

**THE NATIONAL COUNCIL FOR TECHNICAL AND VOCATIONAL EDUCATION AND
TRAINING**



OCCUPATIONAL STANDARDS

**OCCUPATION: LIFTING, LOADING AND UNLOADING MACHINERY OPERATION
TECHNICIAN**

LEVEL: NTA LEVEL 6

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ABBREVIATIONS

CBET	Competency Based Education and Training
NACTE	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.

Lifting, Loading and Unloading Machinery Operation Technicians need to operate, inspect, repair and maintain the crane under the premise of ensuring the safety of personnel and cargo. Generally, the Lifting, Loading and Unloading Machinery Operation Technician performs the following responsibilities:

- a) Inspection of the working environment
- b) Daily spot inspection of equipment
- c) Basic working auxiliary operations
- d) Inspection after operations
- 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) Analysis and resolution 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 6

OCCUPATION	LIFTING, LOADING AND UNLOADING MACHINERY OPERATION TECHNICIAN	OCCUPATION CODE	
DUTY TITLE	CONDUCT CONTROL OF SAFETY HAZARDS AT THE WORKPLACE	DUTY NO.	601
TASK TITLE	IDENTIFY HAZARDS WITHIN LIFTING OPERATIONS AND FACILITIES	TASK NO.	6011
PERFORMANCE CRITERIA	The person performing this task must be able to conduct hazard identification in the lifting process and facilities thereof and propose control measures according to approved standards and regulations.		
RANGE STATEMENT	The task can be performed on site under the supervision of senior lifting, loading and unloading machinery operation technicians and lifting, loading and unloading engineers. The tools and equipment to be used include: 1. Full set of lifting equipment tool kit; 2. Personal protective equipment, such as safety helmets, work clothes, work shoes, 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. Work bench 9. 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. Confirm safe distance between lifting machinery and overhead power lines; 4. Confirm operations area has set up a warning line and whether a person is assigned to supervise the 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 safety equipment; 1.4 Troubleshoot other potential safety hazards. 2.0 Principles The person performing this task must be able to explain the following principles:	

5. Verify proper and safe operation of electric equipment within the area 6. Verify proper level of illumination 7. Verify compliance of safety facilities in the operations facility	2.1 Safety assessment of the working environments and equipment of lifting; 2.2 Safety specifications of lifting environments 2.3 Safety operation specifications of lifting. 3.0 Theories The person performing this task must be able to explain the following: 3.1 Safety detection specifications of working environments of lifting; 3.2 Loading and unloading process procedures; 3.3 Safety protection measures of cargo loading and unloading 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	Hazards within lifting operations and facilities are identified as per approved standards and regulations.
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 equipment usage; 5. Requirements of accident and hazard identification, governance and management.

OCCUPATION	LIFTING, LOADING AND UNLOADING MACHINERY OPERATION TECHNICIAN	OCCUPATION CODE	
DUTY TITLE	CONDUCT CONTROL OF SAFETY HAZARDS AT THE WORKPLACE	DUTY NO.	601
TASK TITLE	IDENTIFY HAZARDS WITHIN LOADING OPERATIONS AND FACILITIES	TASK NO.	6012
PERFORMANCE CRITERIA	The person performing this task must be able to conduct hazard identification in the loading process and facilities thereof and propose control measures according to approved standards and regulations.		
RANGE STATEMENT	The task can be performed at the lifting operation sites under the supervision of senior lifting, loading and unloading machinery operation technicians. The tools and equipment to be used include: 1. Complete toolkits of lifting machinery; 2. Personal protective equipment, such as safety helmets, work clothes, work shoes, 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. Work bench		
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 the weight and centre of gravity of the objects to be lifted; 4. Verify the state of lifting ropes, hooks, clamp rings, etc; 5. Confirm proper and safe operation of all kinds of electric equipment; 6. Verify the flatness of the working ground; 7. Set up safety warning signs and warning fences; 8. Verify the equipment operator's certificates and protective equipment;		Detailed knowledge about: 1.0 Methods The person performing this task must be able to explain how to: 1.1 Troubleshoot cargo safety; 1.2 Troubleshoot auxiliary equipment safety; 1.3 Troubleshoot other potential safety hazards. 2.0 Principles The person performing this task must be able to explain the following principles: 2.1 Safety judgment of the working environments and equipment of lifting; 2.2 Safety specifications of working environments of lifting; 2.3 Inspection and replacement standards of steel wire rope; 2.4 Lubrication standards for ship cargo winches; 2.5 Standard for the inspection of metal structures.	

9. Inspect the fire-fighting facilities; 10. Clean the tools, equipment and workplace; 11. Store tools, equipment and safety gear.	3.0 Theories The person performing this task must be able to explain the following: 3.1 Safety detection specifications of lifting cargo and tools; 3.2 Basic structure of ship cargo winches; 3.3 Routine spot inspection and management regulations of the equipment 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	Hazards within loading operations and facilities are identified and eliminated according to approved standards and regulations.
CIRCUMSTANTIAL KNOWLEDGE	Detailed knowledge about: 1. Types, characteristics, application situations and scrap standards of major tools; 2. Requirements of accident and hazard identification, governance and management; 3. Basic knowledge of ship cargo winch monitoring technology and the application of inspection equipment; 4. Occupational health and safety; 5. Common sense of fire safety.

OCCUPATION	LIFTING, LOADING AND UNLOADING MACHINERY OPERATION TECHNICIAN	OCCUPATION CODE	
DUTY TITLE	CONDUCT CONTROL OF SAFETY HAZARDS AT THE WORKPLACE	DUTY NO.	601
TASK TITLE	IDENTIFY HAZARDS WITHIN UNLOADING OPERATIONS AND FACILITIES	TASK NO.	6013
PERFORMANCE CRITERIA	The person performing this task must be able to conduct hazard identification in the unloading process and facilities thereof and propose control measures according to approved standards and regulations.		
RANGE STATEMENT	The task can be performed at the lifting operation sites under the supervision of senior lifting, loading and unloading machinery operation technicians. The tools and equipment to be used include: 1. Complete toolkits of unloading machinery; 2. Personal protective equipment, such as safety helmets, work clothes, safety boots, gloves and whistles; 3. Safety preliminary scheme of lifting operation; 4. Safety operations specifications of lifting; 5. Emergency supplies, such as protective devices, safety devices, warning boards and interphones; 6. Fire-fighting facilities such as fire extinguishers; 7. Periodic inspection plans of equipment. 8. Work bench		
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 literature related to lifting, loading and unloading operations; 4. Develop unloading plans for related cargo; 5. Identify dangerous cargo; 6. Interpret warning signs and symbols on cargo containers; 7. Segregate different types of cargo		Detailed knowledge about: 1.0 Methods The person performing this task must be able to explain how to: 1.1 Review the safety technical requirements; 1.2 Select the lifting tools; 1.3 Determine the lifting position of the lifting cargo; 1.4 Determine the lifting route. 2.0 Principles The person performing this task must be able to explain the following principles: 2.1 Operating standards for lifting equipment; 2.2 Principles of preparing the lifting schemes. 3.0 Theories	

	The person performing this task must be able to explain the following: 3.1 Loading and unloading process flows; 3.2 Safety technical operating procedures for cargo loading and unloading operations. 4.0 Essential Skills 4.1 Communication skills; 4.2 Customer service skills; 4.3 Teamwork skills; 4.4 Safety inspection skills; 4.5 Emergency disposal skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	Hazards within unloading operations and facilities are identified and controlled according to approved standards and regulations.
CIRCUMSTANTIAL KNOWLEDGE	Detailed knowledge about: 1. Underpinning knowledge of mechanical drawing and mechanical basis; 2. Circumstantial knowledge of skill training.

OCCUPATION	LIFTING, LOADING AND UNLOADING MACHINERY OPERATION TECHNICIAN	OCCUPATION CODE	
DUTY TITLE	CONDUCT EQUIPMENT OPERATION AND DEBUGGING	DUTY NO.	602
TASK TITLE	PERFORM INSPECTION AND DEBUGGING OF TEST RUN	TASK NO.	6021
PERFORMANCE CRITERIA	The person performing this task must be able to perform inspection and debugging of a test run as per approved technical standards, laws and regulations.		
RANGE STATEMENT	The task can be performed at the lifting operation sites under the supervision of senior lifting, loading and unloading machinery operation technicians. The tools and equipment to be used include: 1. Personal protective equipment, such as safety helmets, work clothes, electrician shoes and insulating gloves; 2. Instructions of lifting equipment; 3. Electrician’s complete tool kit; 4. Fitter’s complete tool kit 5. Test equipment 6. Regular inspection forms. 7. Work bench 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 the oil level of the hydraulic system; 4. Eliminate leakages; 5. Verify correctness of electrical signals from the equipment; 6. Perform functional tests of each mechanism; 7. Perform overall test run; 8. Resolve all malfunctions; 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 Master the management methods of daily spot inspection of equipment; 1.2 Master the scope of operations for crane overhaul. 2.0 Principles The person performing this task must be able to explain the following principles: 2.1 Working principles of crane mechanical, control and hydraulic systems; 2.2 Mechanical principles and electrical principles. 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 Basic knowledge of production and organization. 4.0 Essential Skills 4.1 Communication skills; 4.2 Customer service skills; 4.3 Teamwork skills; 4.4 Safety inspection skills; 4.5 Emergency disposal skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	Inspection and debugging of an equipment's test run are conducted in accordance with approved technical specifications and manufacturer's manuals.
CIRCUMSTANTIAL KNOWLEDGE	Detailed knowledge about: 1. Operation manuals of cranes.

OCCUPATION	LIFTING, LOADING AND UNLOADING MACHINERY OPERATION TECHNICIAN	OCCUPATION CODE	
DUTY TITLE	CONDUCT EQUIPMENT OPERATION AND DEBUGGING	DUTY NO.	602
TASK TITLE	DRAW SIMPLE LIFTING PLAN OF THE EQUIPMENT	TASK NO.	6022
PERFORMANCE CRITERIA	The person performing this task must be able to draw a simple 2D lifting plan of the given equipment as per approved standards and regulations.		
RANGE STATEMENT	The task can be performed at the lifting operation sites under the supervision of senior lifting, loading and unloading machinery operation technicians. The tools and equipment to be used include: 1. Fitter’s complete toolkits; 2. Electrician’s complete tool kit; 3. Personal protective equipment, such as safety helmets, work clothes, safety boots, gloves and whistles; 4. Instructions of lifting equipment; 5. Parameter forms of lifting equipment; 6. Parameter forms of cargo. 7. Work bench 8. Computer with accessories 9.		
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 literature related to lifting operations; 4. Draw lifting plan of cargo; 5. Interpret lifting plan drawings and make reasonable modifications; 6. Interpret the modified lifting plan drawings; 7. Conduct training and interpretation for related lifting personnel; 8. Conduct technical disclosure; 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 Draw the lifting drawings of equipment. 2.0 Principles The person performing this task must be able to explain the following principles: 2.1 The principles of mastering engineering drawings. 3.0 Theories The person performing this task must be able to explain the following: 3.1 Basic knowledge of production and organisation. 4.0 Essential Skills 4.1 Communication skills; 4.2 Customer service skills;	

	4.3 Teamwork skills; 4.4 Safety inspection skills; 4.5 Emergency disposal skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	Simple lifting plan drawings are drawn in accordance with approved technical specifications and regulations.
CIRCUMSTANTIAL KNOWLEDGE	Detailed knowledge about: 1. Knowledge of mechanical drawing; 2. Knowledge of technical training; 3. Technical requirements of cargo safe lifting.

OCCUPATION	LIFTING, LOADING AND UNLOADING MACHINERY OPERATION TECHNICIAN	OCCUPATION CODE	
DUTY TITLE	CONDUCT SPECIAL AND ECONOMICAL OPERATIONS	DUTY NO.	603
TASK TITLE	CARRY OUT SPECIAL ECONOMICAL OPERATIONS	TASK NO.	6031
PERFORMANCE CRITERIA	The person performing this task must be able to carry out special economical lifting tasks as per approved technical standards and regulations		
RANGE STATEMENT	The task can be performed at the lifting operation sites under the supervision of senior lifting, loading and unloading machinery operation technicians. The tools and equipment to be used include: 1. Personal protective equipment, such as safety helmets, work clothes, work shoes; 2. Instructions of lifting equipment; 3. Fitter’s complete tool kit; 4. Computer with accessories; 5. Work bench		
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. Confirm serviceability of equipment; 4. Operate each working mechanism economically to minimize power consumption; 5. Adopt the operation methods that save energy; 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 Develop working methods for special conditions and special environments; 1.2 Analyse and compare the dynamic property and economy of cargo winches. 2.0 Principles The person performing this task must be able to explain the following principles: 2.1 Principles of process economy. 3.0 Theories The person performing this task must be able to explain the following: 3.1 Operational knowledge of the lifting equipment; 3.2 Technical requirements of process formulation. 4.0 Essential Skills 4.1 Communication skills;	

	4.2 Customer service skills; 4.3 Teamwork skills; 4.4 Safety inspection skills; 4.5 Emergency disposal skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	Special economical operations are conducted in accordance with approved technical specifications and manufacturer's instructions.
CIRCUMSTANTIAL KNOWLEDGE	Detailed knowledge about: 1. Circumstantial knowledge of the dynamic and economic analysis of loading and unloading machinery; 2. Knowledge of equipment energy saving and consumption reduction management; 3. Occupational health and safety; 4. Common sense of fire safety in lifting operations; 5. Basic operating methods and technical requirements of the equipment.

OCCUPATION	LIFTING, LOADING AND UNLOADING MACHINERY OPERATION TECHNICIAN	OCCUPATION CODE	
DUTY TITLE	CONDUCT SPECIAL AND ECONOMICAL OPERATIONS	DUTY NO.	603
TASK TITLE	PERFORM ECONOMICAL LOADING AND UNLOADING OPERATIONS	TASK NO.	6032
PERFORMANCE CRITERIA	The person performing this task must be able to perform loading and unloading operations in the quickest and safest means according to approved technical standards and regulations.		
RANGE STATEMENT	The task can be performed at the lifting operation sites under the supervision of senior lifting, loading and unloading machinery operation technicians. The tools and equipment to be used include: 1. Personal protective equipment, such as safety helmets, work clothes, safety boots; 2. Instructions of lifting equipment; 3. Safety lifting operation specifications; 4. Procedures for lifting, loading and unloading; 5. Computer with accessories 6. Work bench		
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. Determine the center of gravity for cargo with irregular shape or shift of center of gravity; 4. Select appropriate handling methods according to the characteristics of the cargo; 5. Identify command signal for lifting and moving; 6. Perform lifting operations for dangerous, valuable and fragile items; 7. Handle emergent incidents; 8. Collaborate with various institutions for loading and unloading operations;		Detailed knowledge about: 1.0 Methods The person performing this task must be able to explain how to: 1.1 Determine the operations methods of cranes; 1.2 Complete the lifting operations; 1.3 Conduct loading and unloading operations. 2.0 Principles The person performing this task must be able to explain the following principles: 2.1 Safety principles; 2.2 Equipment operating principles; 2.3 Operational planning principles; 2.4 Cargo disposal principles; 2.5 Communication and command principles. 3.0 Theories The person performing this task must be able to explain the following: 3.1 Operational knowledge of the lifting equipment; 3.2 Identification of lifting processes;	

9. Clean tools, equipment and workplace; 10. Store tools, equipment and safety gear.	3.3 Safety operation specifications. 4.0 Essential Skills 4.1 Communication skills; 4.2 Customer service skills; 4.3 Teamwork skills; 4.4 Safety inspection skills; 4.5 Emergency disposal skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	Economical loading and unloading operations are conducted in accordance with approved technical specifications and manufacturer's instructions.
CIRCUMSTANTIAL KNOWLEDGE	Detailed knowledge about: 1. Lifting and moving tools; 2. Command signals for lifting and moving; 3. Engineering mechanics.

OCCUPATION	LIFTING, LOADING AND UNLOADING MACHINERY OPERATION TECHNICIAN	OCCUPATION CODE	
DUTY TITLE	CONDUCT SPECIAL AND ECONOMICAL OPERATIONS	DUTY NO.	603
TASK TITLE	CONDUCT OPERATIONS IN COMPLEX ENVIRONMENT	TASK NO.	6033
PERFORMANCE CRITERIA	The person performing this task must be able to conduct lifting, loading and unloading operations in a complex environment according to approved technical specifications and regulations.		
RANGE STATEMENT	The task can be performed at the lifting operation sites under the supervision of senior lifting, loading and unloading machinery operation technicians. The tools and equipment to be used include: 1. Personal protective equipment, such as safety helmets, work clothes, work shoes; 2. Instructions of lifting equipment; 3. Safety operation specifications of lifting equipment; 4. Computer with accessories; 5. Work bench.		
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. Analyze complex work environment with heavy objects; 4. Perform lifting/loading/unloading operation; 5. Organize trained personnel to carry out difficult loading and unloading operations under complex conditions; 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 Determine the operations of cranes; 1.2 Detect safety of complex environments. 2.0 Principles The person performing this task must be able to explain the following principles: 2.1 Safety principles; 2.2 Environmental assessment principles; 2.3 Communication and coordination principles; 2.4 Task analysis and planning principles; 2.5 Equipment adaptability principles; 2.6 Risk management principles. 3.0 Theories The person performing this task must be able to explain the following: 3.1 Operational knowledge of the lifting equipment; 3.2 Identification of lifting processes; 3.3 Safety operation specifications.	

	4.0 Essential Skills 4.1 Communication skills; 4.2 Customer service skills; 4.3 Teamwork skills; 4.4 Safety inspection skills; 4.5 Emergency disposal skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	Operations in a complex environment are performed in accordance with approved technical specifications and regulations.
CIRCUMSTANTIAL KNOWLEDGE	Detailed knowledge about: 1. Engineering management knowledge; 2. Work safety knowledge; 3. Contingency handling knowledge.

OCCUPATION	LIFTING, LOADING AND UNLOADING MACHINERY OPERATION TECHNICIAN	OCCUPATION CODE	
DUTY TITLE	CONDUCT SPECIAL AND ECONOMICAL OPERATIONS	DUTY NO.	603
TASK TITLE	PERFORM OCCUPATIONAL RISK ASSESSMENT	TASK NO.	6034
PERFORMANCE CRITERIA	The person performing this task must be able to perform occupational risk assessment within the operation and propose a solution according to approved standards, rules and regulations.		
RANGE STATEMENT	The task can be performed at the lifting operation sites under the supervision of senior lifting, loading and unloading machinery operation technicians. The tools and equipment to be used include: 1. Personal protective equipment, such as safety helmets, work clothes, work shoes; 2. Instructions of lifting equipment; 3. Safety operation specifications of lifting equipment.		
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 when working 3. Identify hazard; 4. Evaluate exposure (Who might be harmed?); 5. Characterize risk 6. Recommend control measure; 7. Suggest whether the operation can continue under abnormal situations.		Detailed knowledge about: 1.0 Methods The person performing this task must be able to explain how to: 1.1 Determine the operations of cranes; 1.2 Determine safety of working environment. 2.0 Principles The person performing this task must be able to explain the following principles: 2.1 Safety principles of lifting operations. 3.0 Theories The person performing this task must be able to explain the following: 3.1 Operational knowledge of the lifting equipment; 3.2 Identification of lifting processes; 3.3 Safety operation specifications. 4.0 Essential Skills 4.1 Communication skills; 4.2 Customer service skills; 4.3 Teamwork skills; 4.4 Safety inspection skills; 4.5 Emergency disposal skills.	

DESCRIPTION OF THE END PRODUCT / SERVICE	Occupational risk assessment is performed in accordance with approved technical specifications and regulations.
CIRCUMSTANTIAL KNOWLEDGE	Detailed knowledge about: 1. Basic knowledge of mechanics; 2. Knowledge of work safety and occupational health; 3. Identification of on-site warning signs.

OCCUPATION	LIFTING, LOADING AND UNLOADING MACHINERY OPERATION TECHNICIAN	OCCUPATION CODE	
DUTY TITLE	CARRY OUT SYSTEMATIC INSPECTION AND ADJUSTMENT OF LIFTING AND LOADING EUIPMENT	DUTY NO.	604
TASK TITLE	CONDUCT PERFORMANCE INSPECTION AND ACCEPTANCE OF CONTROL SYSTEM	TASK NO.	6041
PERFORMANCE CRITERIA	The person performing this task must be able to inspect, repair and accept the equipment control systems as per approved technical standards and regulations .		
RANGE STATEMENT	The task can be performed at the lifting operation sites under the supervision of senior lifting, loading and unloading machinery operation technicians. The tools and equipment to be used include: 1. Personal protective equipment, such as safety helmets, work clothes, work shoes; 2. Instructions of lifting equipment; 3. Safety operation specifications of lifting equipment.		
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 the equipment’s control systems; 4. Resolve simple faults; 5. Perform acceptance test of the control system; 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 Conduct safety operations of the control systems of cranes; 1.2 Diagnose the faults of each working system. 2.0 Principles The person performing this task must be able to explain the following principles: 2.1 Working principles of mechanical, electrical, control and hydraulic systems. 3.0 Theories The person performing this task must be able to explain the following: 3.1 Operational knowledge of the lifting equipment. 4.0 Essential Skills 4.1 Communication skills; 4.2 Customer service skills; 4.3 Teamwork skills; 4.4 Safety inspection skills;	

	4.5 Emergency disposal skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	Performance inspection and acceptance of equipment's control system is conducted in accordance with approved technical specifications and regulations.
CIRCUMSTANTIAL KNOWLEDGE	Detailed knowledge about: 1. Knowledge of mechanical manufacturing; 2. Knowledge of hydraulic transmission; 3. Knowledge of electricity and electronics.

OCCUPATION	LIFTING, LOADING AND UNLOADING MACHINERY OPERATION TECHNICIAN	OCCUPATION CODE	
DUTY TITLE	CARRY OUT SYSTEMATIC INSPECTION AND ADJUSTMENT OF LIFTING AND LOADING EUIPMENT	DUTY NO.	604
TASK TITLE	CONDUCT PERFORMANCE INSPECTION OF EQUIPMENT’S FUNCTIONAL MECHANISM	TASK NO.	6042
PERFORMANCE CRITERIA	The person performing this task must be able to conduct performance inspection of equipment’s functional mechanism as per approved technical standards and regulations.		
RANGE STATEMENT	The task can be performed at the lifting operation sites under the supervision of senior lifting, loading and unloading machinery operation technicians. The tools and equipment to be used include: 1. Personal protective equipment, such as safety helmets, work clothes, safety boots; 2. Instructions of lifting equipment; 3. Safety operation specifications of lifting; 4. Fitter’s complete tool kit 5. 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 the functional mechanism of the equipment; 4. Resolve simple faults; 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 Operate the actuators of cranes. 2.0 Principles The person performing this task must be able to explain the following principles: 2.1 Composition and working principle of each working mechanism of cranes; 2.2 Hydraulic composition and working principle of cranes; 2.3 Working principle of crane safety protection devices. 3.0 Theories The person performing this task must be able to explain the following: 3.1 Operational knowledge of the lifting equipment; 3.2 Knowledge of the mechanical mechanism of cranes.	

	4.0 Essential Skills 4.1 Communication skills; 4.2 Customer service skills; 4.3 Teamwork skills; 4.4 Safety inspection skills; 4.5 Emergency disposal skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	Performance inspection of equipment's functional mechanism is conducted in accordance with approved technical specifications and manufacturer's instructions.
CIRCUMSTANTIAL KNOWLEDGE	Detailed knowledge about: 1. Knowledge of mechanical manufacturing; 2. Knowledge of hydraulic transmission; 3. Knowledge of electricity and electronics.

OCCUPATION	LIFTING, LOADING AND UNLOADING MACHINERY OPERATION TECHNICIAN	OCCUPATION CODE	
DUTY TITLE	PERFORM PERIODIC MAINTENANCE OF EQUIPMENT	DUTY NO.	605
TASK TITLE	ORGANIZE EQUIPMENT MAINTENANCE BASED ON SPOT INSPECTION PLANS	TASK NO.	6051
PERFORMANCE CRITERIA	The person performing this task must be able to organize equipment maintenance based on spot inspection plans according to approved technical specifications and regulations.		
RANGE STATEMENT	The task can be performed at the lifting operation sites under the supervision of senior lifting, loading and unloading machinery operation technicians. The tools and equipment to be used include: 1. Personal protective equipment, such as safety helmets, work clothes, work shoes; 2. Instructions of lifting equipment; 3. Fitter’s complete tool kit; 4. Maintenance facilities and tools, such as cleaning tools, oilers, lubricating oil, wrenches and screwdrivers; 5. Maintenance schedules; 6. Computer with accessories; 7. Work bench.		
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; 3. Develop spot inspection plans and standards of lifting equipment; 4. Inspect the lifting equipment according to the spot inspection plans strictly; 5. Rectify the safety hazards found within a specified time limit; 6. Carry out key inspections on the key parts and key devices, and leave no safety hazards; 7. Clean tools, equipment and the 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 Analyse the occurrence frequency of various kinds of equipment faults; 1.2 Find out the fault laws; 1.3 Maintain equipment. 2.0 Principles The person performing this task must be able to explain the following principles: 2.1 Composition and working principle 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 the lifting equipment; 3.2 The composition of crane equipment.	

	4.0 Essential Skills 4.1 Communication skills; 4.2 Customer service skills; 4.3 Teamwork skills; 4.4 Safety inspection skills; 4.5 Emergency disposal skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	Equipment maintenance is organized based on spot inspection plans in accordance with approved technical specifications and manufacturer's instructions.
CIRCUMSTANTIAL KNOWLEDGE	Detailed knowledge about: 1. Knowledge of crane maintenance; 2. Knowledge of mechanical fault diagnosis; 3. Knowledge of mechanical maintenance; 4. Knowledge of mechanical manufacturing; 5. Knowledge of hydraulic transmission; 6. Knowledge of electricity and electronics.

OCCUPATION	LIFTING, LOADING AND UNLOADING MACHINERY OPERATION TECHNICIAN	OCCUPATION CODE	
DUTY TITLE	PERFORM PERIODIC MAINTENANCE OF EQUIPMENT	DUTY NO.	605
TASK TITLE	ESTABLISH OVERALL TECHNICAL STATUS OF THE EQUIPMENT	TASK NO.	6052
PERFORMANCE CRITERIA	The person performing this task must be able to establish overall technical status of the equipment in accordance with approved technical specifications and regulations.		
RANGE STATEMENT	The task can be performed at the lifting operation sites under the supervision of senior lifting, loading and unloading machinery operation technicians. The tools and equipment to be used include: 1. Personal protective equipment, such as safety helmets, work clothes, safety boots; 2. Instructions of lifting equipment; 3. Maintenance facilities and tools, such as cleaning tools, oilers, lubricating oil, wrenches and screwdrivers; 4. Maintenance schedules; 5. Fitter’s complete tool kit; 6. Computer with accessories; 7. Work bench.		
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. Develop the overall inspection contents and standards of the lifting equipment; 4. Inspect the lifting equipment according to the spot inspection plans; 5. Rectify the safety hazards found within a specified time limit; 6. Inspect all parts, mechanisms and systems to trace any safety hazards;		Detailed knowledge about: 1.0 Methods The person performing this task must be able to explain how to: 1.1 Analyse the occurrence frequency of various kinds of equipment faults; 1.2 Find out the fault laws; 1.3 Conduct maintenance of equipment. 2.0 Principles The person performing this task must be able to explain the following principles: 2.1 Composition and working principle 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 the lifting equipment; 3.2 Knowledge of mechanical fault diagnosis;	

7. Clean tools, equipment and workplace; 8. Store tools, equipment and safety gear.	3.3 Knowledge of mechanical maintenance; 3.4 Knowledge of crane maintenance. 4.0 Essential Skills 4.1 Communication skills; 4.2 Customer service skills; 4.3 Teamwork skills; 4.4 Safety inspection skills; 4.5 Emergency disposal skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	The overall technical status of the equipment is established in accordance with technical requirements and manufacturer's instructions.
CIRCUMSTANTIAL KNOWLEDGE	Detailed knowledge about: 1. Knowledge of hydraulic transmission; 2. Knowledge of electricity and electronics.

OCCUPATION	LIFTING, LOADING AND UNLOADING MACHINERY OPERATION TECHNICIAN	OCCUPATION CODE	
DUTY TITLE	CARRY OUT EXAMINATION AND ELIMINATION OF EQUIPMENT FAULTS	DUTY NO.	606
TASK TITLE	DIAGNOSE THE NORMAL OPERATIONS OF EQUIPMENT	TASK NO.	6061
PERFORMANCE CRITERIA	The person performing this task must be able to diagnose the normal operations of equipment according to approved standards and regulations.		
RANGE STATEMENT	The task can be performed at the lifting operation sites under the supervision of senior lifting, loading and unloading machinery operation technicians. The tools and equipment to be used include: 1. Personal protective equipment, such as safety helmets, work clothes, work shoes; 2. Instructions of lifting equipment; 3. Maintenance facilities and tools, such as cleaning tools, oilers, lubricating oil, wrenches and screwdrivers; 4. Maintenance schedules.		
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 3. Analyse the working principles of the equipment’s major functional systems and diagnose the faults of each functional system; 4. Trace the key parts of the metal structure to find cracks, welding failure, weary and other conditions in time; 5. Inspect the braking system of each mechanism; 6. Verify the lubrication status of each moving part of the whole equipment; 7. Clean tools, equipment and the working place;		Detailed knowledge about: 1.0 Methods The person performing this task must be able to explain how to: 1.1 Visually diagnose whether the device is running properly. 2.0 Principles The person performing this task must be able to explain the following principles: 2.1 Composition and working principle 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 the lifting equipment; 3.2 The structural composition and working principles of the crane equipment; 3.3 Summary of crane faults. 4.0 Essential Skills 4.1 Communication skills; 4.2 Customer service skills;	

8. Store tools, equipment and safety gear.	4.3 Teamwork skills; 4.4 Safety inspection skills; 4.5 Emergency disposal skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	Diagnosis of the normal operations of equipment is performed in accordance with approved technical specifications and manufacturer's instructions.
CIRCUMSTANTIAL KNOWLEDGE	Detailed knowledge about: 1. Knowledge of crane maintenance; 2. Knowledge of mechanical fault diagnosis; 3. Knowledge of mechanical maintenance; 4. Maintenance and operating policies; 5. Waste disposal methods.

OCCUPATION	LIFTING, LOADING AND UNLOADING MACHINERY OPERATION TECHNICIAN	OCCUPATION CODE	
DUTY TITLE	CARRY OUT EXAMINATION AND ELIMINATION OF EQUIPMENT FAULTS	DUTY NO.	606
TASK TITLE	IMPLEMENT ANALYSIS OF THE CAUSES OF ABNORMAL WEAR OF PARTS	TASK NO.	6062
PERFORMANCE CRITERIA	The person performing this task must be able to analyse the wear of equipment accessories, and propose optimization measures according to approved technical standards and regulations.		
RANGE STATEMENT	The task can be performed at the lifting operation sites under the supervision of senior lifting, loading and unloading machinery operation technicians. The tools and equipment to be used include: 1. Personal protective equipment, such as safety helmets, work clothes, work shoes; 2. Instructions of lifting equipment; 3. Maintenance facilities and tools, such as cleaning tools, oilers, lubricating oil, wrenches and screwdrivers; 4. Maintenance schedules. 5. Fitter’s complete tool kit; 6. Work bench; 7. 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; 3. Perform daily attention to the wear conditions of the crane related accessories; 4. Replace worn out parts in time; 5. Analyze worn out parts, find out the causes and suggest remedy		Detailed knowledge about: 1.0 Methods The person performing this task must be able to explain how to: 1.1 Diagnose crane fault; 1.2 Analyse part wear. 2.0 Principles The person performing this task must be able to explain the following principles: 2.1 Principles of mechanical parts wear. 3.0 Theories The person performing this task must be able to explain the following: 3.1 The structural composition and working principles of the crane equipment; 3.2 Summary of crane faults; 3.3 Theories of mechanical parts wear.	

	4.0 Essential Skills 4.1 Communication skills; 4.2 Customer service skills; 4.3 Teamwork skills; 4.4 Safety inspection skills; 4.5 Emergency disposal skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	Analysis of the causes of abnormal wear of parts is conducted in accordance with approved technical requirements and manufacturer's instructions.
CIRCUMSTANTIAL KNOWLEDGE	Detailed knowledge about: 1. Safety operations of operating machines and tools; 2. Safety operations of measuring instruments; 3. Occupational health and safety; 4. Maintenance and operating policies; 5. Waste disposal methods.

OCCUPATION	LIFTING, LOADING AND UNLOADING MACHINERY OPERATION TECHNICIAN	OCCUPATION CODE	
DUTY TITLE	CARRY OUT EXAMINATION AND ELIMINATION OF EQUIPMENT FAULTS	DUTY NO.	606
TASK TITLE	CONDUCT COMMON FAULT DIAGNOSIS AND SIMPLE MAINTENANCE OF EQUIPMENT	TASK NO.	6063
PERFORMANCE CRITERIA	The person performing this task must be able to conduct common fault diagnosis and simple maintenance of equipment according to approved technical standards and regulations.		
RANGE STATEMENT	The task can be performed at the lifting operation sites under the supervision of senior lifting, loading and unloading machinery operation technicians. The tools and equipment to be used include: 1. Personal protective equipment, such as safety helmets, work clothes, safety boots; 2. Fitter’s complete tool kit; 3. Instructions of lifting equipment; 4. Maintenance facilities and tools, such as cleaning tools, oilers, lubricating oil, wrenches and screwdrivers; 5. Maintenance schedules. 6. Computer with accessories; 7. Work bench.		
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. Prepare the maintenance process of reduction gearboxes; 4. Find out the cause of the underpower and poor transmission of the equipment, and prepare maintenance plans; 5. Prepare maintenance tools, spare parts, fasteners and auxiliary materials according to maintenance process requirements.		Detailed knowledge about: 1.0 Methods The person performing this task must be able to explain how to: 1.1 Diagnose crane faults; 1.2 Maintain cranes; 1.3 Develop technical requirements, standards and processes for the maintenance of typical crane parts. 2.0 Principles The person performing this task must be able to explain the following principles: 2.1 Principles of mechanical parts wear; 2.2 Working principles of crane mechanical systems and electrical systems; 2.3 Principles of state detection and fault diagnosis. 3.0 Theories	

6. Conduct test run of equipment after maintenance; 7. Clean tools, equipment and safety gear; 8. Store tools, equipment and safety gear.	The person performing this task must be able to explain the following: 3.1 Summary of crane faults; 3.2 Maintenance of cranes; 3.3 Circumstantial knowledge of hydraulic and pneumatic transmission fault diagnosis. 4.0 Essential Skills 4.1 Communication skills; 4.2 Customer service skills; 4.3 Teamwork skills; 4.4 Safety inspection skills; 4.5 Emergency disposal skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	Common fault diagnosis and simple maintenance of equipment are performed in accordance with approved technical specifications and manufacturer's instructions.
CIRCUMSTANTIAL KNOWLEDGE	Detailed knowledge about: 1. Safety operations of operating machines and tools; 2. Safety operations of measuring instruments; 3. Occupational health and safety; 4. Maintenance and operating policies.

OCCUPATION	LIFTING, LOADING AND UNLOADING MACHINERY OPERATION TECHNICIAN	OCCUPATION CODE	
DUTY TITLE	CARRY OUT EXAMINATION AND ELIMINATION OF EQUIPMENT FAULTS	DUTY NO.	606
TASK TITLE	PERFORM AVAILABILITY TESTING AND ACCEPTANCE OF REPAIRED EQUIPMENT	TASK NO.	6064
PERFORMANCE CRITERIA	The person performing this task must be able to perform availability testing and acceptance of repaired equipment according to approved technical standards and regulations.		
RANGE STATEMENT	The task can be performed at the lifting operation sites under the supervision of senior lifting, loading and unloading machinery operation technicians. The tools and equipment to be used include: 1. Personal protective equipment, such as safety helmets, work clothes, work shoes; 2. Instructions of lifting equipment; 3. Maintenance facilities and tools, such as cleaning tools, oilers, lubricating oil, wrenches and screwdrivers; 4. Maintenance schedules.		
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 equipment troubleshooting; 4. Establish standards for the normal operations of cranes; 5. Participate in the acceptance of the crane after maintenance; 6. Clean tools, equipment and the 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 Diagnose crane faults; 1.2 Maintain cranes; 1.3 Use detection equipment. 2.0 Principles The person performing this task must be able to explain the following principles: 2.1 Working principles of crane mechanical systems and electrical systems. 3.0 Theories The person performing this task must be able to explain the following: 3.1 Fundamentals of mechanical design; 3.2 Summary of crane faults; 3.3 Maintenance of cranes. 4.0 Essential Skills	

	4.1 Communication skills; 4.2 Customer service skills; 4.3 Teamwork skills; 4.4 Safety inspection skills; 4.5 Emergency disposal skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	Availability testing and acceptance of repaired equipment are performed in accordance with approved technical specifications and manufacturer's manuals.
CIRCUMSTANTIAL KNOWLEDGE	Detailed knowledge about: 1. Safety operations of operating machines and tools; 2. Safety operations of measuring instruments; 3. Occupational health and safety; 4. Maintenance and operating policies; 5. Waste disposal methods.

TABLE 1: DACUM CHARTS FOR LIFTING, LOADING AND UNLOADING TECHNICIAN - NTA 6

DUTIES	TASKS	ENABLERS
1.0 Conduct control of safety hazards at the workplace environment	1.1 Identify hazards within lifting process and facilities.	General skills and knowledge • Cooperation with others using skills and submission of reports to the superiors • Usage of manufacturer's manuals • Safety operation specifications of lifting equipment • Safety specifications for lifting equipment • Interpretation of technical drawings • Safety specifications for lifting operations • Work safety and loading and unloading tools and equipment • General knowledge of safe lifting operations • General knowledge of safe lifting operations • Personal protective equipment such as helmets, work shoes, insulating shoes and insulating gloves • Loading and unloading toolkits and measuring toolkits • Fire-fighting facilities such as fire extinguishers • Warning signs and fences Materials • Safety warning stickers and other consumables in accordance with safety specifications Requirements for employees • Teamwork spirit, responsibility, safety awareness and specification compliance
	1.2 Identify hazards within loading process and facilities.	
	1.3 Identify hazards within unloading process and facilities.	
2.0 Conduct equipment operation and debugging	2.1 Perform inspection and debugging of test run.	General skills and knowledge • Cooperation with others using communication skills and submission of reports to the superiors • Usage of manufacturer's manuals
	2.2 Draw simple lifting plan of the equipment.	

DUTIES	TASKS	ENABLERS
		• Safety operation specifications of lifting equipment • Interpretation of technical drawings • The structure and working principles of the main mechanical mechanism • Knowledge of electrical principles of lifting equipment • Knowledge of hydraulic pressure principles of lifting equipment • Electricity and electronic knowledge Tools and equipment • Personal protective equipment such as helmets, work shoes, insulating shoes and insulating gloves • Electrical tools, loading and unloading tools and inspection tools • Fire-fighting facilities such as fire extinguishers • Warning signs and fences Materials • Equipment and tools that meet safety specifications Requirements for employees • Teamwork spirit, responsibility, safety awareness, environmental protection awareness and specification compliance
3.0 Conduct special and economical operations	3.1 Carry out special economical operations.	General skills and knowledge • Cooperation with others using communication skills and submission of reports to the superiors • Usage of manufacturer's manuals • Safety operation specifications of lifting equipment • Interpretation of technical drawings • Technical measures of loading and unloading safety • Processes of lifting loading and unloading
	3.2 Perform economical loading and unloading operations.	
	3.3 Conduct operations in complex environment.	
	3.4 Perform occupational risk assessment.	

DUTIES	TASKS	ENABLERS
		- Knowledge of lifting equipment structure Tools and equipment - Personal protective equipment such as helmets, work shoes, insulating shoes and insulating gloves - Electrical tools, loading and unloading tools and inspection tools - Fire-fighting facilities such as fire extinguishers - Warning signs and fences Materials - Equipment and tools that meet safety specifications Requirements for employees - Teamwork spirit, responsibility, safety awareness, environmental protection awareness and specification compliance
4.0 Carry out systematic inspection and adjustment of lifting and loading equipment.	4.1 Conduct performance inspection and acceptance of control system.	General skills and knowledge - Cooperation with others using communication skills and submission of reports to the superiors - Usage of manufacturer's manuals - Safety operation specifications of lifting equipment - Interpretation of technical drawings - Management of lifting equipment after completing the operation - Mechanical drawing and limit fitting - Foundation of the lifting machinery Tools and equipment - Personal protective equipment such as helmets, work shoes, insulating shoes and insulating gloves
	4.2 Conduct performance inspection of functional mechanism.	

DUTIES	TASKS	ENABLERS
		• Electrical tools, loading and unloading tools and inspection tools • Fire-fighting facilities such as fire extinguishers • Warning signs and fences Materials • Equipment, tools, emergency supplies, etc. which is in line with safety specifications Requirements for employees • Teamwork spirit, responsibility, safety awareness, environmental protection awareness and specification compliance
5.0 Perform periodic maintenance of equipment	5.1 Organize equipment maintenance based on spot inspection plan.	General skills and knowledge • Cooperation with others using communication skills and submission of reports to the superiors • Usage of manufacturer's manuals • Safety operation specifications of lifting equipment • Interpretation of technical drawings • General knowledge of the maintenance of the lifting equipment Tools and equipment • Personal protective equipment such as helmets, work shoes, insulating shoes and insulating gloves • Electrical tools, loading and unloading tools, inspection tools and lubricating oil • Fire-fighting facilities such as fire extinguishers • Warning signs and fences Materials • Equipment and tools that meet safety specifications Requirements for employees
	5.2 Establish overall technical status of the equipment.	

DUTIES	TASKS	ENABLERS
		Teamwork spirit, responsibility, safety awareness, environmental protection awareness and specification compliance
6.0 Carry out examination and elimination of equipment faults	6.1 Diagnose the normal operations of equipment.	General skills and knowledge - Cooperation with others using communication skills and submission of reports to the superiors - Usage of manufacturer's manuals - Safety operation specifications of lifting equipment - Interpretation of technical drawings - General knowledge of the maintenance of the lifting equipment Tools and equipment - Personal protective equipment such as helmets, work shoes, insulating shoes and insulating gloves - Electrical tools, loading and unloading tools, inspection tools and lubricating oil - Fire-fighting facilities such as fire extinguishers - Warning signs and fences Materials - Equipment and tools that meet safety specifications Requirements for employees - Teamwork spirit, responsibility, safety awareness, environmental protection awareness and specification compliance
	6.2 Implement analysis of the causes of abnormal wear of parts.	
	6.3 Conduct common fault diagnosis and simple maintenance of equipment.	
	6.4 Perform availability testing and acceptance of repaired equipment	