THE NATIONAL COUNCIL FOR TECHNICAL AND VOCATIONAL EDUCATION AND TRAINING

OCCUPATIONAL STANDARDS

OCCUPATION: LIFTING, LOADING AND UNLOADING MACHINERY OPERATION TECHNICIAN

LEVEL: NTA LEVEL 4

FEBRUARY 2024

TABLE OF CONTENTS

ABBREVIATIONS

NACTVET	National Council for Technical and Vocational Education and Training
NOS	National Occupational Standards
OS	Occupational Standards
TET	Technical Education and Training
TVET	Technical and Vocational Education and Training

GLOSSARY OF TERMS

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

Standards:	A set of statements, which if proved true under working conditions, means that an individual is meeting an expected level and type of performance.
Task Analysis:	The process of analysing each task to determine the steps, circumstantial knowledge, attitudes, performance standards, tools and materials needed, as well as safety concerns required for the employees performing it.
Task:	A work activity that has a definite beginning and ending, is observable or measurable, and consists of two or more definite steps that leads to a product, service, or decision.
Underpinning Knowledge:	Crucial knowledge that an individual must acquire in order to demonstrate competences that are associated in performing a given task.
Verification Process:	The process of having experts review and confirm the importance of the task (competency) statements identified through occupational analysis. Other questions, such as the degree of task learning difficulty are also frequently asked. This process is also sometimes referred to as validation.

1.0 INTRODUCTION

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

Occupational Standards (OS) are performance criteria that are matched with labour market demands. Each of them describes the functions, performance standards, and understanding or knowledge underpinning a given occupation. They combine skills, knowledge, and attitudes to describe best practice. They are useful tools for establishing job roles, personnel recruitment, supervision, and appraisal, as well as TET Standards. They are also helpful for benchmarking and harmonizing job qualifications on a national and international level. Standards, in general, provide a solid framework for high-quality TET that is labour market-relevant, current, and consistent in application across all public and private institutions.

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

For the purpose of TET delivery, Tanzania has adopted the Competence Based Education and Training (CBET) approach. The CBET approach focuses on providing learners with the skills and knowledge required to meet the occupational standards. Occupational standards are thus the starting point for developing competency-based training (CBET) programmes. Therefore, it is quite pertinent for TET institutions to use the relevant occupational standards as a benchmark for formulating their

curricula. Occupational Standards are developed based on a given occupation's current and future demands. As a result, they serve as a means of bridging the gap between the worlds of employment and technical education and training. The document explains how the occupational standards were developed, as well as the scope, the occupational profile in the form of DACUM charts, and the Occupational Standards.

2.0 OCCUPATIONAL STANDARD DEVELOPMENT PROCESS

The process of developing these Occupational Standards involved both local and international expertise. The process began with an examination of major documents that guide Tanzanian skills development including the *10-year National Skills Development Strategy (2016-2026).* NACTVET labour market reports were also used in the literature review to determine the skills demand in the Tanzanian labour market as a whole.

After the literature review, a team of experts in consultation with practitioners developed draft occupational standards. The draft document was used to develop an occupational profile for each occupation (DACUM Chart), which is attached as an **Appendix** to every Occupational Standard.

The draft occupational standards will be validated during stakeholders' forum. The information from stakeholders' forum will provide insight from the workplaces and professional bodies regarding trends and changes in the profession, including how well graduates are prepared for working in the occupation.

3.0 THE SCOPE AND OVERVIEW OF THE OCCUPATION STANDARDS FOR LIFTING, LOADING AND UNLOADING MACHINERY OPERATION TECHNICIANS

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

The Lifting, Loading and Unloading Machinery Operation Technicians shall inspect, adjust and maintain lifting equipment under the supervision of the Lifting, Loading and Unloading Machinery Operation Engineers. They can complete the basic operation of lifting equipment, engage in the selection of equipment, lifting and moving tools and operating process, monitor equipment operating

state during the operation and formulate protective measures for loading and unloading operations on site.

Generally, the Lifting, Loading and Unloading Machinery Operation Technician performs the following responsibilities:

a) Inspection of working environment

b) Daily spot inspection of equipment

c) Assistance in basic operations

d) Post-operation inspection

e) Assurance of working environment safety

f) Equipment system inspection

g) Basic operations

h) Equipment inspection and adjustment

i) Daily maintenance of equipment

j) Elimination of the safety hazards in the working environment

k) Equipment operation and debugging

l) Special and economical operations

m) Systematic inspection and adjustment

n) Equipment periodic maintenance

o) Judgment and exclusion of equipment faults

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

4.0 VALIDITY PERIOD

Due to the rapid development of technology, the validity period of occupational standards is 3-5 years. The review will proceed in the same manner as the one before it, with new occupational standards being developed based on current trends of the labour market.

5.0 OCCUPATIONAL STANDARDS

5.1. OCCUPATIONAL STANDARDS FOR LIFTING, LOADING AND UNLOADING MACHINERY OPERATION TECHNICIAN - NTA LEVEL 4

<table>
<tr><td>OCCUPATION</td><td>LIFTING, LOADING AND UNLOADING MACHINERY OPERATION TECHNICIAN</td><td>OCCUPATION CODE</td><td></td></tr>
<tr><td>DUTY TITLE</td><td>CONDUCT INSPECTION OF WORKING ENVIRONMENT</td><td>DUTY NO.</td><td>401</td></tr>
<tr><td>TASK TITLE</td><td>PERFORM IDENTIFICATION AND CONTROL OF HAZARD SOURCES</td><td>TASK NO.</td><td>4011</td></tr>
<tr><td>PERFORMANCE CRITERIA</td><td colspan="3">The person performing this task must be able to identify and control hazard sources in accordance with approved specifications and regulations.</td></tr>
<tr><td>RANGE STATEMENT</td><td colspan="3">The task can be performed at the lifting operation site under the supervision of senior lifting, loading and unloading machinery operation technicians.
The tools and equipment to be used include:
1. Fitter’s complete toolkit;
2. Personal protective equipment, such as safety helmets, work clothes, safety boots, gloves and whistles;
3. Meteorological data receivers;
4. Level gauge;
5. Warning signs and fences;
6. Fire-fighting facilities such as fire extinguishers;
7. Signal generators;
8. Computer with accessories;
9. Checklist</td></tr>
<tr><td colspan="4">EVIDENCE REQUIREMENT</td></tr>
<tr><td colspan="2">PRACTICAL PERFORMANCE</td><td colspan="2">UNDERPINNING KNOWLEDGE</td></tr>
<tr><td colspan="2">The person performing this task must be able to do the following:
1. Select tools, equipment and safety gear;
2. Observe health and safety precautions;
3. Identify hazardous factors in the lifting site;
4. Verify the reliability of the safety gear for lifting operations
5. Inspect the fire-fighting facilities of cranes;
6. Perform firefighting drills;
7. Standardize the use of communication equipment for work communication;</td><td colspan="2">Detailed knowledge about:
1.0 Methods
The person performing this task must be able to explain how to:
1.1 Identify hazardous factors on site;
1.2 Conduct safety inspection of fire-fighting facilities;
1.3 Conduct troubleshooting of the auxiliary equipment for safety;
1.4 Conduct troubleshooting of the auxiliary tools for safety;
1.5 Inspect personal protective devices.

2.0 Principles
The person performing this task must be able to explain the following principles:
2.1 Principles of identifying and protecting against hazard sources;</td></tr>
</table>

8. Clean tools, equipment and workplace; 9. Store tools, equipment and safety gear	2.2 Principles of work safety for lifting operations; 2.3 Principles of using fire-fighting facilities; 2.4 Principles of communication equipment. **3.0 Theories** The person performing this task must be able to explain the following: 3.1 Selection methods of inspection tools before lifting operations; 3.2 Safety identification of working conditions of lifting equipment; 3.3 Safety specifications for lifting operations; 3.4 Safety procedures of handling specific cargo (hazardous, dangerous, fragile, over height/gauge, etc). **4.0 Essential Skills** 4.1 Communication skills; 4.2 Customer service skills; 4.3 Teamwork skills; 4.4 Safety inspection skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	Identification and control of hazard sources is performed in accordance with the requirements of safety for lifting operations.
CIRCUMSTANTIAL KNOWLEDGE	**Detailed knowledge about:** 1. Electronic and electrician technology; 2. Identification of hazard sources; 3. Knowledge of work safety and occupational health; 4. Knowledge of fire-fighting equipment usage; 5. Requirements of accident and hazard identification, governance and management; 6. Details of cargo types and their handling methods and techniques

OCCUPATION	LIFTING, LOADING AND UNLOADING MACHINERY OPERATION TECHNICIAN	**OCCUPATION CODE**	
DUTY TITLE	CONDUCT INSPECTION OF WORKING ENVIRONMENT	**DUTY NO.**	401
TASK TITLE	DETERMINE THE SAFE WORKING RANGE OF PERSONNEL AND MACHINES	**TASK NO.**	4012
PERFORMANCE CRITERIA	The person performing this task must be able to determine the safe working range of personnel and machines according to the working environment as per approved standards and specifications for lifting operations and equipment operation manuals.		
RANGE STATEMENT	The task can be performed at the lifting operation site under the supervision of senior lifting, loading and unloading machinery operation technicians. The tools and equipment to be used include: 1. Fitter's complete tool kits; 2. Personal protective equipment, such as safety helmets, work clothes, safety boots, gloves and whistles; 3. Meteorological data receivers; 4. Level gauges; 5. Warning signs and fences; 6. Fire-fighting facilities such as fire extinguishers; 7. Signal generators; 8. Computer with accessories; 9. Checklist		

EVIDENCE REQUIREMENT	
PRACTICAL PERFORMANCE	**UNDERPINNING KNOWLEDGE**
The person performing this task must be able to do the following: 1. Select tools, equipment and safety gear; 2. Wear personal protective equipment according to the specifications; 3. Observe health and safety precautions while working; 4. Determine the safe working range of personnel; 5. Identify the actual lifting capacity of cranes; 6. Determine the safe working range of equipment; 7. Verify the operability of safety devices for lifting operations;	**Detailed knowledge about:** **1.0 Methods** The person performing this task must be able to explain how to: 1.1 Troubleshoot circuit safety; 1.2 Troubleshoot safety distance; 1.3 Troubleshoot auxiliary equipment safety; 1.4 Troubleshoot other potential safety hazards; 1.5 Inspect personal protective devices; 1.6 Determine the extent of involvement of persons and machine involvement. **2.0 Principles** The person performing this task must be able to explain the following principles: 2.1 Principles of identifying the safe working range of personnel and machines; 2.2 Principles of work safety for lifting operations;

8. Verify the condition of the steel wire rope on the luffing mechanism for lifting operations; 9. Clean tools, equipment and workplace; 10. Store tools, equipment and safety gear.	2.3 Principles of safety specifications for lifting operations. **3.0 Theories** The person performing this task must be able to explain the following: 3.1 Methods of determining the safe working range of personnel and machines according to the working requirement of environment; 3.2 Proper wearing methods of personal protective equipment; 3.3 Methods of identifying the actual lifting weight of cranes; 3.4 Daily safety specifications for lifting operations; 3.5 Safety operation specifications of lifting machinery; 3.6 Operating conditions of lifting safety (protection) devices. **4.0 Essential Skills** 4.1 Communication skills; 4.2 Customer service skills; 4.3 Teamwork skills; 4.4 Safety inspection skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	Determination of the safe working range of personnel and machines is performed in accordance with approved standards and safety specifications for lifting operations.
CIRCUMSTANTIAL KNOWLEDGE	**Detailed knowledge about:** 1. Common knowledge of fire safety; 2. Determination of the safe working range of personnel and machines according to the working environment in the lifting site.

OCCUPATION	LIFTING, LOADING AND UNLOADING MACHINERY OPERATION TECHNICIAN	**OCCUPATION CODE**	
DUTY TITLE	CONDUCT DAILY SPOT INSPECTION OF EQUIPMENT	**DUTY NO.**	402
TASK TITLE	CARRY OUT SAFETY INSPECTION OF ELECTRICAL AND MECHANICAL COMPONENTS	**TASK NO.**	4021
PERFORMANCE CRITERIA	The person performing this task must be able to conduct the safety inspection of mechanical components in accordance with the requirements of safety specifications for lifting operations and the manufacturer's equipment operation manuals.		
RANGE STATEMENT	The task can be performed at the lifting operation site under the supervision of senior lifting, loading and unloading machinery operation technicians. The tools and equipment to be used include: 1. Fitter's complete tool kit; 2. Personal protective equipment, such as safety helmets, work clothes, safety boots, gloves and whistles; 3. Meteorological data receivers; 4. Level gauges; 5. Warning signs and fences; 6. Fire-fighting facilities such as fire extinguishers; 7. Signal generators. 8. Computer with accessories; 9. Checklist.		

EVIDENCE REQUIREMENT	
PRACTICAL PERFORMANCE	**UNDERPINNING KNOWLEDGE**
The person performing this task must be able to do the following: 1. Select tools, equipment and safety gear; 2. Observe health and safety precautions while working; 3. Perform visual inspection of the main structure of the equipment; 4. Check for cracks and physical deformations; 5. Verify the strength of the electrical signal from the electrical equipment; 6. Verify the operability of each functional mechanism. 7. Clean tools, equipment and workplace; 8. Store tools, equipment and safety gear.	**Detailed knowledge about:** **1.0 Methods** The person performing this task must be able to explain how to: 1.1 Troubleshoot circuit safety; 1.2 Inspect electrical equipment signals; 1.3 Troubleshoot equipment and component safety; 1.4 Troubleshoot other potential safety hazards; 1.5 Inspect personal protective devices; 1.6 Inspect the selection of tools. **2.0 Principles** The person performing this task must be able to explain the following principles: 2.1 Principles of lifting component detection; 2.2 Principles of work safety for lifting operations; 2.3 Principles of safety specifications for lifting operations;

	2.4 Operation requirements and specifications of equipment; 2.5 Standard for the inspection of metal structures; 2.6 Standards of tool selection and scrapping. **3.0 Theories** The person performing this task must be able to explain the following: 3.1 Methods of determining whether the metal structure of the main parts of the equipment and tools is normal; 3.2 Methods of determining the electrical equipment signals are normal; 3.3 Methods of determining the operation of each mechanism is normal; 3.4 Methods of determining the safe working range of equipment; 3.5 Safety operation specifications of lifting machinery; 3.6 Operating conditions of lifting safety (protection) devices; 3.7 Daily safety specifications for lifting operations. **4.0 Essential Skills** 4.1 Communication skills; 4.2 Customer service skills; 4.3 Teamwork skills; 4.4 Safety inspection skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	Safety inspection of mechanical components is performed in accordance with approved standards of safety for lifting operations.
CIRCUMSTANTIAL KNOWLEDGE	**Detailed knowledge about:** 1. Common knowledge of mechanical and electrical system of the partial machines, fire safety; 2. Underpinning knowledge of mechanical drawing of electrical and mechanical basis;

OCCUPATION	LIFTING, LOADING AND UNLOADING MACHINERY OPERATION TECHNICIAN	**OCCUPATION CODE**	
DUTY TITLE	CONDUCT DAILY SPOT INSPECTION OF EQUIPMENT	**DUTY NO.**	402
TASK TITLE	VERIFY LEVELS OF FUEL, LUBRICATING OIL, HYDRAULIC OIL, AND COOLANT.	**TASK NO.**	4022
PERFORMANCE CRITERIA	The person performing this task must be able to verify levels of fuel, lubricating oil, hydraulic oil and coolant in accordance with safety specifications for lifting equipment and the manufacturer's equipment operation manuals.		
RANGE STATEMENT	The task can be performed at the lifting operation site under the supervision of senior lifting, loading and unloading machinery operation technicians. The tools and equipment to be used include: 1. Fitter's complete tool kit; 2. Personal protective equipment, such as safety helmets, work clothes, safety boots, gloves and whistles; 3. Meteorological data receivers; 4. Level gauges; 5. Warning signs and fences; 6. Fire-fighting facilities such as fire extinguishers; 7. Signal generators; 8. Computer with accessories.		

EVIDENCE REQUIREMENT	
PRACTICAL PERFORMANCE	**UNDERPINNING KNOWLEDGE**
The person performing this task must be able to do the following: 1. Select tools, equipment and safety gear; 2. Observe health and safety precautions while working; 3. Verify fuel level; 4. Confirm lubrication of each moving part of the lifting equipment; 5. Verify the oil level of the hydraulic system; 6. Check for leaks; 7. Verify coolant level; 8. Determine the safe working range of equipment. 9. Clean tools, equipment and workplace 10. Store tools, equipment and safety gear.	**Detailed knowledge about:** **1.0 Methods** The person performing this task must be able to explain how to: 1.1 Troubleshoot circuit safety; 1.2 Inspect the lubrication of each lifting component; 1.3 Inspect for pipeline and seals leakage. 1.4 Inspect the oil level of hydraulic systems; 1.5 Inspect personal protective devices; 1.6 Inspect the selection of tools. **2.0 Principles** The person performing this task must be able to explain the following principles: 2.1 Principles of lifting operation quality; 2.2 Safety specifications for lifting operations; 2.3 Lubrication standards of lifting operations; 2.4 Standards of pipeline leakage.

	3.0 Theories The person performing this task must be able to explain the following: 3.1 Technical performance and use requirements of equipment; 3.2 Basic knowledge of production and organisation; 3.3 Operating conditions of lifting safety (protection) devices. **4.0 Essential Skills** 4.1 Communication skills; 4.2 Customer service skills; 4.3 Teamwork skills; 4.4 Safety inspection skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	Levels of fuel, lubricating oil, hydraulic oil, and coolant are verified in accordance with approved standards and requirements of safety for lifting equipment.
CIRCUMSTANTIAL KNOWLEDGE	**Detailed knowledge about:** 1. Common knowledge of fire safety; 2. Knowledge of work safety and occupational health of lifting operations.

OCCUPATION	LIFTING, LOADING AND UNLOADING MACHINERY OPERATION TECHNICIAN	**OCCUPATION CODE**	
DUTY TITLE	CONDUCT DAILY SPOT INSPECTION OF EQUIPMENT	**DUTY NO.**	402
TASK TITLE	INSPECT THE PARAMETER DISPLAY PANEL FOR VARIOUS INDICATORS	**TASK NO.**	4023
PERFORMANCE CRITERIA	The person performing this task must be able to inspect and interpret the parameter display panel for various indicators in accordance with the requirements of safety specifications for lifting operations and the manufacturer's equipment operation manuals.		
RANGE STATEMENT	The task can be performed at the lifting operation site under the supervision of senior lifting, loading and unloading machinery operation technicians. The tools and equipment to be used include: 1. Fitter's complete tool kit; 2. Personal protective equipment, such as safety helmets, work clothes, safety boots, gloves and whistles; 3. Meteorological data receivers; 4. Level gauges; 5. Warning signs and fences; 6. Fire-fighting facilities such as fire extinguishers; 7. Signal generators; 8. Computer with accessories		

EVIDENCE REQUIREMENT

PRACTICAL PERFORMANCE	**UNDERPINNING KNOWLEDGE**
The person performing this task must be able to do the following: 1. Select tools, equipment and safety gear; 2. Observe health and safety precautions while working; 3. Interpret parameters displayed on display panel; 4. Take corrective action if necessary; 5. Record parameter readings; 6. Clean tools, equipment and workplace; 7. Store tools, equipment and safety gear.	**Detailed knowledge about:** **1.0 Methods** The person performing this task must be able to explain how to: 1.1 Troubleshoot circuit safety; 1.2 Inspect the display value of various indicators; 1.3 Inspect the selection of tools. **2.0 Principles** The person performing this task must be able to explain the following principles: 2.1 Principles of the detection and specific scope of lifting operations; 2.2 Principles of safety specifications for lifting operations; 2.3 Routine spot inspection and regulations of equipment. **3.0 Theories**

	The person performing this task must be able to explain the following: 3.1 Methods of selecting cargo loading and unloading tools; 3.2 Methods of all kinds of indicator value judgment; 3.3 Operating conditions of lifting safety (protection) devices. **4.0 Essential Skills** 4.1 Communication skills; 4.2 Customer service skills; 4.3 Teamwork skills; 4.4 Safety inspection skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	Parameter display readings for various indicators are recorded and corrective action taken in accordance with the requirements of safety for lifting equipment.
CIRCUMSTANTIAL KNOWLEDGE	**Detailed knowledge about:** 1. Common knowledge of interpreting parameters displays; 2. Electronic and electrician technology; 3. Knowledge of work safety and occupational health of lifting operations.

OCCUPATION	LIFTING, LOADING AND UNLOADING MACHINERY OPERATION TECHNICIAN	**OCCUPATION CODE**	
DUTY TITLE	PROVIDE ASSISTANCE IN BASIC OPERATIONS AND MEANS	**DUTY NO.**	403
TASK TITLE	SUGGEST THE TRANSPORT ROUTE	**TASK NO.**	4031
PERFORMANCE CRITERIA	The person performing this task must be able to assist in determining the transport route in accordance with the requirements of safety specifications for lifting operations and the manufacturer's equipment operation manuals.		
RANGE STATEMENT	The task can be performed at the lifting operation site under the supervision of senior lifting, loading and unloading machinery operation technicians. The tools and equipment to be used include: 1. Fitter's complete tool kit; 2. Personal protective equipment, such as safety helmets, work clothes, safety boots, gloves and whistles; 3. Meteorological data receivers; 4. Level gauges; 5. Warning signs and fences; 6. Fire-fighting facilities such as fire extinguishers; 7. Signal generators; 8. Computer with accessories		

EVIDENCE REQUIREMENT	
PRACTICAL PERFORMANCE	**UNDERPINNING KNOWLEDGE**
The person performing this task must be able to do the following: 1. Wear labour protective equipment according to the specifications; 2. Assist in determining the transport route according to the cargo to be loaded and unloaded.	**Detailed knowledge about:** **1.0 Methods** The person performing this task must be able to explain how to: 1.1 Determine the transport routes; 1.2 Conduct safety inspection; 1.3 Determine transport means. **2.0 Principles** The person performing this task must be able to explain the following principles: 2.1 Safety specifications for working environment of lifting operations; 2.2 Safety specifications for lifting operations; 2.3 Means and transport routs. **3.0 Theories** The person performing this task must be able to explain the following: 3.1 Safety judgment of the working environment and equipment of transport operations;

	3.2 Safety protection measures of cargo loading and unloading operations; 3.3 Methods of determining the transport means and routes. **4.0 Essential Skills** 4.1 Communication skills; 4.2 Customer service skills; 4.3 Teamwork skills; 4.4 Safety inspection skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	The determination of the transport route is assisted in accordance with the requirements of safety specifications for lifting operations.
CIRCUMSTANTIAL KNOWLEDGE	**Detailed knowledge about:** 1. Knowledge of work safety and occupational health; 2. Common knowledge of transport means and routes; 3. Basic operating methods and technical requirements of equipment.

OCCUPATION	LIFTING, LOADING AND UNLOADING MACHINERY OPERATION TECHNICIAN	**OCCUPATION CODE**	
DUTY TITLE	PROVIDE ASSISTANCE IN BASIC OPERATIONS	**DUTY NO.**	403
TASK TITLE	CARRY OUT FLAG SETTING	**TASK NO.**	4032
PERFORMANCE CRITERIA	The person performing this task must be able to set flags in accordance with the requirements of safety specifications for lifting operations and the manufacturer's equipment operation manuals.		
RANGE STATEMENT	The task can be performed at the lifting operation site under the supervision of senior lifting, loading and unloading machinery operation technicians. The tools and equipment to be used include: 1. Fitter's complete tool kit; 2. Personal protective equipment, such as safety helmets, work clothes, safety boots, gloves and whistles; 3. Meteorological data receivers; 4. Level gauges; 5. Warning signs and fences; 6. Fire-fighting facilities such as fire extinguishers; 7. Signal generators; 8. Computer with accessories		

EVIDENCE REQUIREMENT	
PRACTICAL PERFORMANCE	**UNDERPINNING KNOWLEDGE**
The person performing this task must be able to do the following: 1. Wear labour protective equipment according to the specifications; 2. Set flags according to the transport route; 3. Assess safety working environment for flags and personal equipment.	**Detailed knowledge about:** **1.0 Methods** The person performing this task must be able to explain how to: 1.1 Set various kinds of flags; 1.2 Assist in the safety inspection. **2.0 Principles** The person performing this task must be able to explain the following principles: 2.1 Safety specifications for lifting operations; 2.2 Equipment operation manuals. **3.0 Theories** The person performing this task must be able to explain the following: 3.1 Safety specifications for lifting operations; 3.2 Flag setting requirements and methods. **4.0 Essential Skills** 4.1 Communication skills; 4.2 Customer service skills;

	4.3 Teamwork skills; 4.4 Safety inspection skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	The flags of the transport route are set in accordance with the requirements of safety specifications for lifting operations.
CIRCUMSTANTIAL KNOWLEDGE	**Detailed knowledge about:** 1. Knowledge of work safety and occupational health of lifting operations; 2. Common knowledge of flags and cargo operations; 3. Basic operating methods and technical requirements of the equipment.

OCCUPATION	LIFTING, LOADING AND UNLOADING MACHINERY OPERATION TECHNICIAN	**OCCUPATION CODE**	
DUTY TITLE	PROVIDE ASSISTANCE IN BASIC OPERATIONS	**DUTY NO.**	403
TASK TITLE	PASS ON COMMAND SIGNALS TO TEAM MEMBERS	**TASK NO.**	4033
PERFORMANCE CRITERIA	The person performing this task must be able to pass command signals in accordance with the requirements of safety specifications for lifting operations and the manufacturer's equipment operation manuals.		
RANGE STATEMENT	The task can be performed at the lifting operation site under the supervision of senior lifting, loading and unloading machinery operation technicians. The tools and equipment to be used include: 1. Fitter's complete tool kit; 2. Personal protective equipment, such as safety helmets, work clothes, safety boots, gloves and whistles; 3. Meteorological data receivers; 4. Level gauges; 5. Warning signs and fences; 6. Fire-fighting facilities such as fire extinguishers; 7. Signal generators; 8. Computer with accessories		

EVIDENCE REQUIREMENT

PRACTICAL PERFORMANCE	**UNDERPINNING KNOWLEDGE**
The person performing this task must be able to do the following: 1. Wear labour protective equipment according to the specifications; 2. Recognize gestures and signs for tansport.	**Detailed knowledge about:** **1.0 Methods** The person performing this task must be able to explain how to: 1.1 Use various flag setting methods; 1.2 Determine signals requirement. **2.0 Principles** The person performing this task must be able to explain the following principles: 2.1 Principles of setting flags. **3.0 Theories** The person performing this task must be able to explain the following: 3.1 Safety specifications for lifting operations; 3.2 Knowledge of command signals for equipment operation; 3.3 Basic operating methods and technical requirements of equipment; 3.4 Operation manuals of equipment.

	4.0 Essential Skills 4.1 Communication skills; 4.2 Customer service skills; 4.3 Teamwork skills; 4.4 Safety inspection skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	Command signals are identified, and the operations are conducted according to the signals in accordance with the requirements of safety specifications for lifting operations and equipment operation manuals.
CIRCUMSTANTIAL KNOWLEDGE	**Detailed knowledge about:** 1. Knowledge of work safety and occupational health of lifting operations; 2. Common knowledge of fire safety; 3. Basic operating methods and technical requirements of equipment.

OCCUPATION	LIFTING, LOADING AND UNLOADING MACHINERY OPERATION TECHNICIAN	**OCCUPATION CODE**	
DUTY TITLE	PROVIDE ASSISTANCE IN BASIC OPERATIONS	**DUTY NO.**	403
TASK TITLE	PROVIDE ASSISTANCE IN THE TRANSPORT WORK	**TASK NO.**	4034
PERFORMANCE CRITERIA	The person performing this task must be able to assist in the transport work in accordance with the requirements of safety specifications for lifting operations and the manufacturer's equipment operation manuals.		
RANGE STATEMENT	The task can be performed at the lifting operation site under the supervision of senior lifting, loading and unloading machinery operation technicians. The tools and equipment to be used include: 1. Fitter's complete tool kit; 2. Personal protective equipment, such as safety helmets, work clothes, safety boots, gloves and whistles; 3. Meteorological data receivers; 4. Level gauges; 5. Warning signs and fences; 6. Fire-fighting facilities such as fire extinguishers; 7. Signal generators; 8. Computer with accessories		

EVIDENCE REQUIREMENT	
PRACTICAL PERFORMANCE	**UNDERPINNING KNOWLEDGE**
The person performing this task must be able to do the following: 1. Wear labour protective equipment according to the specifications; 2. Assist in the transport work in accordance with job requirements.	**Detailed knowledge about:** **1.0 Methods** The person performing this task must be able to explain how to: 1.1 Assist in the transport work. **2.0 Principles** The person performing this task must be able to explain the following principles: 2.1 Working principles of the transport means; 2.2 Mechanical and electrical principles; 2.3 Equipment operating procedures. **3.0 Theories** The person performing this task must be able to explain the following: 3.1 Technical performance and use requirements of cranes; 3.2 Operating standards of lifting equipment;

	3.3 Technical requirements of transport means safety operations. **4.0 Essential Skills** 4.1 Communication skills; 4.2 Customer service skills; 4.3 Teamwork skills; 4.4 Safety inspection skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	The transport work is assisted in accordance with the requirements of safety specifications for lifting operations and operating procedures.
CIRCUMSTANTIAL KNOWLEDGE	**Detailed knowledge about:** 1. Knowledge of work safety and occupational health in transport operations; 2. Common knowledge of fire safety; 3. common knowledge of transport means 4. Basic operating methods and technical requirements of equipment.

OCCUPATION	LIFTING, LOADING AND UNLOADING MACHINERY OPERATION TECHNICIAN	**OCCUPATION CODE**	
DUTY TITLE	CONDUCT POST-OPERATION ACTIVITIES	**DUTY NO.**	404
TASK TITLE	FILL IN OPERATION LOGBOOK	**TASK NO.**	4041
PERFORMANCE CRITERIA	The person performing this task must be able to fill in operation logbook in accordance with the requirements of safety specifications for lifting operations.		
RANGE STATEMENT	The task can be performed at the lifting operation site under the supervision of senior lifting, loading and unloading machinery operation technicians. The tools and equipment to be used include: 1. Fitter's complete tool kit; 2. Personal protective equipment, such as safety helmets, work clothes, safety boots, gloves and whistles; 3. Meteorological data receivers; 4. Level gauges; 5. Warning signs and fences; 6. Fire-fighting facilities such as fire extinguishers; 7. Signal generators; 8. Computer with accessories		

EVIDENCE REQUIREMENT	
PRACTICAL PERFORMANCE	**UNDERPINNING KNOWLEDGE**
The person performing this task must be able to do the following: 1. Select tools, equipment and safety gear; 2. Observe health and safety precautions while working; 3. Record all work events and incidents in logbook according to the specifications; 4. Fill in such records as job slips and operation logs; 5. Clean tools, equipment and workplace; 6. Store tools, equipment and safety gear.	**Detailed knowledge about:** **1.0 Methods** The person performing this task must be able to explain how to: 1.1 Standardize the filling of operation logs and conduct shift change. **2.0 Principles** The person performing this task must be able to explain the following principles: 2.1 Composition and working principles of each working mechanism of cranes. **3.0 Theories** The person performing this task must be able to explain the following: 3.1 Operational knowledge of lifting equipment; 3.2 Composition of operating equipment; 3.3 Requirements of filling in equipment operation logs; 3.4 Procedures and requirements of shift change. **4.0 Essential Skills**

	4.1 Communication skills; 4.2 Customer service skills; 4.3 Teamwork skills; 4.4 Safety inspection skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	Post-operation inspection is carried out in accordance with the requirements of safety specifications for lifting operations.
CIRCUMSTANTIAL KNOWLEDGE	**Detailed knowledge about:** 1. Knowledge of work safety and occupational health of lifting operations; 2. Common knowledge of fire safety; 3. Basic operating methods and technical requirements of equipment.

OCCUPATION	LIFTING, LOADING AND UNLOADING MACHINERY OPERATION TECHNICIAN	**OCCUPATION CODE**	
DUTY TITLE	CONDUCT POST-OPERATION ACTIVITIES	**DUTY NO.**	404
TASK TITLE	RE-SET SAFETY PROTOCOLS FOR OPERATIONS	**TASK NO.**	4042
PERFORMANCE CRITERIA	The person performing this task must be able to re-set safety protocols for operations in accordance with the approved specifications of safety for lifting equipment and the manufacturer's equipment operation manuals.		
RANGE STATEMENT	The task can be performed at the lifting operation site under the supervision of senior lifting, loading and unloading machinery operation technicians. The tools and equipment to be used include: 1. Fitter's complete tool kit; 2. Personal protective equipment, such as safety helmets, work clothes, safety boots, gloves and whistles; 3. Meteorological data receivers; 4. Level gauges; 5. Warning signs and fences; 6. Fire-fighting facilities such as fire extinguishers; 7. Signal generators; 8. Computer with accessories		

EVIDENCE REQUIREMENT

PRACTICAL PERFORMANCE	**UNDERPINNING KNOWLEDGE**
The person performing this task must be able to do the following: 1. Select tools, equipment and safety gear; 2. Observe health and safety precautions while working; 3. Inspect, test and reset safety protection devices 4. Clean tools, equipment and workplace; 5. Store tools, equipment and safety gear.	**Detailed knowledge about:** **1.0 Methods** The person performing this task must be able to explain how to: 1.1 Perform safety protection for operations. **2.0 Principles** The person performing this task must be able to explain the following principles: 2.1 Composition and working principles of each working mechanism of equipment; 2.2 Work safety of lifting operations. **3.0 Theories** The person performing this task must be able to explain the following: 3.1 Operational knowledge of lifting equipment; 3.2 Knowledge of mechanical fault diagnosis; 3.3 Knowledge of mechanical maintenance. 4.0 Essential Skills

	4.1 Communication skills; 4.2 Customer service skills; 4.3 Teamwork skills; 4.4 Safety inspection skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	Post-operation inspection is carried out in accordance with the requirements of safety specifications for loading and unloading operations.
CIRCUMSTANTIAL KNOWLEDGE	**Detailed knowledge about:** 1. Knowledge of work safety and occupational health of lifting operations; 2. Common knowledge of fire safety; 3. Basic operating methods and technical requirements of equipment.

APPENDIX: DACUM CHARTS FOR LIFTING, LOADING AND UNLOADING MACHINERY OPERATION TECHNICIAN - NTA LEVEL 4

DUTIES	TASKS	ENABLERS
1.0 Conduct inspection of working environment	1.1 Perform identification of and control of hazard sources. 1.2 Determine safe working range of personnel and equipment.	**General skills and knowledge** · Knowledge of work safety and occupational health of lifting operations · Safety specifications for lifting operations · Communication skills · Customer service skills · Safety inspection skills **Tools and equipment** · Loading and unloading toolkits of lifting machinery · Personal protective equipment, such as safety helmets, work clothes, work shoes, gloves and whistles · Meteorological data receivers · Level gauges · Warning signs and fences · Fire-fighting facilities such as fire extinguishers · Signal generators · Whole set of toolboxes **Materials** · Measuring tools that comply with technical requirements **Requirements for employees** · Teamwork spirit, integrity, time management and commitment
2.0 Conduct daily spot inspection of equipment	2.1 Carry out safety inspection of mechanical components. 2.2 Verify levels of fuel, lubricating oil, hydraulic oil and coolant. 2.3 Inspect the parameter display panel for various indicators.	**General skills and knowledge** · Knowledge of work safety and occupational health of lifting operations · Safety specifications for lifting operations · Communication skills · Customer service skills · Safety inspection skills · Routine spot inspection and management regulations of equipment

DUTIES	TASKS	ENABLERS
		· Inspection and management regulations of instruments and apparatus **Materials** · Measuring tools that comply with technical requirements · Lubricating oils that comply with technical requirements **Requirements for employees** · Teamwork spirit, integrity, time management and commitment
3.0 Provide assistance in basic operations	3.1 Suggest the transport route. 3.2 Carry out flag setting. 3.3 Pass on command signals to team members 3.4 Assist in the transport work.	**General skills and knowledge** · Knowledge of work safety and occupational health of lifting operations · Safety specifications for lifting operations · Communication skills · Customer service skills · Basic operating methods and technical requirements of equipment · Commanding signals for lifting and moving · Identification of on-site warning signs **Materials** · Loading and unloading toolkits of lifting machinery · Personal protective equipment, such as safety helmets, work clothes, · work shoes, gloves and whistles · Level gauges · Warning signs and fences · Signal generators · Whole set of toolboxes **Requirements for employees** · Teamwork spirit, integrity, time management and commitment
	4.1 Fill in operation logbook	**General skills and knowledge**

DUTIES	TASKS	ENABLERS
4.0 Conduct post-operation activities	4.2 Reset Safety protocols.	· Knowledge of work safety and occupational health of lifting operations · Safety specifications for lifting operations · Fire safety in lifting operations · Operating conditions of safety devices in lifting operations · Safety protection measures of loading and unloading operations · Requirements of filling in equipment operation logs · Procedures and requirements of shift change **Materials** · Loading and unloading toolkits of lifting machinery · Personal protective equipment, such as safety helmets, work clothes, work shoes, gloves and whistles · Level gauges · Warning signs and fences · Signal generators · Whole set of toolboxes **Requirements for employees** · Teamwork spirit, integrity, time management and commitment