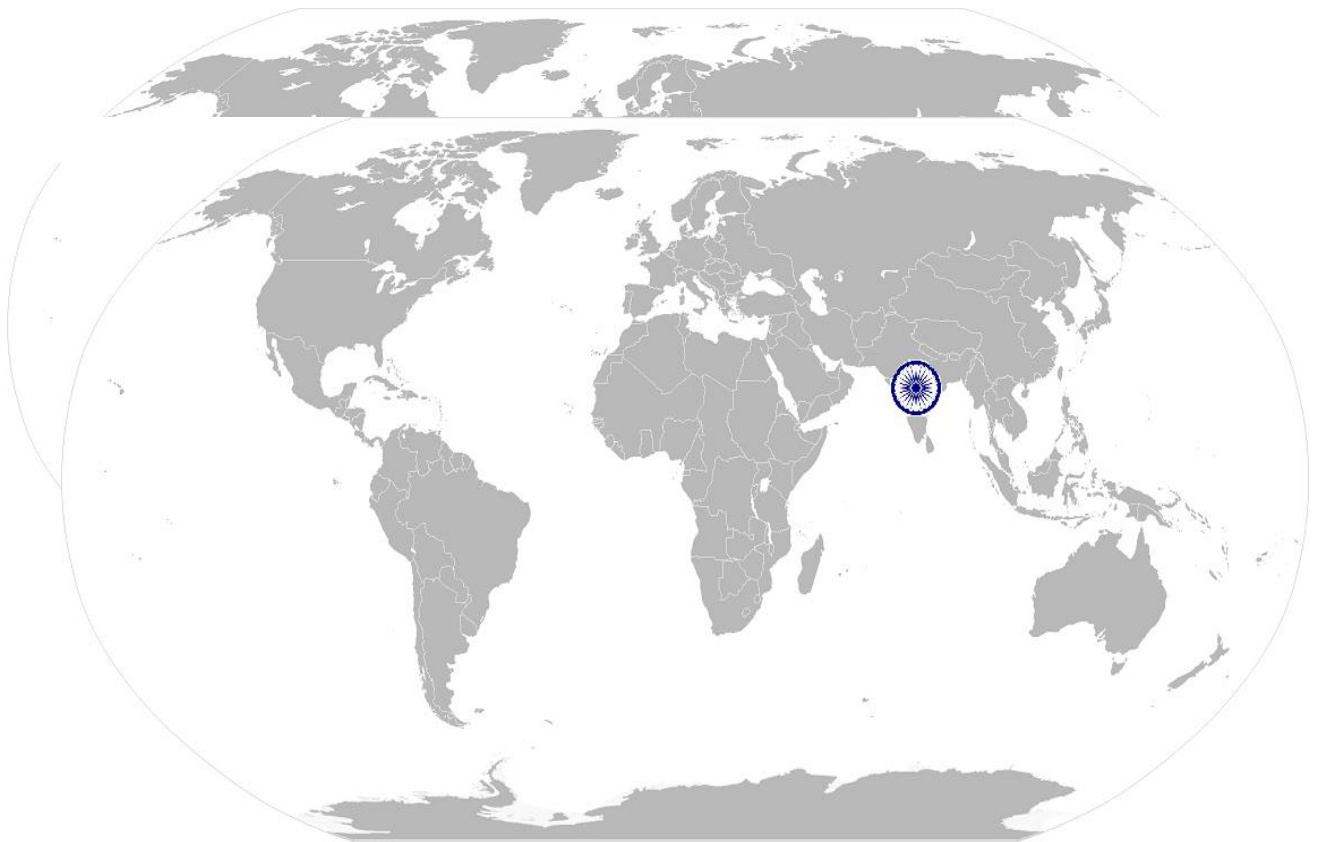
Assist in overhauling of engine and auxiliary equipment

Skills	SB1. identify if there is a need for overhauling
	SB2. identify the machine or system that needs to be overhauled
	Plan and organize
	The user/individual on the job needs to know how to:
	SB3. plan and estimate the time for each activity
	SB4. maintain punctuality and respond to queries in a timely manner
	SB5. prioritize and execute tasks based on instructions
	SB6. be a team player and achieve joint goals
	Customer centricity
	The user/individual on the job needs to know and understand:
	SB7. importance of given timelines
	SB8. urgency of priority requests as per the instructions
	Problem solving
	The user/individual on the job needs to know how to:
SB9. identify need for basic troubleshooting or engine overhauling	
SB10. perform basic overhauling of auxiliary units and parts as per SOP	
Analytical thinking	
The user/individual on the job needs to know how to:	
SB11. analyse common issues with engine and take precautions while overhauling	
Critical thinking	
The user/individual on the job needs to know how to:	
SB12. focus on task at hand and complete it without errors and delays	
SB13. identify hazardous situations and initiate appropriate action	
SB14. ensure proper precautions are taken during overhauling	

NOS Version Control

NOS Code	LSC/N4203		
Credits(NSQF)	TBD	Version number	1.0
Industry	Logistics	Drafted on	30/06/2018
Industry Sub-sector	Inland waterways	Last reviewed on	15/10/2018
Occupation	Engine operations (including overhauling)	Next review date	15/10/2021

National Occupational Standard



Overview

This unit is about on-board training of crew members for engine operations

LSC/N4205

Onboard training of crew members for engine operations

National Occupational Standard

Unit Code	LSC/N4205
Unit Title (Task)	On-board training of crew members for engine operations
Description	This unit is about on-board training of crew members for engine operations
Scope	<p>This unit/task covers the following:</p> <ul style="list-style-type: none"> • Training for engine operation supervision • Training for engine and part overhauling • Training for welding, cutting and machining <p>Range: Engine and associated equipment, tools and tackles, maintenance equipment, equipment manual, Standard Operating Procedures (SOP), computer, projector, stationery, worksheets etc</p>
Performance Criteria(PC) w.r.t. the scope	
Element	Performance Criteria
Training for engine operation	<p>To be competent, the user/individual on the job must be able to guide crew to:</p> <p>PC1. take precautions regarding possible risks associated with engine operations related to chemical, thermal, oil spills, bunkering of fuel, etc.</p> <p>PC2. operate and maintain lifesaving and firefighting appliance</p> <p>PC3. monitor safe running of machinery and recording of tank and engine parameters</p> <p>PC4. usage of various tools, tackles and maintenance equipment</p> <p>PC5. perform routine maintenance and basic troubleshooting</p> <p>PC6. keep the engine room bilge clean of oil and oily water</p> <p>PC7. record all tank parameters and read related instruments</p>
Training for engine and part overhauling	<p>To be competent, the user/individual on the job must be able to guide crew to:</p> <p>PC8. follow safety precautions and SOPs when overhauling</p> <p>PC9. check for safety devices on the main engine and the auxiliary engine</p> <p>PC10. check that instruments and their reading to see functioning of the main and auxiliary engines</p> <p>PC11. check tank levels and gauges and draw inferences</p> <p>PC12. detailed engine dismantling, over hauling and assembling procedure</p> <p>PC13. open ballast systems and trouble shoot pumping system</p>
Training for welding, cutting and machining	<p>To be competent, the user/individual on the job must be able to guide the crew to:</p> <p>PC14. take necessary precautions while using tools</p> <p>PC15. identify the right tool for different requirements</p> <p>PC16. use the tool in the right way with all necessary precautions and SOPs</p> <p>PC17. perform checklist of precautions before welding</p> <p>PC18. safe stowage of maintenance equipment and disposal of maintenance wastes</p>
Knowledge and understanding (K)	
E. Organizational	The individual on the job needs to know:

LSC/N4205

Onboard training of crew members for engine operations

<p>context (Knowledge of the company / organization and its processes)</p>	<p>KA1. organizational procedures and SOPs for tasks at hand, documentation policy and emergency responses, internal communication over network</p> <p>KA2. security and safety procedures to be followed</p> <p>KA3. reporting structure of the organization for escalation of issues</p> <p>KA4. risk and impact of not following defined procedures/work instructions</p> <p>KA5. coding system followed to communicate using flags, hand signals and sound signals</p>
<p>B. Technical knowledge</p>	<p>The individual on the job needs to know and understand:</p> <p>KB1. various types of valves and the major components</p> <p>KB2. safe operating procedure for opening and closing of valve</p> <p>KB3. identify various types of valves, pumps and cocks used for shipboard application, their components, usage and SOP for overhauling</p> <p>KB4. types of pumps in engine room</p> <p>KB5. precaution before starting a pump</p> <p>KB6. types of joints used for pipeline</p> <p>KB7. precaution to be taken before commencing repair work</p> <p>KB8. different types of oil and air filters used on board</p> <p>KB9. hazards of cleaning filter on a running machinery</p> <p>KB10. PPE to be worn during cleaning or repairing various equipment</p> <p>KB11. checks to be made on a filter during cleaning</p> <p>KB12. use of propelling and shafting</p> <p>KB13. preservation of equipment in good condition</p> <p>KB14. preparation needed for starting an auxiliary diesel engine</p> <p>KB15. checks to be made on an operating auxiliary engine</p> <p>KB16. components of main engine</p> <p>KB17. risk involved in working with compressed air for auxiliary purpose</p>
<p>Skills (S)</p>	
<p>C. Core skills/ generic skills</p>	<p>Reading skills</p> <p>The user/individual on the job needs to know how to read:</p> <p>SA1. written instructions</p> <p>SA2. maps and routes</p> <p>SA3. operating manuals and SOPs</p> <p>SA4. inventory counts and records</p> <p>Writing skills</p> <p>The user/individual on the job needs to know how to:</p> <p>SA5. write instructions</p> <p>SA6. deliver presentations and classes</p> <p>SA7. write daily reports</p> <p>Oral communication (listening and speaking skills)</p> <p>The user/individual on the job needs to know how to:</p>

LSC/N4205

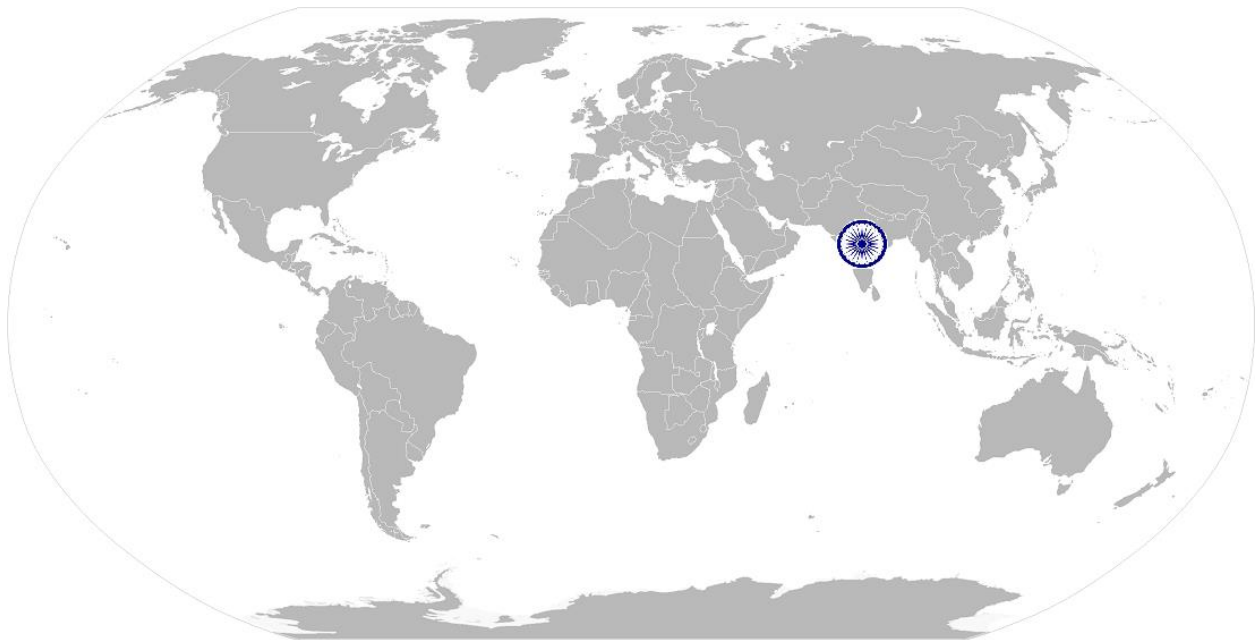
Onboard training of crew members for engine operations

	SA8. communicate with officers, masters and co-workers SA9. collect information from masters
D. Professional skills	Decision making
	The user/individual on the job needs to know how to: SB1. decide on cases and specific instances that needs to be highlighted during training SB2. decide basic precautions that need to be emphasized during training SB3. identify order of activities for training
	Plan and organize
	The user/individual on the job needs to know how to: SB4. plan and estimate the time for each activity SB5. maintain punctuality and respond in a timely manner SB6. prioritize and execute tasks based on instructions SB7. be a team player and achieve joint goals
	Customer centricity
	The user/individual on the job needs to know and understand: SB8. importance of timely circulation of information SB9. catering to urgencies and priority requests as per the instructions
	Problem solving
	The user/individual on the job needs to know how to: SB10. identify new and innovative ways for on job training SB11. suggest interactive methods and tasks for enforcing learning
	Analytical thinking
	The user/individual on the job needs to know how to: SB12. analyse the usual challenges in learning based on past experience and provide higher focus on the same
Critical thinking	
The user/individual on the job needs to know how to: SB13. adjust based on the intellect of each deck hand to provide effective learning SB14. explain precautions and risks of not following the same onboard the vessel	

NOS Version Control

NOS Code	LSC/N4205		
Credits(NSQF)	TBD	Version number	1.0
Industry	Logistics	Drafted on	30/06/2018
Industry Sub-sector	Inland waterways	Last reviewed on	15/10/2018
Occupation	Engine operations	Next review date	15/10/2021

National Occupational Standard



Overview

This unit is about performing tug vessel operations

LSC/N4106

Manage tug vessel operations

National Occupational Standard

Unit Code	LSC/N4106
Unit Title (Task)	Manage tug vessel operations
Description	This unit is about performing tug vessel operations
Scope	<p>This unit/task covers the following:</p> <ul style="list-style-type: none"> • Preparing for towing operation • Towing of vessel <p>Range: Tug vessel and towing equipment cum accessories, navigational aids, simulator, computer, projector, stationery, worksheets, etc.</p>
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
Preparing for towing operation	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. check the engine and power systems of tug boat for fitness with respect to operations and regulatory compliance</p> <p>PC2. check that the crew is certified for tug operations and have the requisite Personal Protective Equipment (PPEs)</p> <p>PC3. check that the towing gear and equipment - bollard, fairleads, sheaves, wires and ropes, etc. are in good condition and functional</p> <p>PC4. check that the towing equipment and vessel are suitable for towing the vessel</p> <p>PC5. prepare tow plan identifying the route to taken and planned passage including safe time of operation during day and night; factor in obstacles, traffic, weather conditions, adjacent river and coastal berths, tight bends, tug connection to be used, etc.</p> <p>PC6. check for presence of sufficient fuel, water and spares on board</p> <p>PC7. check for navigational information and warnings</p> <p>PC8. identify the Bollard Pull (BP), the width and size of vessel to calculate the displacement and the speed for tug operations</p> <p>PC9. identify the pivot point for towing based on currents, weather, etc. for safe and stable towing of the vessel</p> <p>PC10. estimate the position of tug vessel with respect to the towed vessel factoring in the no. of tugs, pivot point, speed of towing, etc.</p> <p>PC11. estimate the number of tows required and the towing position based on the number of vessel and barges to be towed together</p>
	<p>PC12. check that all emergency equipment and emergency plan is in place</p> <p>PC13. check that all watertight hatches and doors are closed</p> <p>PC14. provide instructions to crew as per the towing plan</p> <p>PC15. check for stability of both vessels prior to commencement of operation</p> <p>PC16. move the tug vessel to the aft or forward point of the vessel to be towed factoring in the speed and suction for securing the tugs</p> <p>PC17. check with crew if the tug is connected and secured</p> <p>PC18. carefully start the tug vessel and apply power to displace water for moving</p>

LSC/N4106

Manage tug vessel operations

	<p>the vessel to be towed, taking precautions against the water currents, girting, top-sizing, capsizing, etc.</p> <p>PC19. adjust for obstacles, wind speed and currents, traffic factoring the girting, vessel speed, etc.</p> <p>PC20. regularly check during operations if the towing arrangement and watertight integrity of the tow are satisfactory</p> <p>PC21. prepare for and address emergency towing scenarios as per the emergency towing SOP in case of loss of tow wire</p> <p>PC22. navigate the towed vessel to the destination and slowly brake factoring the vessel inertia to prevent capsizing or girting</p> <p>PC23. dis-engage the tow from the vessel</p>
<p>A. Organizational context</p>	<p>The individual on the job needs to know:</p> <p>KA1. organizational procedures and SOPs for tasks at hand, documentation policy and emergency responses, internal communication over network</p> <p>KA2. security and safety procedures to be followed</p> <p>KA3. reporting structure of the organization for escalation of issues</p> <p>KA4. risk and impact of not following defined procedures/work instructions</p> <p>KA5. coding system followed to communicate using flags, hand signals and sound signals</p>
<p>B. Technical knowledge</p>	<p>The individual on the job needs to know and understand:</p> <p>KB1. different type of tug boats and their operations</p> <p>KB2. different type of tug connections – hawser based, Integrated unit, articulated unit, etc. and their benefits</p> <p>KB3. use of different tug equipment - bollards, fairleads, sheaves, wires, tow connections, etc. and their uses</p> <p>KB4. effect of ocean and river currents, weather, suction from towed vessel and other environmental factors that can impact towing of vessel</p> <p>KB5. responsibility, manning, certification and training of tug vessel and crew</p> <p>KB6. use of PPEs, making tow plans and emergency plans and SOP for contingencies</p> <p>KB7. mooring operating using tug vessels</p> <p>KB8. understanding of vessel safety during tug, girting, pivot points, Bollard pull, position for vessel towing, displacement and speed calculations, etc.</p> <p>KB9. coastal and inland navigational routes for tug vessels and their limitations</p>
<p>Skills (S)</p>	
<p>C. Core skills/ generic skills</p>	<p>Reading skills</p> <p>The user/individual on the job needs to know how to read:</p> <p>SA1. written instructions</p> <p>SA2. maps and routes</p>

LSC/N4106

Manage tug vessel operations

	SA3. SOPs and operating manuals SA4. messages on various communication systems
	Writing skills
	The user/individual on the job needs to know how to: SA5. write instructions SA6. write daily reports
	Oral communication (listening and speaking skills)
	The user/individual on the job needs to know how to: SA7. communicate with officers, port terminals, other vessels and co-workers SA8. collect information from officers
D. Professional skills	Decision making
	The user/individual on the job needs to know how to: SB1. decide on the navigation route and speed for vessels SB2. decide on the work allotment of crew on board
	Plan and organize
	The user/individual on the job needs to know how to: SB3. plan and estimate the time for each activity SB4. maintain punctuality and respond in a timely manner SB5. prioritize and execute tasks based on instructions SB6. be a team player and achieve joint goals
	Customer centricity
	The user/individual on the job needs to know and understand: SB7. importance of timeliness for operations and circulation of information SB8. urgency of priority requests as per the instructions
	Problem solving
	The user/individual on the job needs to know how to: SB9. inform the ranking in-charge regarding adverse observations in engine, navigation route, obstacles, etc. SB10. suggest make shift arrangements, trouble shooting, route alterations, etc.
	Analytical thinking
	The user/individual on the job needs to know how to: SB11. analyse the position of a vessel or obstacle on the map and its estimated route SB12. analyse the speed and torque for a certain tug operation based on vessel size and terrain of river/ ocean bed
	Critical thinking
	The user/individual on the job needs to know how to: SB13. observe obstacles and dangerous operations by other vessels and take precautions

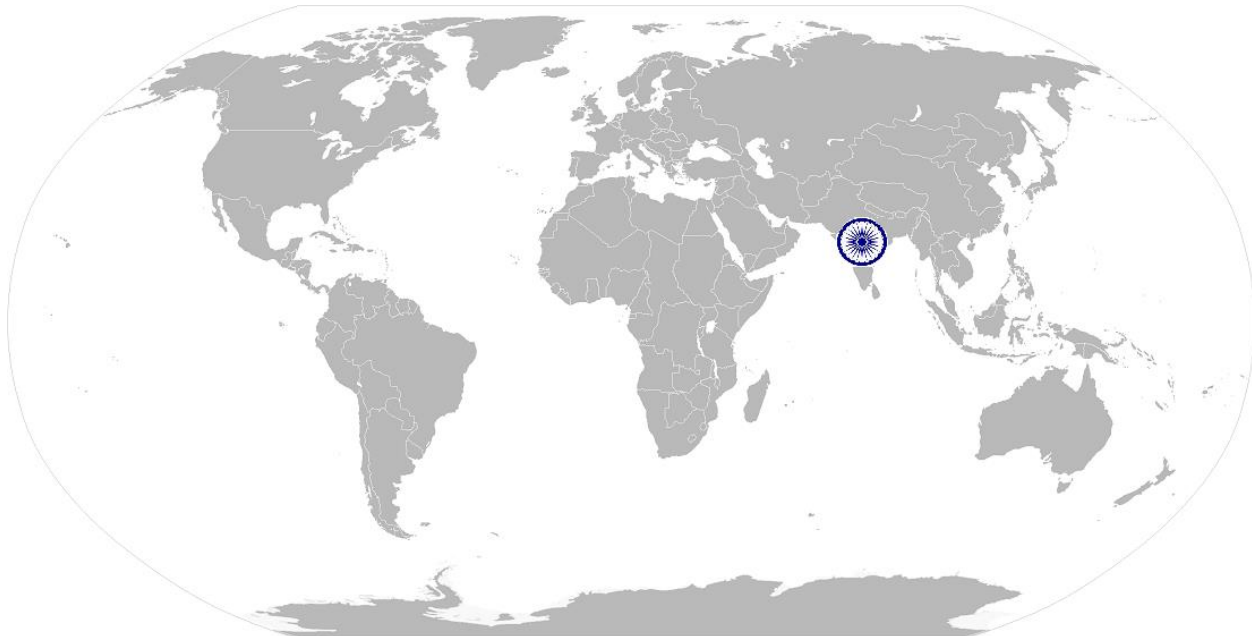
LSC/N4106

Manage tug vessel operations

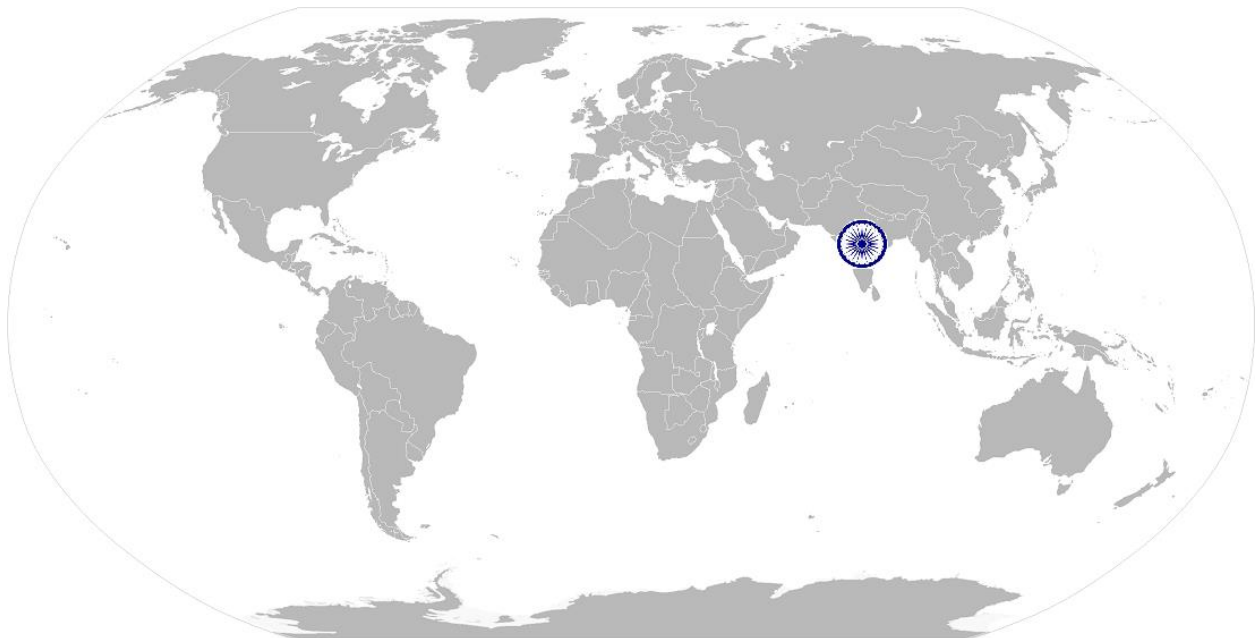
	<p>SB14. assess weather and environment for performing a tug operation</p> <p>SB15. focus on task at hand and complete it without errors and delays</p>
--	---

NOS Version Control

NOS Code	LSC/N4106		
Credits(NSQF)	TBD	Version number	1.0
Industry	Logistics	Drafted on	30/06/2018
Industry Sub-sector	Inland waterways	Last reviewed on	15/10/2018
Occupation	Vessel Operations (Vessel planning)	Next review date	15/10/2021



National Occupational Standard



Overview

This unit is about Profit and Loss Account Management and Cost Accounting

LSC/N9603

Profit and loss account management and cost accounting

National Occupational Standard

Unit Code	LSC/N9603
Unit Title (Task)	Profit and Loss Account management and cost accounting
Description	This unit is about about Profit and loss account management and cost accounting
Scope	<p>This unit/task covers the following:</p> <ul style="list-style-type: none"> Profit and loss account management and review Analysis of activity based costs <p>Range: Computers, Management information system (MIS), Enterprise Resource Planning (ERP), performance review softwares</p>
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
Profit and Loss account management and review	<p>To be competent, the user/ individual must be able to:</p> <p>PC1. review department wise budgets and make amendments if required</p> <p>PC2. collate and prepare annual budgets along with sales and profit targets</p> <p>PC3. schedule both capital and operational expenses accordance to the budget</p> <p>PC4. analyze and review the P&L performance for the unit</p> <p>PC5. analyze profitability and business performance trends department wise</p> <p>PC6. periodically analyze variances in the expenditure with respect to the budget and accordingly take corrective actions</p> <p>PC7. periodically analyze the physical output and performance with respect to the budget and identify places for improvements</p> <p>PC8. undertake adequate risk management so as to meet Key Performance targets</p> <p>PC9. manage and control budgets of different departments on a periodic basis to optimize financial performance</p>
Analysis of activity based costs	<p>PC10. periodically review activity and department financial performance</p> <p>PC11. identify the activities having high variance with respect to the budgeted costs or the forecasted revenue</p> <p>PC12. analyze the actual cost w.r.t physical output to draw inferences</p> <p>PC13. identify reasons in discussion with department and take remedial and corrective actions where-ever required</p> <p>PC14. work towards rationalizing the cost of the activity wise operations to achieve higher financial goals</p>
Knowledge and understanding (K)	
A. Organizational context (Knowledge of the company / organization and its processes)	<p>The individual on the job needs to know and understand:</p> <p>KA1. vision, mission and values of the company</p> <p>KA2. company's reporting structure to support and expedite project activities</p> <p>KA3. company's policy and work instructions on quality standards as well as documentation policy</p> <p>KA4. importance of the individual's role in the workflow</p>

LSC/N9603

Profit and loss account management and cost accounting

	<p>KA5. company's policy on business ethics and code of conduct</p> <p>KA6. business and performance of the company</p> <p>KA7. knowledge repository and various projects done by the company</p> <p>KA8. occupational health and safety standards, handling of special and dangerous goods, etc.</p> <p>KA9. procedures for dealing with loss or damage to goods</p> <p>KA10. value of items handled and implications of damage/loss of the same</p> <p>KA11. risk and impact of not following defined work, safety and security procedures</p> <p>KA12. company policy defined TATs and output metrics for daily operations</p> <p>KA13. coding system followed to label items</p> <p>KA14. IT system and ERP system of the organization</p> <p>KA15. organizational goal for the year as well as branch/ territory targets</p>
<p>B. Technical knowledge</p>	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. process flow of service operation and understanding of basic supply chain value chain</p> <p>KB2. state/country taxes and routing</p> <p>KB3. local and global geographies</p> <p>KB4. use of enterprise resource planning software (ERP) and the MIS</p> <p>KB5. use of tools for documentation: MS excel and MS Word, etc.</p> <p>KB6. basics of statistical and quantitative analysis tools</p> <p>KB7. use of spreadsheets to tabulate and analyze the data</p> <p>KB8. structure and implications of fees and charges involved in transportation, warehousing, processing clearances, etc.</p> <p>KB9. transit rules and regulations</p> <p>KB10. working and capacities of different MHEs and other equipment used for handling the shipment</p> <p>KB11. procurement related concepts like Purchase order (PO), Invoices, procedures etc.</p> <p>KB12. significance of team coordination to achieve revenue and productivity targets of the organization</p> <p>KB13. various techniques for performance improvement and cost accounting</p> <p>KB14. budgeting exercises</p>
<p>Skills (S)</p>	
<p>A. Core skills/ generic skills</p>	<p>Reading skills</p> <p>The user/individual on the job needs to know how to read:</p> <p>SA1. company's work instructions, customer requirement and quality policy</p> <p>SA2. legal policies and regulations</p> <p>SA3. internal communications memorandums</p> <p>SA4. written instructions, standard operating procedures</p> <p>SA5. SOPs and documents required for all operational activities</p> <p>SA6. inferences drawn from the system reports</p>

LSC/N9603

Profit and loss account management and cost accounting

	SA7. financial statements
	Writing skills
	The user/individual on the job needs to know how to:
	SA8. maintain the record of as per company's policy
	SA9. make the note of instructions to team members
	SA10. develop operating procedures and update them
	SA11. write communications, letters, etc.
	SA12. prepare daily reports, checklists
	SA13. prepare reports and presentations based on data analytics and ERP reports
	Oral communication (listening and speaking skills)
The user/individual on the job needs to know how to:	
SA14. communicate with client, external coordinators, internal staff effectively	
SA15. motivate employees	
SA16. share experiences and provide guidance to juniors and peers	
B. Professional skills	Decision making
	The user/ individual on the job needs to know and understand how to:
	SB1. assess business performance to identify need for interventions
	SB2. identify areas for improvement and accordingly suggest remedial action
	SB3. identify areas for budget modifications and budget cuts
	SB4. decide on ways to improve performance
	Plan and organize
	The user/ individual on the job needs to know how to:
	SB5. plan and organise performance review sessions
	SB6. make action plan for performance improvement
	SB7. organise projects/ training plans for performance improvement
	SB8. monitor the activities of the performance improvement plan
	Customer centricity
	The user/ individual on the job needs to know how to:
	SB9. sensitive employees towards customer requirements
	SB10. focus on customer satisfaction as a key part of the performance review
	Problem solving
	The user/individual on the job needs to know how to:
	SB11. identify reasons for variances and resolve them in discussion with team and management
	SB12. suggest new technologies, capital purchases, operational strategies to enhance operational and financial performance
	Analytical thinking
	The user/individual on the job needs to know how to:
	SB13. analyze reasons for variances across departments
	SB14. compare with past trends to see if it is seasonal or cyclical in nature

LSC/N9603

Profit and loss account management and cost accounting

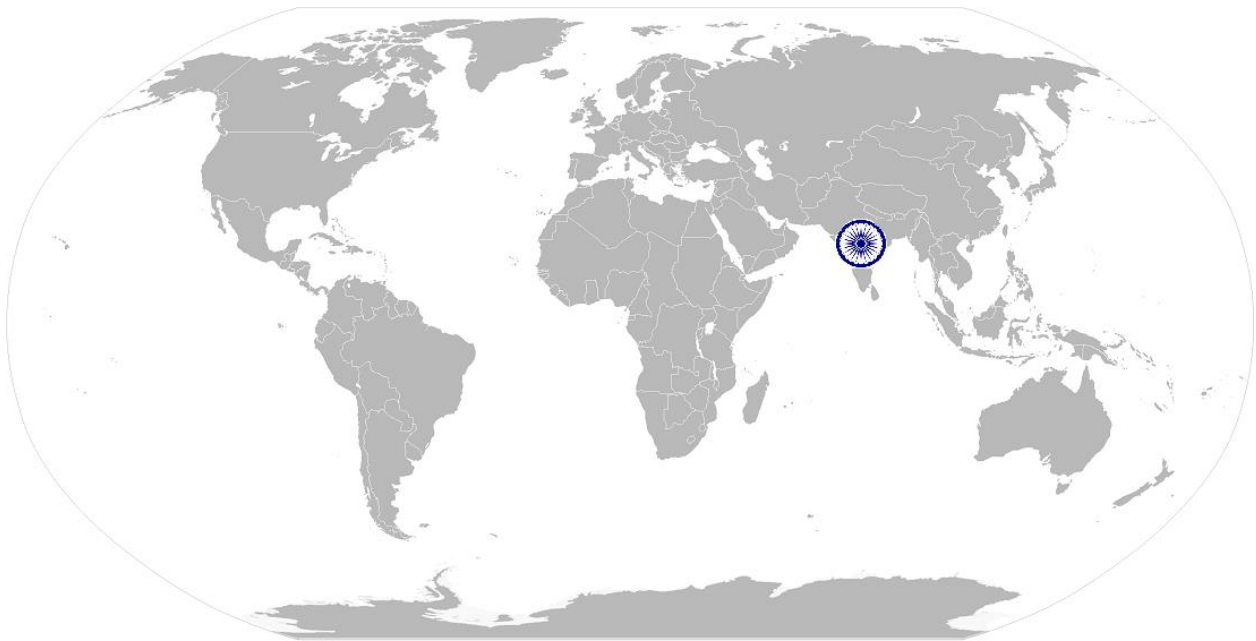
	SB15. identify areas that are crucial for improvement and accordingly revisit budgets
	Critical thinking
	The user/individual on the job needs to know how to: SB16. assess the financial performance and make strategic decisions regarding budgets, focus areas SB17. motivate and ensure output so as to achieve financial goals

NOS Version Control:

NOS Code	LSC/N9602		
Credits(NSQF)	TBD	Version number	1.0
Industry	Logistics	Drafted on	30/06/2018
Industry Sub-sector	Generic	Last reviewed on	15/10/2018
Occupation	Generic	Next review date	15/10/2021



National Occupational Standard



Overview

This unit is about planning the container and cargo storage in the yard and overseeing movement operations

LSC/N3511

Perform ship and yard planning

National Occupational Standard

Unit Code	LSC/N3511
Unit Title (Task)	Perform ship and yard planning
Description	This unit is about about container tracking and developing vessel berthing plans
Scope	<p>This unit/task covers the following:</p> <ul style="list-style-type: none"> Plan yard to receive cargo Inspect yard to check for space utilization, segregation of cargo, cleanliness, necessary precautions <p>Range: Stationery, Standard Operating Procedures (SOP), Radio-Frequency Identification (RFID)scanner, bar code scanner, markers, Personal Protective Equipment (PPEs), Enterprise Resource Planning (ERP), computer, display board, printer, Material Handling Equipment (MHEs), etc</p>
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
Plan yard to receive cargo	<p>To be competent, the user/ individual must be able to:</p> <p>PC1. obtain information regarding the vessel details - docking schedule and berth, bays and containers to be unloaded and loaded</p> <p>PC2. obtain information regarding movement of containers / cargo from port terminals to Container Freight Stations (CFS)/ Inland Container Depots (ICD) or client</p> <p>PC3. check yard's capacity utilization and open bays and locations</p> <p>PC4. assess the quantity of cargo to be moved and plan storage space for cargo</p> <p>PC5. allocate resources for cargo movement</p> <p>PC6. communicate the task at hand to cargo equipment handlers, manual cargo handlers and lifting and vessel supervisors</p> <p>PC7. discuss the plan for cargo movement with the operators to finalize the container/ cargo movement plan</p> <p>PC8. review that all equipment and workforce is ready for operations at the time of vessel docking / transport arrival</p> <p>PC9. review that the necessary precautions and PPEs have been taken</p> <p>PC10. deploy resources for loading/ unloading as per cargo stowage plan</p> <p>PC11. coordinate with cargo surveyor for safe and secured loading/ unloading</p>
Inspect yard to check for space utilization, segregation of cargo, cleanliness, necessary precautions	<p>To be competent, the user/ individual must be able to:</p> <p>PC12. conduct periodic inspections of the yard</p> <p>PC13. check for cleanliness, adequate use of PPEs, regulations and norms for workforce are clearly followed</p> <p>PC14. check that cargo bays are clearly marked and segregated, containers and cargo are stored as per prescribed norms</p> <p>PC15. check that equipment are parked are right positions</p> <p>PC16. check that all necessary precautions for storage of hazardous cargo is in place</p>

LSC/N3511

Perform ship and yard planning

	<p>including emergency services</p> <p>PC17. prepare inspection report highlighting any anomaly or changes, as required</p>
Knowledge and understanding (K)	
B. Organizational context (Knowledge of the company / organization and its processes)	<p>The individual on the job needs to know and understand:</p> <p>KA1. organizational procedures and SOPs for tasks at hand, documentation policy and emergency responses</p> <p>KA2. security and safety procedures to be followed</p> <p>KA3. reporting structure of the organization and the supplier for escalation of issues</p> <p>KA4. risk and impact of not following defined procedures/work instructions</p> <p>KA5. coding system followed for different type of cargo and their distress codes</p>
B. Technical knowledge	<p>The individual on the job needs to know and understand:</p> <p>KB1. basics of operations in a port terminal, ICD and CFS</p> <p>KB2. use of various cargo handling equipment</p> <p>KB3. use of rope, flags and other manual equipment</p> <p>KB4. vessel layout and loading and unloading activities</p> <p>KB5. procedures of tank cleaning, cargo movement</p> <p>KB6. requirements regarding handling of cargo</p> <p>KB7. different type of vessels and cargo and container sizes</p> <p>KB8. different type of cranes and MHEs – their capacities, constraints and usage</p> <p>KB9. handling of hazardous and non-hazardous cargo</p> <p>KB10. marking of material and people movement areas</p> <p>KB11. stuffing and de-stuffing norms with respect to different cargo</p> <p>KB12. special characteristics and handling requirements of shipments, if any</p>
Skills (S)	
C. Core skills/ generic skills	Reading skills
	<p>The user/individual on the job needs to know how to read:</p> <p>SA1. written instructions</p> <p>SA2. shipping manifest, Bill of lading shipping bills and related documents</p> <p>SA3. ERP and computer generated reports</p> <p>SA4. cargo stowage plans and vessel plans</p> <p>SA5. SOPs and safety regulation manuals</p>
	Writing skills
	<p>The user/individual on the job needs to know how to write:</p> <p>SA6. work-orders and instructions</p> <p>SA7. checklist of activities, delays, undelivered items, contacts, etc</p> <p>SA8. daily reports</p>
	Oral communication (listening and speaking skills)
	<p>The user/individual on the job needs to know how to:</p> <p>SA9. communicate with customers, fireght operators, transporters, shipping</p>

LSC/N3511

Perform ship and yard planning

	<p>companies, other supervisors and port authorities</p> <p>SA10. communicate with cargo equipment operators and ground staff over very high frequency (VHF) radio</p> <p>SA11. guide cargo handlers for smooth operations</p>
D. Professional skills	Decision making
	<p>The user/individual on the job needs to know how to:</p> <p>SB1. decide on required workforce and equipment for performing a particular task</p> <p>SB2. assess the environmental condition and type of cargo to assess if it is safe for operations</p> <p>SB3. resolve a problem quickly internally</p> <p>SB4. prioritise shipments</p> <p>SB5. decide on deployment of alternate resources when required</p>
	Plan and organize
	<p>The user/individual on the job needs to know how to:</p> <p>SB6. plan and estimate the co-ordination required for resolving a query.</p> <p>SB7. maintain punctuality</p> <p>SB8. respond to the client in a timely manner</p> <p>SB9. prioritize and execute tasks based on client requirements</p> <p>SB10. make work plans and resource allocation plans</p> <p>SB11. make checks on execution of work plans</p> <p>SB12. be a team player and achieve joint goals</p>
	Customer centricity
	<p>The user/individual on the job needs to know how to:</p> <p>SB13. adhere to the customer timelines</p> <p>SB14. address the urgency regarding shipments and activities</p>
	Problem solving
	<p>The user/individual on the job needs to know how to:</p> <p>SB15. make adjustment to working requirements for difficult weathers and hazardous goods</p> <p>SB16. identify trends/common causes for delays, damages, etc.</p> <p>SB17. co-ordinate and handle major issues with different departments</p> <p>SB18. identify bottlenecks and operational problems and suggest remedial action</p>
	Analytical thinking
	<p>The user/individual on the job needs to know how to:</p> <p>SB19. assess the resource requirement for a particular task at hand</p> <p>SB20. assess and prepare for backup resources in case of delays</p> <p>SB21. plan for cargo movement so that the resources and storage space is optimally utilised</p>
Critical thinking	
<p>The user/individual on the job needs to know and understand how to:</p> <p>SB22. resolve issues in a quick and cost effective manner</p>	

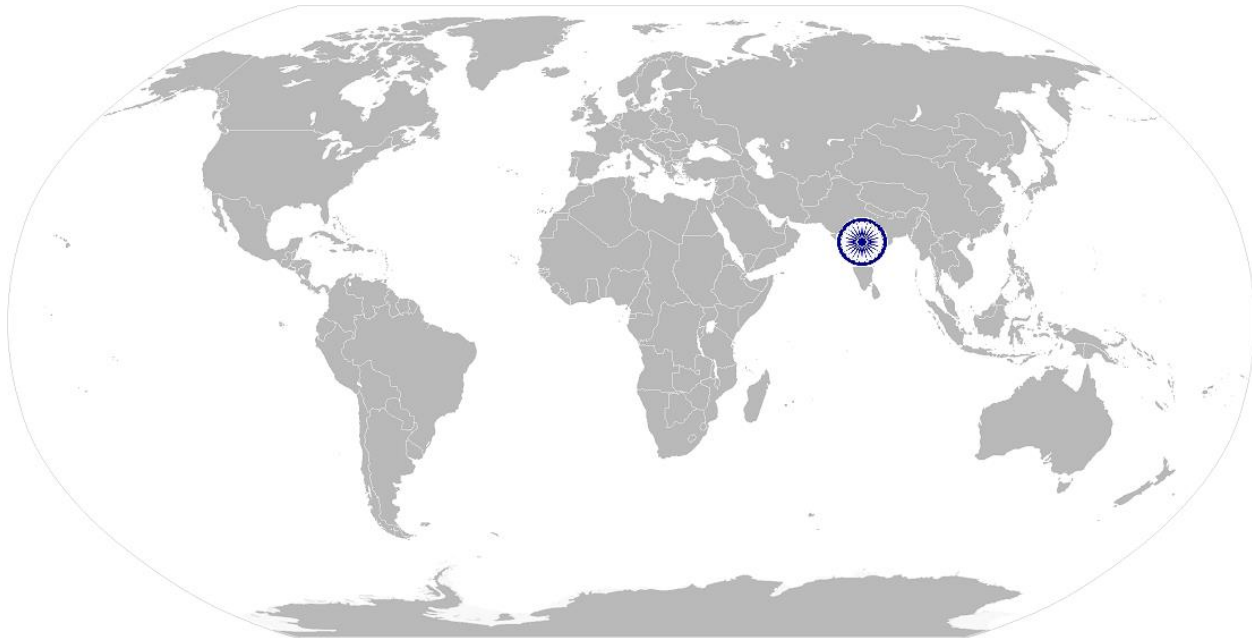
LSC/N3511

Perform ship and yard planning

	<p>SB23. develop work plans factoring in external factors</p> <p>SB24. check that all security measures and safety protocols are followed at all times</p>
--	--

NOS Version Control

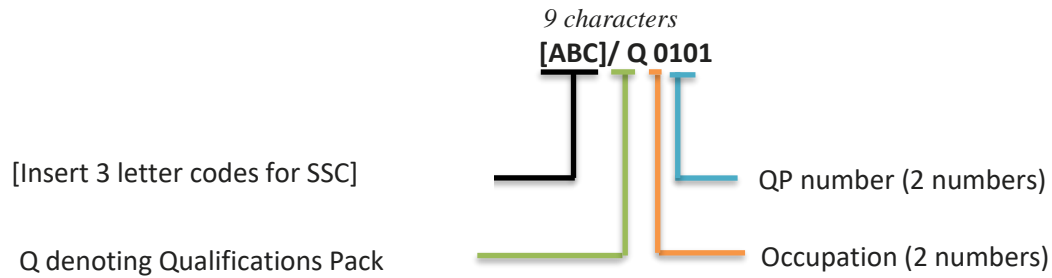
NOS Code		LSC/N3511	
Credits(NSQF)	TBD	Version number	1.0
Industry	Logistics	Drafted on	30/06/2018
Industry Sub-sector	Port terminals, CFS and ICDs	Last reviewed on	15/10/2018
Occupation	Port Operation & Management (cargo handling, yard planning, vessel planning)	Next review date	15/10/2021



Annexure

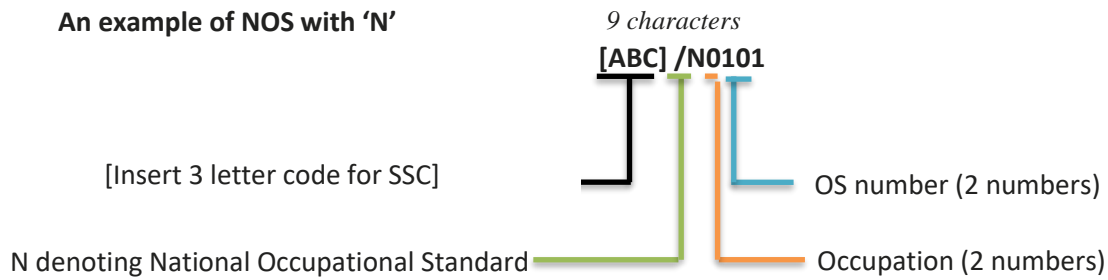
Nomenclature for QP and NOS

Qualifications Pack



Occupational Standard

An example of NOS with 'N'



[Back to top...](#)

The following acronyms/codes have been used in the nomenclature above:

Sub-sector	Range of Occupation numbers
Warehousing	1 to 9
Land Transportation	10 to 14
EXIM/ Freight Forwarding/ Customs Clearance	21 to 23
Courier/Express	15 to 20
E-Commerce	24 to 30
Supply Chain	31 to 34
Port Terminals, ICD and CFS	35 to 41
Inland Waterways	42 to 46
Liquid Logistics	47 to 49
Air Cargo Operations	61 to 62
Rail Logistics	50 to 55
Cold Chain Logistics	86 to 94
Generic Occupations	95 to 99

Sequence	Description	Example
Three letters	Industry name	LSC
Slash	/	/
Next letter	Whether QP or NOS	Q / N
Next two numbers	Occupation code	01
Next two numbers	OS number	01

CRITERIA FOR ASSESSMENT OF TRAINEES

Job Role Vessel Operator Grade 2

Qualification Pack LSC/ Q4102

Sector Skill Council Logistics

Guidelines for Assessment

1. Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each PC
2. The assessment for the theory part will be based on knowledge bank of questions created by the SSC
3. Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training center (as per assessment criteria below)
4. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training center based on this criterion
5. To pass the Qualification Pack, every trainee should score a minimum of 70% in every NOS
6. In case of unsuccessful completion, the trainee may seek re-assessment on the Qualification Pack

Compulsory NOS					
Total Marks: 600				Marks Allocation	
Assessment Outcomes	Assessment Criteria for Outcomes	Total Marks	Out of	Theory	Skills Practical
LSC/N4104 Perform navigation	PC1. check map for available routes	100	6	2	4
	PC2. check weather and sea condition forecasts		6	2	4
	PC3. develop vessel's sailing plan and direction		6	2	4
	PC4. advise on the path and estimated time to the destination		6	2	4
	PC5. calculate expected time of arrival (ETA)		6	2	4
	PC6. communicate and update the port on the progress of the vessel		6	2	4
	PC7. follow the planned route		6	2	4
	PC8. use tide tables and charts to determine tidal effects and ocean current effects on water levels and vessel		6	2	4
	PC9. maintain general surveillance of the ship		6	2	4
	PC10. record vessel's movement to avoid collision		6	2	4
	PC11. maintain nautical charts, publications and equipment		4	1	3
	PC12. prepare and share weather reports to stakeholders		4	1	3

	PC13. monitor the progress of the ship against the plan		4	1	3
	PC14. handover the required details to the reliever		4	1	3
	PC15. assist the master in devising a plan of action based on ship's elements		4	1	3
	PC16. record minimum depth of water, wind's force, tide, current and general condition of the berth		4	1	3
	PC17. prepare contingency plan for any change in circumstances		4	1	3
	PC18. engage in manual steering if required		4	1	3
	PC19. listen to the instructions as given by the pilot about the course of action		4	1	3
	PC20. note down all navigational marks in the ship manoeuvring book		4	1	3
			100	30	70
LSC/N4005 Perform advanced preventive maintenance	PC1. perform basic check of cranes, derricks, winches and related equipment	100	5	2	3
	PC2. ensure safe working load (SWL) or working load limit (WWL) of equipment		6	2	4
	PC3. inspect the friction brake lining regularly in the capstan and replace whenever necessary		5	2	3
	PC4. check wire cable in case if they are broken or rust		4	1	3
	PC5. inspect winch drums for deterioration of friction		5	2	3
	PC6. examine hatch cover and hatch beams for corrosion, cleanliness, cracks and material failure		5	2	3
	PC7. lubricate the working parts and record the wear and tear		4	1	3
	PC8. take step to prevent oil or grease from accumulating on the brake surface		5	2	3
	PC9. replace rubber gasket immediately in case found missing or broken		4	1	3
	PC10. report to the officer in case of any failure, damage or malfunction		4	1	3
	PC11. move different type of cargo and loads using equipment - slings, lifts and in a secure and safe manner		4	1	3
	PC12. check for the load limit on scaffolding		5	2	3
	PC13. take necessary precautions like fix the safety harness and connect the fall arrester device, wear PPEs, have standby emergency support personnel, secure ladder and stage for working, etc. prior to working		4	1	3
	PC14. setup and use scaffolding by securing the scaffolding platform using guardrails, mid-rails		4	1	3

	and toe boards				
	PC15. take due precautions when climbing portable ladders		4	1	3
	PC16. perform routine maintenance work aloft using various equipment related to greasing, oiling or basic fitting and carpentry		4	1	3
	PC17. perform maintenance working over-side the vessel on the working stage rigged via ladders		4	1	3
	PC18. keep the necessary equipment – hand-tools, drills, paint and paint brush, chisel and hammers, etc. in a tightly rigged bucket alongside to work		4	1	3
	PC19. use donning and breathing equipment to perform maintenance in enclosed spaces strictly as per SOP		4	1	3
	PC20. use chemicals and strong detergents with due precautions and PPEs for cleaning and maintenance activities		4	1	3
	PC21. pour chemical in water container for dilution		4	1	3
	PC22. check that the area is well ventilated		4	1	3
	PC23. report to master or officer in case of any accidents, injuries, damages and malfunction of equipment		4	1	3
			100	30	70
LSC/N4006 Perform welding, cutting and machining	PC1. remove dust, dirt, grease, oil, etc. from the metal piece to be weld with the help of wire brush or power wire	100	5	2	3
	PC2. insert a suitable electrode in the electrode holder at an angle of 60° to 80°		5	2	3
	PC3. wear the necessary PPE and face shield to protect the eyes and face from harmful ultraviolet and infrared radiation		6	2	4
	PC4. select proper current and polarity		6	2	4
	PC5. contact the electrode with the metal and separate it at proper distance to produce an arc		6	2	4
	PC6. brush off the slag after the joint has cooled with the chipping hammer		6	2	4
	PC7. take out the electrode holder to break arc		6	2	4
	PC8. switch off the supply of current and shut off acetylene valve and the oxygen		6	2	4
	PC9. check that filled in gas cylinders and empty gas cylinders are kept separate		6	2	4
	PC10. check lathe for any damage or missing part		4	1	3
	PC11. wear protective eyewear and PPE		4	1	3
	PC12. clamp the work piece tightly to the lathe		4	1	3

	PC13. ensure that cutting of the work piece with the lathe is done as recommended by the manufacturer		4	1	3
	PC14. follow safety procedure while fabrication		4	1	3
	PC15. clean the area after using lathe		4	1	3
	PC16. open and close valves as per procedure		4	1	3
	PC17. inspect pipes at regular intervals as described in the ship's maintenance schedule		4	1	3
	PC18. inspect for leakages, switch off the relevant pump and investigate the source of leakage		4	1	3
	PC19. make temporary repair by binding or clamping		4	1	3
	PC20. inspect the inside of the pipes looking for cause of erosion and corrosion		4	1	3
	PC21. repair all leaks as per procedure		4	1	3
			100	30	70
LSC/N3531 Allocate resources and manage stores	PC1. obtain details of vessel route and prepare tasks for workforce to complete various maintenance activities	100	7	2	5
	PC2. prepare schedule for maintenance of deck and engine room equipment and machineries		7	2	5
	PC3. get the work plan approved from the vessel chief officer/ master		7	2	5
	PC4. allocate tasks to crew along with necessary equipment		7	2	5
	PC5. identify priorities and allocate adequate resources to address various tasks		6	2	4
	PC6. provide guidance to assistants and workers if required and suggest ways to resolve issues		6	2	4
	PC7. escalate the matter to chief officer/ master for any external technical support		6	2	4
	PC8. liaise with officers to streamline vessel operations		6	2	4
	PC9. conduct inspection of vessel for safety, security of cargo and vessel, cleanliness, marking of cargo areas, fitness of equipment and emergency systems, etc.		6	2	4
	PC10. prepare daily reports on task performed by crew		6	2	4
	PC11. escalate issues with respect to operations, cargo handling, damages, injuries, service requirements, etc. to chief officer/ master		6	2	4
	PC12. maintain stock of inventory in the ship of different items – cargo handling tools, food items, clothing and linen, spare parts, etc.		6	2	4
	PC13. maintain stores under lock and key		4	1	3

	PC14. check cleanliness and hygiene of stock including rodent prevention, waste segregation, etc.		4	1	3
	PC15. provide items from stores as per authorized approvals		4	1	3
	PC16. keep a daily count of inventory and update the count register		4	1	3
	PC17. identify the items to be quarantines or disposed and take necessary approvals for action		4	1	3
	PC18. inform the chief officer/ master regarding re-placements and shortages		4	1	3
			100	30	70
LSC/N9904 Maintain integrity and ethics in operations	PC1. refrain from indulging in corrupt practices	100	5	2	3
	PC2. avoid using company's funds, property or resources for undertaking personal activities		5	2	3
	PC3. protect customer's information and ensure it is not misused		5	2	3
	PC4. protect data and information related to business or commercial decisions		5	2	3
	PC5. avoid acceptance of cash or kind from vendors for support or contract negotiations		5	2	3
	PC6. demonstrate and practice ethics in day-to-day processes and dealings with customers and colleagues		5	2	3
	PC7. avoid nepotism		5	2	3
	PC8. consult supervisor or senior management when in situations that may require differentiating between ethical and unethical		6	2	4
	PC9. report promptly all violations of code of ethics		5	2	3
	PC10. dress up and conduct in a professional manner		5	2	3
	PC11. communicate with clients and stakeholders in a soft and polite manner		5	2	3
	PC12. follow etiquettes in accordance to the place		5	2	3
	PC13. check for regulatory documentation and compliances for the shop floor as per information from the supervisor		6	2	4
	PC14. perform activities considering the regulatory requirements		5	2	3
	PC15. use PPEs in accordance to regulatory requirements		6	3	3
	PC16. identify the different types of dangerous goods and handling methodologies		6	3	3
	PC17. follow the SOP for handling of different types of dangerous goods		6	2	4

	PC18. consult supervisor or senior management when in situations that may require differentiating between ethical and unethical		5	2	3
	PC19. promptly report all regulatory violations		5	2	3
			100	40	60
LSC/N4102 Follow health and safety procedures in vessels	PC1. wear a life jacket and immersion suit	100	3	1	2
	PC2. safely jump from a height into the water		3	1	2
	PC3. swim while wearing lifejacket		3	1	2
	PC4. right an inverted life raft while wearing life jacket		3	1	2
	PC5. board a life raft or survival vessel from the vessel or the water while wearing life jacket		3	1	2
	PC6. keep afloat without life jacket		3	1	2
	PC7. operate survival craft, life raft and its equipment and communication devices		3	1	2
	PC8. assess the casualty and immediate medical needs and threat to own safety		3	1	2
	PC9. position casualty and apply resuscitation techniques		4	2	2
	PC10. apply measures to control bleeding, cover and secure burn injuries using bandages and emergency medical kit		3	1	2
	PC11. apply measures for basic shock management		3	1	2
	PC12. assist in rescue and transport of the casualty		3	1	2
	PC13. take due precautions like – segregate and store, ensure proximity to firefighting equipment, etc. while storing inflammable materials on-board the vessel		3	1	2
	PC14. regularly monitor the inflammable material and cargo for fire hazards		4	2	2
	PC15. organise and maintain the firefighting equipment to make it easily accessible and operable during emergencies		4	2	2
	PC16. check fire and smoke alarms for functionality		3	1	2
	PC17. keep the emergency response routes and escape routes clear		4	2	2
	PC18. use different protective equipment and high pressure breathing equipment		3	1	2
	PC19. use different type of firefighting equipment to extinguish a fire, when required		3	1	2
	PC20. participate in fire and emergency drills		3	1	2
	PC21. inform and take appropriate action when discovering a potential emergency		3	1	2
	PC22. recognize the emergency signal and		3	2	1

	respond as per the emergency plan				
	PC23. follow the designated escape routes		3	1	2
	PC24. follow safe and environmental friendly working practices		3	1	2
	PC25. follow precautions while entering closed areas and hazardous areas on-board the vessel		3	1	2
	PC26. maintain effective communications in person and while using vessel communication devices and systems		3	1	2
	PC27. follow vessel security plan		3	2	1
	PC28. identify security risks and threats, communicate and initiate action as per vessel security plan		4	2	2
	PC29. undertake regular vessel inspection with respect to vessel and cargo security		4	2	2
	PC30. check that all cargo containers, holds and hatches are secured		3	1	2
	PC31. check security equipment and system for functionality and maintenance		4	2	2
			100	40	60

Electives					
Elective 1.1 - Advanced Deck Operations - Vessel handling with steering					
Total marks 100				Marks allocation	
Assessment outcome	Assessment criteria	Total marks	Out of	Theory	Practical
LSC/N4105 Vessel handling with steering	PC1. prepare vessel coastal berthing schedule based on input from officer and port/ terminal, factoring in tides	100	9	3	6
	PC2. prepare vessel route map in inland waterways and identify key landmarks and markers for navigation		9	3	6
	PC3. check with deck staff regarding mooring lines and cargo clearance prior to berthing and drafting		7	2	5
	PC4. read and report observations in gyro compass and magnetic compass		9	3	6
	PC5. identify the cardinal, inter-cardinal points and by points		9	3	6
	PC6. convert reading of degrees to points and vice versa		7	2	5
	PC7. repeat helm orders and take action per the helm orders given		7	2	5
	PC8. confirm that the helm orders are carried out		8	2	6
	PC9. change from automatic steering to manual steering and vice versa when required		7	2	5

	PC10. steer a steady course with smooth alternation in course with utmost regard for area of navigation		7	2	5
	PC11. keep a look out for various landmarks and mile marks in the inland rivers and estuaries to keep track of course		7	2	5
	PC12. steer safely in bending and narrow channels factoring current, bank cushions, bank suction,		7	2	5
	PC13. take precautions while steering with regarding currents when performing staying the bend and hugging the point and heading into current		7	2	5
			100	30	70

Elective 1.2 - Advanced Deck Operations - Cargo facilitation

Total marks 100				Marks allocation	
------------------------	--	--	--	-------------------------	--

Assessment outcome	Assessment criteria	Total marks	Out of	Theory	Practical
LSC/N4007 Cargo facilitation during loading and discharge	PC1. provide details of capacities of cargo from the manifest to the chief officer	100	7	2	5
	PC2. assist chief officer in preparing the loading plan, based on details of cargo to be discharged and loaded as per cargo manifest		7	2	5
	PC3. assist chief officer in carrying out vessel stability assessment		7	2	5
	PC4. check that the cargo does not infringe load-line regulation while on passage		7	2	5
	PC5. check that heavy cargo is stored beneath the light cargo		7	2	5
	PC6. clean the cargo space for cleanliness, damage and presence of lighting and ventilation		7	2	5
	PC7. check that the cargo does not touch the spar ceiling		6	2	4
	PC8. clean the dunnage		5	2	3
	PC9. stow the cargo with the help of rigged derrick, hoist or cranes as required		6	2	4
	PC10. get approval on documents of specific cargoes such as hazardous, livestock, etc. from the chief officer		6	2	4
	PC11. stow all the cargo and securely lash it using wire ropes and chains		6	2	4
	PC12. document details of damaged cargo and highlight to master		5	2	3
	PC13. check that all listed cargo are loaded/ discharges		4	1	3
	PC14. do an inventory count of cargo and give a sign off to the master/ chief officer		4	1	3

	PC15. check that all cargo are tightly secured and lashed from all sides		4	1	3
	PC16. check that cargo containers, boxes, etc. do not move during operations		4	1	3
	PC17. check that hazardous cargo is kept segregated with all necessary precautions		4	1	3
	PC18. perform regular monitoring of cargo during voyage for damages, displacements, thefts, etc.		4	1	3
			100	30	70
Elective 1.3 - Advanced Deck Operations - On-board training of deck crew					
Total marks 100				Marks allocation	
Assessment outcome	Assessment criteria	Total marks	Out of	Theory	Practical
LSC/N4008 On-board training of deck crew	PC1. take watch and report from bridge	100	7	2	5
	PC2. use different hand signals and flag signals		7	2	5
	PC3. understand and comprehend navigational terms		7	2	5
	PC4. read gyro and magnetic compass and adjust for errors		7	2	5
	PC5. take helm orders and steer the ship using degrees and points		7	2	5
	PC6. take necessary precautions while steering and watch regarding weathers, obstacles, currents, landmarks, etc.		7	2	5
	PC7. mooring and docking the vessel at terminals		6	2	4
	PC8. take precautions and measures to keep store rodent free		5	2	3
	PC9. appropriately store different items – food, water, liquids, spares, equipment, cash, etc.		6	2	4
	PC10. inspect store, take inventory count and update		6	2	4
	PC11. manage cold storage and store equipment		6	2	4
	PC12. track threshold levels for raising replacement/ shortage requests		5	2	3
	PC13. check document prior to releasing an item from store		4	1	3
	PC14. check that all listed cargo are loaded/ discharged and do inventory counts		4	1	3
	PC15. check storage pattern and lashing of cargo		4	1	3
	PC16. check that hatches and holds are secured		4	1	3
	PC17. take precautions while handling cargo particularly hazardous cargo		4	1	3
	PC18. check for damage to cargo during transit		4	1	3

	and loading operations				
			100	30	70
Elective 2.1 - Advanced Engine Operations - Over hauling of main engine and other equipment					
Total marks 100				Marks allocation	
Assessment outcome	Assessment criteria	Total marks	Out of	Theory	Practical
LSC/N4203 Over hauling of main engine and other equipment	PC1. check for safety devices on the main engine and the auxiliary engine	100	7	2	5
	PC2. check for issues with respect to noise, various measuring gauges, moving parts to identify the need for repair and overhaul		7	2	5
	PC3. inform the master or officer on duty regarding need for overhauling and get permission		7	2	5
	PC4. check that the main engine is shut off and secured from hazards with respect to fuel leak, oil leak, heat, etc. prior to overhauling		7	2	5
	PC5. check that the SOP and necessary precautions are followed for overhauling of engine		7	2	5
	PC6. continually monitor the engine readings during overhauling operations by the technical team		7	2	5
	PC7. assist the technical team to clarify doubts		7	2	5
	PC8. open and close valves for operation using tools like wheel spanner, etc. as per SOPs		7	2	5
	PC9. use drain valves and drain cocks draining fluids from air bottles, oil and fuel tanks, pipes, etc.		6	2	4
	PC10. check tanks and level gauges		6	2	4
	PC11. open pumps, valves and pipes as per SOP		7	2	5
	PC12. safely open ballast system of vessel when required		7	2	5
	PC13. perform basic pumping system cleaning and trouble shooting		6	2	4
	PC14. open auxiliary units like filters, centrifugal separators, joints and glade packing, etc. for cleaning and overhauling		6	2	4
	PC15. perform basic maintenance and troubleshooting when required as per the overhauling SOP		6	2	4
			100	30	70
Elective 2.2 - Advanced Engine Operations - Supervision of engine operations and troubleshooting					
Total marks 100				Marks allocation	
Assessment outcome	Assessment criteria	Total marks	Out of	Theory	Practical

LSC/N4204 Supervision of engine operations and troubleshooting	PC1. carry out orders given by duty engineer	100	4	1	3
	PC2. assign duties and manage the engine room staff		5	2	3
	PC3. monitor the safe running of the machinery with respect to various operational parameters		5	2	3
	PC4. check that instruments and their reading to see functioning of the main and auxiliary engines		4	1	3
	PC5. prepare for hot and cold start		4	1	3
	PC6. follow SOPs and safety precautions for operating the generator and main engine during different weather conditions and operations		4	1	3
	PC7. record all tank parameters for sludge and bilge system		4	1	3
	PC8. implement Planned maintenance system (PMS)		4	1	3
	PC9. conduct regular inspection of engine and auxiliary machinery for fitness and maintenance needs		4	1	3
	PC10. inspect equipment in SOEP (Shipboard oil pollution emergency plan) locker for functionality and fitness		4	1	3
	PC11. supervise engine crew during routine maintenance and basic repairs as instructed by duty engineer/ master		4	1	3
	PC12. keep the engine room bilge clean of oil and oily water		4	1	3
	PC13. take precautions to prevent oil spills and accidents during bunkering of fuel and oil		4	1	3
	PC14. store all spares properly and maintain the record in the spares inventory		4	1	3
	PC15. assist the crew with maintenance and repair duties bunkering of fuel and oil		3	1	2
	PC16. check all fuel rack incase engine rpm is fluctuating		3	1	2
	PC17. check the temperature of the airline for any leakage from air valve		3	1	2
	PC18. overhaul and test pressure of fuel valve in case there is deviation in temperature of fuel system		3	1	2
	PC19. frequently clean exhaust gas boiler to avoid sparks in the main engine		3	1	2
	PC20. use cooling to prevent overheating of engine block		3	1	2
	PC21. replace faulty gauges, that are not working due to lose connections		3	1	2
	PC22. fabricate engine replacement parts such		3	1	2

	as valves, stay rods, bolts using metal and working machinery				
	PC23. repair engine, electric motor, pumps and other mechanical and electrical equipment		3	1	2
	PC24. record data in the log book, bell book, weekly routine book		3	1	2
	PC25. maintain and update inventory count of spares for the engine room like pumps, auxiliary engine, etc. regularly		3	1	2
	PC26. record details of quantity of oil in the tanks for machinery operation like lube oil, fuel or diesel in the oil record book		3	1	2
	PC27. make record of the next bunker order		3	1	2
	PC28. update and maintain Planned Maintenance System (PMS) book		3	1	2
			100	30	70
Elective 2.3 - Advanced Engine Operations - On-board training for engine crew					
Total marks 100				Marks allocation	
Assessment outcome	Assessment criteria	Total marks	Out of	Theory	Practical
LSC/N4205 On-board training for engine crew	PC1. take precautions regarding possible risks associated with engine operations related to chemical, thermal, oil spills, bunkering of fuel, etc.	100	7	2	5
	PC2. operate and maintain lifesaving and firefighting appliance		7	2	5
	PC3. monitor safe running of machinery and recording of tank and engine parameters		7	2	5
	PC4. usage of various tools, tackles and maintenance equipment		7	2	5
	PC5. perform routine maintenance and basic troubleshooting		7	2	5
	PC6. keep the engine room bilge clean of oil and oily water		7	2	5
	PC7. record all tank parameters and read related instruments		6	2	4
	PC8. follow safety precautions and SOPs when overhauling		6	2	4
	PC9. check for safety devices on the main engine and the auxiliary engine		6	2	4
	PC10. check that instruments and their reading to see functioning of the main and auxiliary engines		4	1	3
	PC11. check tank levels and gauges and draw inferences		4	1	3
	PC12. detailed engine dismantling, overhauling and assembling procedure		6	2	4
	PC13. open ballast systems and trouble shoot		5	2	3

	pumping system				
	PC14. take necessary precautions while using tools		4	1	3
	PC15. identify the right tool for different requirements		5	2	3
	PC16. use the tool in the right way with all necessary precautions and SOPs		4	1	3
	PC17. perform checklist of precautions before welding		4	1	3
	PC18. safe stowage of maintenance equipment and disposal of maintenance wastes		4	1	3
			100	30	70

Options					
Option 1 - Tug vessel operations					
Total marks 100				Marks allocation	
Assessment outcome	Assessment criteria	Total marks	Out of	Theory	Practical
LSC/N4106 Manage tug vessel operations	PC1. check the engine and power systems of tug boat for fitness with respect to operations and regulatory compliance	100	6	2	4
	PC2. check that the crew is certified for tug operations and have the requisite PPEs		5	2	3
	PC3. check that the towing gear and equipment - bollard, fairleads, sheaves, wires and ropes, etc. are in good condition and functional		5	2	3
	PC4. check that the towing equipment and vessel are suitable for towing the vessel		5	2	3
	PC5. prepare tow plan identifying the route to taken and planned passage including safe time of operation during day and night; factor in obstacles, traffic, weather conditions, adjacent river and coastal berths, tight bends, tug connection to be used, etc.		5	2	3
	PC6. check for presence of sufficient fuel, water and spares on board		5	2	3
	PC7. check for navigational information and warnings		5	2	3
	PC8. identify the Bollard Pull (BP), the width and size of vessel to calculate the displacement and the speed for tug operations		4	1	3
	PC9. identify the pivot point for towing based on currents, weather, etc. for safe and stable towing of the vessel		4	1	3
	PC10. estimate the position of tug vessel with respect to the towed vessel factoring in the no.		4	1	3

	of tugs, pivot point, speed of towing, etc.				
	PC11. estimate the number of tows required and the towing position based on the number of vessel and barges to be towed together		4	1	3
	PC12. check that all emergency equipment and emergency plan is in place		4	1	3
	PC13. check that all watertight hatches and doors are closed		4	1	3
	PC14. provide instructions to crew as per the towing plan		4	1	3
	PC15. check for stability of both vessels prior to commencement of operation		4	1	3
	PC16. move the tug vessel to the aft or forward point of the vessel to be towed factoring in the speed and suction for securing the tugs		4	1	3
	PC17. check with crew if the tug is connected and secured		4	1	3
	PC18. carefully start the tug vessel and apply power to displace water for moving the vessel to be towed, taking precautions against the water currents, girting, top-sizing, capsizing, etc.		4	1	3
	PC19. adjust for obstacles, wind speed and currents, traffic factoring the girting, vessel speed, etc.		4	1	3
	PC20. regularly check during operations if the towing arrangement and watertight integrity of the tow are satisfactory		4	1	3
	PC21. prepare for and address emergency towing scenarios as per the emergency towing SOP in case of loss of tow wire		4	1	3
	PC22. navigate the towed vessel to the destination and slowly brake factoring the vessel inertia to prevent capsizing or girting		4	1	3
	PC23. dis-engage the tow from the vessel		4	1	3
			100	30	70
Option 2 - Profit management					
Total marks 100				Marks allocation	
LSC/N9603 Profit and Loss Account management and cost accounting	PC1. review department wise budgets and make amendments if required	100	8	3	5
	PC2. collate and prepare annual budgets along with sales and profit targets		8	3	5
	PC3. schedule both capital and operational expenses accordance to the budget		7	2	5
	PC4. analyse and review the P&L performance for the unit		7	2	5
	PC5. analyse profitability and business performance trends department wise		7	2	5

	PC6. periodically analyse variances in the expenditure with respect to the budget and accordingly take corrective actions		7	2	5
	PC7. periodically analyse the physical output and performance with respect to the budget and identify places for improvements		7	2	5
	PC8. undertake adequate risk management so as to meet Key Performance targets		7	2	5
	PC9. manage and control budgets of different departments on a periodic basis to optimise financial performance		7	2	5
	PC10. periodically review activity and department financial performance		7	2	5
	PC11. identify the activities having high variance with respect to the budgeted costs or the forecasted revenue		7	2	5
	PC12. analyse the actual cost w.r.t physical output to draw inferences		7	2	5
	PC13. identify reasons in discussion with department and take remedial and corrective actions where-ever required		7	2	5
	PC14. work towards rationalizing the cost of the activity wise operations to achieve higher financial goals		7	2	5
			100	30	70
Option 3 - Perform Ship and Yard Planning					
Total marks 100				Marks allocation	
LSC/N3511 Perform Ship and Yard Planning	PC1. obtain information regarding the vessel details - docking schedule and berth, bays and containers to be unloaded and loaded	100	7	2	5
	PC2. obtain information regarding movement of containers / cargo from port terminals to CFS/ ICD or client		7	2	5
	PC3. check yard's capacity utilization and open bays and locations		7	2	5
	PC4. assess the quantity of cargo to be moved and plan storage space for cargo		7	2	5
	PC5. allocate resources for cargo movement		3	1	2
	PC6. communicate the task at hand to cargo equipment handlers, manual cargo handlers and lifting and vessel supervisors		3	1	2
	PC7. discuss the plan for cargo movement with the operators to finalise the container/ cargo movement plan		7	2	5
	PC8. review that all equipment and workforce is ready for operations at the time of vessel docking / transport arrival		3	1	2
	PC9. review that the necessary precautions		7	2	5

	and PPEs have been taken				
	PC10. deploy resources for loading/ unloading as per cargo stowage plan		3	1	2
	PC11. coordinate with cargo surveyor for safe and secured loading/ unloading		7	2	5
	PC12. conduct periodic inspections of the yard		7	2	5
	PC13. check for cleanliness, adequate use of PPEs, regulations and norms for workforce are clearly followed		7	2	5
	PC14. check that cargo bays are clearly marked and segregated, containers and cargo are stored as per prescribed norms		7	2	5
	PC15. check that equipment are parked are right positions		7	2	5
	PC16. check that all necessary precautions for storage of hazardous cargo is in place including emergency services		7	2	5
	PC17. prepare inspection report highlighting any anomaly or changes, as required		4	2	2
			100	30	70

Annexure: Trainer qualification and equipment requirement

Trainer qualification –

- Diploma/ Class XII pass with minimum 5 years of experience in inland or coastal vessel operations with minimum 3 years of experience as master
- Has detailed knowledge of vessel engine room operations including equipment operation, advanced troubleshooting, maintenance, repair and overhauling etc. (or)
- Has in-depth knowledge of vessel deck operations including navigation, planning and managing operations, deck maintenance, cargo management, housekeeping, compliance to regulatory norms, etc.
- The trainer should have the ability to read write and communicate in vernacular language, Hindi and English

Training Equipment requirement –

PPEs, SOPs and manuals, Vessel, maps & charts, navigation aids, compass, GPS, Vessel and engine room equipment, tools and tackles, cranes and winches, welding equipment, fitting tools, work bench, navigation aids, vessel, simulator, ERP, performance review software's, SOP, RFID scanner, bar code scanner, markers, MHEs, etc Tug vessel and towing equipment cum accessories, simulator, computer, projector, stationery, worksheets, etc