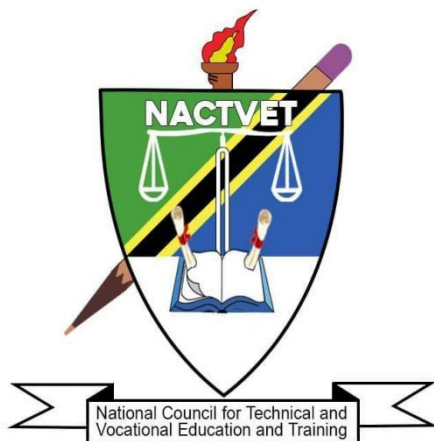


**NATIONAL COUNCIL FOR TECHNICAL AND VOCATIONAL EDUCATION AND
TRAINING OF TANZANIA**



APRIL 2023

PROPOSED OCCUPATIONAL STANDARDS

OCCUPATION: OIL & GAS STORAGE AND TRANSPORTATION TECHNICIAN

LEVEL: NTA 5

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ABBREVIATIONS

CBET	Competency-based Education and Training
DCS	Distributed Control System
HSE	Health, Safety, and Environment
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 to perform consistently to the standards required in 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 performance tool of assessment of the pre-scribed outcomes.
Occupational/Job Analysis:	A process used to identify the tasks that are important to employees in any given occupation

Performance Criteria:	Indicate the expected end results or outcome in form of evaluative statements.
Skills:	The ability to perform occupational tasks with a high degree of proficiency within a given occupation. Skill is composed by three completely interdependent components: cognitive, affective, and psychomotor.
Standards:	It is a set of statement, which if proved true under working conditions, means that an individual is meeting an expected level and type of performance.
Task Analysis:	The process of analysing each task to determine the steps, related knowledge, attitudes, performance standards, tools and materials needed, and safety concerns required of employees performing it.
Task:	A work activity that has a definite beginning and ending, is observable or measurable, consists of two or more definite steps, and leads to a product, service, or decision.
Underpinning Knowledge:	This is 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 conform the importance of the task (competency) statements identified through occupational analysis. Other questions, such as the degree of task learning difficulty are also frequently asked. This process is also sometimes referred to as validation.

1.0. INTRODUCTION

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

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

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

In TET delivery, Tanzania adopted the Competency-based Education and Training (CBET) approach. The CBET approach focuses on providing learners with the skills and knowledge

required to meet the occupational standards. Occupational standards are thus the starting point for developing Competency-based Education and Training (CBET) programmes. TET institutions will be required to benchmark their curricula with relevant occupational standards.

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

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

2.0. OCCUPATIONAL STANDARD DEVELOPMENT PROCESS

The Occupational standards development process began with an examination of major documents that guide Tanzanian skill development. The 10-year *National Skills Development Strategy* (2016-2026) was one of the documents reviewed, and it outlined six (6) economic sectors that should be prioritized when developing skills development programmes.

These sectors include: Transport and Logistics, Tourism and Hospitality, Agribusiness, Construction, Energy and ICT. 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 workshop comprised of expert workers and educators with substantial knowledge and experience in the occupation conducted an occupational analysis utilizing the DACUM approach to produce the occupational profile. The analysis resulted in DACUM Charts, which are attached as **Appendix 1** to this document.

The occupational standards were then developed. Experts in Occupational Analysis and the Development of Occupational Standards facilitated the workshop. Interviews, online surveys, and a stakeholder forum were used to validate the occupational standards. Engineers, supervisory technicians on the job, and experienced Oil & Gas Storage and Transportation technicians were key informants in the survey to discover occupational trends. This information

was used to gain insight from the workplaces regarding trends and changes in the profession, including how well graduates are prepared for working in the occupation. A total ofonline surveys were completed by experts from the labour market across the country. Apart from the survey aiding in defining the scope for the occupational analysis, they served to engage a wide cross-section of experts in the occupation. The stakeholders' forum was attended byparticipants from different parts of the country representing various companies.

3.0. THE SCOPE AND OVERVIEW OF THE OCCUPATION STANDARDS FOR OIL & GAS STORAGE AND TRANSPORTATION TECHNICIANS

These standards cover a broad range of duties and tasks that can be performed by an Oil & Gas Storage and Transportation Technician. However, the occupational standards are not meant to replace individual job descriptions, they are to be used for guidance in defining skill levels and knowledge for the technician in specific settings or positions. The Oil & Gas Storage and Transportation 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 Oil & Gas Storage and Transportation Technician work under engineers' supervision to ensure safe, continuous, cost-effective, and efficient oil & gas storage and transportation. During loading and unloading operations in the oil depot, oil storage and transmission, gas handling and processing, and natural gas offloading, Oil & Gas Storage and Transportation Technicians are expected to complete various operations, including operation control, device operation, and technical management. Generally, the Oil & Gas Storage and Transportation Technician performs the following duties:

- a) Collecting data on oil receiving and delivery in the oil depot
- b) Recording the operating data of the oil depot
- c) Monitoring the gas gathering and transmission at the gas well site
- d) Operation of oil receiving and delivery in the oil depot
- e) Oil offloading operation
- f) Gas filtration and purification
- g) Operation of gas offloading
- h) Compressed gas handling

- i) Compressed gas storage
- j) LNG handling
- k) LNG storage
- f) LNG gasification

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

4.0. VALIDITY PERIOD

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

5.0. OCCUPATIONAL STANDARDS

5.1. OCCUPATIONAL STANDARDS FOR OIL & GAS STORAGE AND TRANSPORTATION TECHNICIAN -NTA 5

TRANSPORTATION TECHNICIAN-NTAS			
OCCUPATION	OIL & GAS STORAGE AND TRANSPORTATION TECHNICIAN	OCCUPATION CODE	
DUTY TITLE	OPERATION OF OIL RECEIVING AND DELIVERY IN THE OIL DEPOT	DUTY NO.	501
TASK TITLE	OPENING AND CLOSING OF SOLENOID VALVE	TASK NO.	5011
PERFORMANCE CRITERIA	The person executing the task must be able to complete the opening and closing of solenoid valves in accordance with the operating procedures for oil receiving and delivery.		
RANGE STATEMENT	This task can be performed at the oil transmission station under the supervision of the Senior Oil & Gas Storage and Transportation Technician and the Oil & Gas Storage and Transportation Process Engineer. The under-mentioned equipment(s)/tools will be needed: 1. PPE: helmet, safety glasses, self-priming filtering gas mask, hearing protection device, labor protection clothing, gloves, safety shoes; 2. Walkie-talkie; 3. Solenoid valve; 4. Oil pipeline; 5. Cleaning tools.		
EVIDENCE REQUIREMENT			
PRACTICAL PERFORMANCE		UNDERPINNING KNOWLEDGE	
The person performing this task must be able do the following: 1. Strictly implement personal safety protection and wear a complete set of labor protection appliances when performing tasks; 2. Select appropriate tools and equipment for this task; 3. Open the solenoid valve; 4. Close the solenoid valve; 5. Monitor the operation of the solenoid valve; 6. Record the operating parameters of the solenoid valve; 7. Clean tools, equipment and workplaces; 8. Store tools and equipment safely.		Detailed knowledge about: 1.0. Methods The person performing this task must be able to explain how: 1.1. Analyze the operating parameters of the solenoid valve; 1.2. Perform solenoid valve opening and closing operations. 2.0. Principle The person performing this task must be able to explain the following principles: 2.1. Working principle of solenoid valve; 2.2. Operating procedures of solenoid valve. 3.0. Theories The person performing this task must be able to explain: 3.1. Automated process flow of oil receiving and delivery system in oil depots; 3.2. Structure and technical performance of solenoid valve; 3.3. Use and maintenance of solenoid valves; 3.4. Basic knowledge of oil depot automation system. 4.0. Essential skills 4.1. Communication skills; 4.2. Teamwork skills;	

	4.3. Report writing skills; 4.4. Standard operations.
DESCRIPTION OF PRODUCTS/SERVICE	END The person executing the task must be able to complete the opening and closing of solenoid valves in accordance with the operating procedures for oil receiving and delivery.
CIRCUMSTANTIAL KNOWLEDGE	Detailed knowledge about: 1. Basic knowledge of safety and environmental protection.

OCCUPATION	OIL & GAS STORAGE AND TRANSPORTATION TECHNICIAN	OCCUPATION CODE	
DUTY TITLE	OPERATION OF OIL RECEIVING AND DELIVERY IN THE OIL DEPOT	DUTY NO.	501
TASK TITLE	STARTING AND SHUTDOWN OF CENTRIFUGAL PUMPS	TASK NO.	5012
PERFORMANCE CRITERIA	The person executing the task must be able to complete the starting and shutdown of centrifugal pumps in accordance with the operating procedures for oil receiving and delivery.		
RANGE STATEMENT	This task can be performed at the oil transmission station under the supervision of the Senior Oil & Gas Storage and Transportation Technician and the Oil & Gas Storage and Transportation Process Engineer. The under-mentioned equipment(s)/tools will be needed: 1. PPE: helmet, safety glasses, self-priming filtering gas mask, hearing protection device, labor protection clothing, gloves, safety shoes; 2. Walkie-talkie; 3. Centrifugal pump; 4. Oil pipeline; 5. Cleaning tools.		
EVIDENCE REQUIREMENT			
PRACTICAL PERFORMANCE		UNDERPINNING KNOWLEDGE	
The person performing this task must be able do the following: 1. Strictly implement personal safety protection and wear a complete set of labor protection appliances when performing tasks; 2. Select appropriate tools and equipment for this task; 3. Start centrifugal pump; 4. Perform centrifugal pump shutdown operations; 5. Monitor the stable operating parameters of centrifugal pumps; 6. Switch to standby centrifugal pump according to task requirements; 7. Clean tools, equipment and workplaces; 8. Store tools and equipment safely.		Detailed knowledge about: 1.0. Methods The person performing this task must be able to explain how: 1.1. Fill in and submit the operating records of centrifugal pumps; 1.2. Switch to standby centrifugal pump. 2.0. Principle The person performing this task must be able to explain the following principles: 2.1. Structure and technical performance of centrifugal pumps; 2.2. Operating procedures for centrifugal pumps. 3.0. Theories The person performing this task must be able to explain: 3.1. Oil transmission process flow of oil depot; 3.2. Operation of centrifugal pumps; 3.3. Basic properties of oil. 4.0. Essential skills 4.1. Communication skills; 4.2. Teamwork skills; 4.3. Report writing skills; 4.4. Standard operations.	

DESCRIPTION OF PRODUCTS/SERVICE	END The person executing the task must be able to complete the starting and shutdown of centrifugal pumps in accordance with the operating procedures for oil receiving and delivery.
CIRCUMSTANTIAL KNOWLEDGE	Detailed knowledge about: 1. Basic knowledge of safety and environmental protection.

OCCUPATION	OIL & GAS STORAGE AND TRANSPORTATION TECHNICIAN	OCCUPATION CODE	
DUTY TITLE	OPERATION OF OIL RECEIVING AND DELIVERY IN THE OIL DEPOT	DUTY NO.	501
TASK TITLE	RECEIVING AND VENTING OF LOADING ARMS	TASK NO.	5013
PERFORMANCE CRITERIA	The person executing the task must be able to complete the receiving and venting of loading arms in accordance with the operating procedures for oil receiving and delivery.		
RANGE STATEMENT	This task can be performed at the oil transmission station under the supervision of the Senior Oil & Gas Storage and Transportation Technician and the Oil & Gas Storage and Transportation Process Engineer. The under-mentioned equipment(s)/tools will be needed: 1. PPE: helmet, safety glasses, self-priming filtering gas mask, hearing protection device, labor protection clothing, gloves, safety shoes; 2. Walkie-talkie; 3. Loading arm; 4. Oil pipeline; 5. Level gauge and flow meter; 6. Oil tank temperature monitoring system; 7. Electrostatic ground wire; 8. Cleaning tools.		
EVIDENCE REQUIREMENT			
PRACTICAL PERFORMANCE		UNDERPINNING KNOWLEDGE	
The person performing this task must be able do the following: 1. Strictly implement personal safety protection and wear a complete set of labor protection appliances when performing tasks; 2. Select appropriate tools and equipment for this task; 3. Connect the highway loading and unloading arm to the oil tank truck; 4. Connect the railway loading and unloading arm to the oil tank truck; 5. Insert the loading arm into the oil tank truck for loading and unloading operations; 6. Perform loading arm venting and exhaust; 7. Monitor the loading and unloading liquid level of oil tank trucks;		Detailed knowledge about: 1.0. Methods The person performing this task must be able to explain how: 1.1. Operate the highway loading arm loading and unloading truck; 1.2. Operate railway loading arm loading and unloading truck. 2.0. Principle The person performing this task must be able to explain the following principles: 2.1. Working principle of loading arm; 2.2. Operating procedures for oil receiving and delivery from oil tanks; 2.3. Operating procedures for loading and unloading arms. 3.0. Theories The person performing this task must be able to explain: 3.1. Process flow of oil receiving and delivery system in oil depots; 3.2. Use and maintenance of loading arms; 3.3. Basic properties of oil.	

8. Adjust the loading and unloading flow of oil tank trucks; 9. Clean tools, equipment and workplaces; 10. Store tools and equipment safely.	4.0 Essential skills 4.1. Communication skills; 4.2. Teamwork skills; 4.3. Standard operations.
DESCRIPTION OF END PRODUCTS/SERVICE	The person executing the task must be able to complete the loading and unloading operations of loading arms in accordance with the operating procedures for oil receiving and delivery in oil depots.
CIRCUMSTANTIAL KNOWLEDGE	Detailed knowledge about: 1. Instrument use and maintenance; 2. Basic knowledge of safety and environmental protection.

OCCUPATION	OIL & GAS STORAGE AND TRANSPORTATION TECHNICIAN	OCCUPATION CODE	
DUTY TITLE	OPERATION OF OIL RECEIVING AND DELIVERY IN THE OIL DEPOT	DUTY NO.	501
TASK TITLE	FILL IN THE RECORD OF OIL RECEIVING AND DELIVERY (OPERATION TICKET) IN THE OIL DEPOT	TASK NO.	5014
PERFORMANCE CRITERIA	The person executing the task must be able to complete the record of oil receiving and delivery (operation ticket) at the oil depot in accordance with the operating procedures for oil receiving and delivery in the oil depot.		
RANGE STATEMENT	This task can be performed at the oil transmission station under the supervision of the Senior Oil & Gas Storage and Transportation Technician and the Oil & Gas Storage and Transportation Process Engineer. The under-mentioned equipment(s)/tools will be needed: 1. PPE: helmet, safety glasses, self-priming filtering gas mask, hearing protection device, labor protection clothing, gloves, safety shoes; 2. Walkie-talkie; 3. Process flow diagrams for oil transmission positions; 4. Oil pipeline; 5. Valves for oil pipelines; 6. Cleaning tools.		
EVIDENCE REQUIREMENT			
PRACTICAL PERFORMANCE		UNDERPINNING KNOWLEDGE	
The person performing this task must be able do the following: 1. Strictly implement personal safety protection and wear a complete set of labor protection appliances when performing tasks; 2. Select appropriate tools and equipment for this task; 3. Understand the process flow diagram of loading and unloading operations in oil depots; 4. Monitor the process parameters of oil depot loading and unloading operations; 5. Fill in the operation ticket for oil receiving; 6. Fill in the operation ticket for oil delivery; 7. Clean tools, equipment and workplaces; 8. Store tools and equipment safely.		Detailed knowledge about: 1.0. Methods The person performing this task must be able to explain how: 1.1. Understand the process flow diagram of loading and unloading operations in oil depots; 1.2. Record the process parameters for oil receiving and delivery in the oil depot. 2.0. Principle The person performing this task must be able to explain the following principles: 2.1. The role and zoning of oil depots; 2.2. The composition and functions of the oil depot loading and unloading system. 3.0. Theories The person performing this task must be able to explain: 3.1. Control and record the operating parameters of oil receiving and delivery in oil depots; 3.2. Methods in drawing a process flow diagram for oil loading and unloading operations.	

	4.0. Essential skills 4.1. Communication skills; 4.2. Teamwork skills; 4.3. Report writing skills; 4.4. Standard operations.
DESCRIPTION OF PRODUCTS/SERVICE	END The person executing the task must be able to complete the record of oil receiving and delivery (operation ticket) at the oil depot in accordance with the operating procedures for oil receiving and delivery in the oil depot.
CIRCUMSTANTIAL KNOWLEDGE	Detailed knowledge about: 1. Instrument use and maintenance; 2. Basic knowledge of safety and environmental protection.

OCCUPATION	OIL & GAS STORAGE AND TRANSPORTATION TECHNICIAN	OCCUPATION CODE	
DUTY TITLE	OPERATION OF OIL RECEIVING AND DELIVERY IN THE OIL DEPOT	DUTY NO.	501
TASK TITLE	OIL COMPREHENSIVE METERING	TASK NO.	5015
PERFORMANCE CRITERIA	The person executing the task must be able to complete the comprehensive metering operations in accordance with the operating procedures for oil metering.		
RANGE STATEMENT	This task can be performed in the laboratory under the supervision of the Senior Oil & Gas Storage and Transportation Technician and the Oil & Gas Storage and Transportation Process Engineer. The following equipment(s) and tool(s) will be used in executing the task: 1. PPE: helmet, safety glasses, self-priming filtering gas mask, labor protection clothing, gloves, safety shoes; 2. Comprehensive oil metering tools and equipment: dipstick, water-finding paste, temperature box, portable density meter, pipeline flow meter, sampler, and sampling bottle.		
EVIDENCE REQUIREMENT			
PRACTICAL PERFORMANCE		UNDERPINNING KNOWLEDGE	
The person performing this task must be able do the following: 1. Strictly implement personal safety protection and wear a complete set of labor protection appliances when performing tasks; 2. Select appropriate tools and equipment for this task; 3. Measure the vertical distance from the oil surface to the tank bottom reference point (light oil); 4. Measure the vertical distance from the reference point of the oil measuring port to the liquid level (heavy oil); 5. Measure the water surface height inside the oil tank; 6. Collect oil samples from oil tanks; 7. Measure the oil temperature with a thermometer; 8. Measure the oil density with a density meter; 9. Measure the flow rate of oil pipelines with a flow meter; 10. Record and process measurement data; 11. Clean tools, equipment and workplaces; 12. Store tools and equipment safely.		Detailed knowledge about: 1.0. Methods The person performing this task must be able to explain how: 1.1. Select sampling methods for different oil tanks and oils; 1.2. Standardize hand gauging operations; 1.3. Measure the oil's physical parameters. 2.0. Principle The person performing this task must be able to explain the following principles: 2.1. Operating procedures for oil metering; 2.2. The oil's physical and chemical properties and parameters. 3.0. Theories The person performing this task must be able to explain: 3.1. Precautions for the operation of oil inspection gauges, air gauges, and water gauges; 3.2. Risks and safety measures for oil metering operations. 4.0. Essential skills 4.1. Communication skills; 4.2. Teamwork skills; 4.3. Report writing skills; 4.4. Standard operations.	

DESCRIPTION OF PRODUCTS/SERVICE	END	The person executing the task must be able to complete the comprehensive metering operations in accordance with the operating procedures for oil metering.
CIRCUMSTANTIAL KNOWLEDGE		Detailed knowledge about: 1. Occupational health and safety.

OCCUPATION	OIL & GAS STORAGE AND TRANSPORTATION TECHNICIAN	OCCUPATION CODE	
DUTY TITLE	OIL OFFLOADING OPERATION	DUTY NO.	502
TASK TITLE	START AND STOP THE OIL DELIVERY UNIT	TASK NO.	5021
PERFORMANCE CRITERIA	The person executing the task must be able to complete the start and stop operation of the oil transportation unit in accordance with the oil offloading operation procedures.		
RANGE STATEMENT	This task can be performed at the oil transmission station under the supervision of the Senior Oil & Gas Storage and Transportation Technician and the Oil & Gas Storage and Transportation Process Engineer. The following equipment(s) and tool(s) will be used in executing the task: 1. PPE: helmet, safety glasses, self-priming filtering gas mask, hearing protection device, labor protection clothing, gloves, safety shoes; 2. Walkie-talkie; 3. Centrifugal pump; 4. Screw pump; 5. Gear pump; 6. Oil pipeline; 7. Cleaning tools.		
EVIDENCE REQUIREMENT			
PRACTICAL PERFORMANCE		UNDERPINNING KNOWLEDGE	
The person performing this task must be able do the following: 1. Strictly implement personal safety protection and wear a complete set of labor protection appliances when performing tasks; 2. Select appropriate tools and equipment for this task; 3. Operate centrifugal pump, screw pump and gear pump; 4. Complete the startup and shutdown operations of the oil transportation unit; 5. Perform switchover operations of oil transmission units; 6. Accurately record the operating parameters of the oil transportation unit; 7. Monitor the dynamic operation of oil transportation units; 8. Clean tools, equipment and workplaces; 9. Store tools and equipment safely.		Detailed knowledge about: 1.0. Methods The person performing this task must be able to explain how: 1.1 Select an oil transfer pump based on the basic properties of the oil transported; 1.2 Determine the series and parallel process of oil transfer units based on the quantity of oil transported. 2.0. Principle The person performing this task must be able to explain the following principles: 2.1. Working characteristics of oil transportation pump stations; 2.2. The composition and functions of various parts of the oil pipeline system; 2.3. Operating procedures for switching oil transmission units; 2.4. Knowledge about long-distance oil transportation. 3.0. Theories	

	The person performing this task must be able to explain: 3.1. Process flow of long distance oil pipeline; 3.2. Safety precautions for the start-up and shut-down operation of oil transmission units; 3.3. Use and maintenance of oil transportation equipment. 4.0. Essential skills 4.1. Communication skills; 4.2. Teamwork skills; 4.3. Standard operations.
DESCRIPTION OF END PRODUCTS/SERVICE	The person executing the task must be able to complete the start and stop operation of the oil transportation unit in accordance with the oil offloading operation procedures.
CIRCUMSTANTIAL KNOWLEDGE	Detailed knowledge about: 1. Instrument use and maintenance; 2. Basic knowledge of safety and environmental protection.

OCCUPATION	OIL & GAS STORAGE AND TRANSPORTATION TECHNICIAN	OCCUPATION CODE	
DUTY TITLE	OIL OFFLOADING OPERATION	DUTY NO.	502
TASK TITLE	PERFORM DAILY OIL TANK OPERATIONS	TASK NO.	5022
PERFORMANCE CRITERIA	The person executing the task must be able to perform daily oil tank operations in accordance with the oil offloading operation procedures.		
RANGE STATEMENT	This task can be performed at the oil transmission station under the supervision of the Senior Oil & Gas Storage and Transportation Technician and the Oil & Gas Storage and Transportation Process Engineer. The following equipment(s) and tool(s) will be used in executing the task: 1. PPE: helmet, safety glasses, self-priming filtering gas mask, hearing protection device, labor protection clothing, gloves, safety shoes; 2. Walkie-talkie; 3. Oil tank; 4. Oil pipeline; 5. Level gauge of oil tank; 6. Oil tank temperature monitoring system; 7. Cleaning tools.		
EVIDENCE REQUIREMENT			
PRACTICAL PERFORMANCE		UNDERPINNING KNOWLEDGE	
The person performing this task must be able do the following: 1. Strictly implement personal safety protection and wear a complete set of labor protection appliances when performing tasks; 2. Select appropriate tools and equipment for this task; 3. Connect the pipeline between the oil tank and the loading and unloading area; 4. Start the oil transmission pump; 5. Adjust the delivery volume of the pipeline; 6. Perform oil receiving and delivery operations of the oil tank; 7. Perform transfer operation according to scheduling instructions; 8. Perform oil tank dehydration operations; 9. Perform safe operation monitoring of oil tanks; 10. Clean tools, equipment and workplaces;		Detailed knowledge about: 1.0. Methods The person performing this task must be able to explain how: 1.1. Perform tank switching operation; 1.2. Perform quality control during dehydration operations; 1.3. Record safe operation data of oil tanks. 2.0. Principle The person performing this task must be able to explain the following principles: 2.1. Operating procedures for oil receiving and delivery from oil tanks; 2.2. Operating procedures for transfer; 2.3. Operating procedures for oil tank dehydration; 2.4. Classification and role of oil tanks. 3.0. Theories The person performing this task must be able to explain: 3.1. Process flow of loading and unloading operations in oil depots; 3.2. Safety management requirements for oil tank operations;	

11. Store tools and equipment safely.	3.3. Knowledge of oil loading and unloading operations; 3.4. Use and maintenance of oil transportation equipment. 4.0. Essential skills 4.1. Communication skills; 4.2. Teamwork skills; 4.3. Standard operations; 4.4. Awareness of clean production.
DESCRIPTION OF END PRODUCTS/SERVICE	The person executing the task must be able to perform daily oil tank operations in accordance with the oil offloading operation procedures.
CIRCUMSTANTIAL KNOWLEDGE	Detailed knowledge about: 1. Instrument use and maintenance; 2. Basic knowledge of safety and environmental protection.

OCCUPATION	OIL & GAS STORAGE AND TRANSPORTATION TECHNICIAN	OCCUPATION CODE	
DUTY TITLE	OIL OFFLOADING OPERATION	DUTY NO.	502
TASK TITLE	SWITCH THE OIL TRANSPORTATION PROCESS FLOW	TASK NO.	5023
PERFORMANCE CRITERIA	The person executing the task must be able to complete the switching of the oil transportation process flow in accordance with the oil offloading operation procedures.		
RANGE STATEMENT	This task can be performed at the oil transmission station under the supervision of the Senior Oil & Gas Storage and Transportation Technician and the Oil & Gas Storage and Transportation Process Engineer. The following equipment(s) and tool(s) will be used in executing the task: 1. PPE: helmet, safety glasses, self-priming filtering gas mask, hearing protection device, labor protection clothing, gloves, safety shoes; 2. Walkie-talkie; 3. Process flow diagrams for oil transmission positions; 4. Oil pipeline; 5. Valves for oil pipelines; 6. Pig, launcher and receiver; 7. Cleaning tools.		
EVIDENCE REQUIREMENT			
PRACTICAL PERFORMANCE	UNDERPINNING KNOWLEDGE		
The person performing this task must be able do the following: 1. Strictly implement personal safety protection and wear a complete set of labor protection appliances when performing tasks; 2. Select appropriate tools and equipment for this task; 3. Understand the process flow diagram of oil pipelines; 4. Execute the process of converting a closed positive transmission into a pressure overrun; 5. Execute the process of converting a pressure overrun into a full overrun; 6. Execute the process of converting a bypass oil tank into a sealed oil transportation; 7. Execute long-distance pipeline transmission and receiving pigs 8. Operation and shut down the high-pressure relief valve;	Detailed knowledge about: 1.0. Methods The person performing this task must be able to explain how: 1.1. Switch the positive delivery process for the delivery task; 1.2. Switch pressure overrun at different transmission volumes; 1.3. Switch the reverse transmission process according to operational requirements. 2.0. Principle The person performing this task must be able to explain the following principles: 2.1. Operating characteristics of oil pipeline systems; 2.2. Operating procedures for oil pipeline clearing. 3.0. Theories The person performing this task must be able to explain: 3.1. Operating principles and switching elements of the oil transmission process flow;		

9. Replace flanges and valves; 10. Clean tools, equipment and workplaces; 11. Store tools and equipment safely.	3.2. Requirements for controlling pressure and temperature when switching oil transmission processes; 3.3. Methods of using and maintenance of oil transportation equipment; 3.4. Methods in drawing of process flow diagrams for oil pipelines; 3.5. Knowledge of fluid transportation. 4.0. Essential skills 4.1. Communication skills; 4.2. Teamwork skills; 4.3. Standard operations.
DESCRIPTION OF END PRODUCTS/SERVICE	The person executing the task must be able to complete the switching of the oil transportation process flow in accordance with the oil offloading operation procedures.
CIRCUMSTANTIAL KNOWLEDGE	Detailed knowledge about: 1. Instrument use and maintenance; 2. Basic knowledge of safety and environmental protection.

OCCUPATION	OIL & GAS STORAGE AND TRANSPORTATION TECHNICIAN	OCCUPATION CODE	
DUTY TITLE	OIL OFFLOADING OPERATION	DUTY NO.	502
TASK TITLE	READING AND REPORTING OPERATING DATA OF OIL TRANSPORTATION INSTRUMENTS	TASK NO.	5024
PERFORMANCE CRITERIA	The person executing the task must be able to complete the reading and reporting operating data of oil transportation instruments in accordance with the oil offloading operation procedures.		
RANGE STATEMENT	This task can be performed at the oil transmission station under the supervision of the Senior Oil & Gas Storage and Transportation Technician and the Oil & Gas Storage and Transportation Process Engineer. The following equipment(s) and tool(s) will be used in executing the task: 1. PPE: helmet, safety glasses, self-priming filtering gas mask, hearing protection device, labor protection clothing, gloves, safety shoes; 2. Walkie-talkie; 3. Pressure gauges; 4. Temperature measurement devices; 5. Liquid level meters; 6. Flow meters; 7. Mechanical breather valves; 8. Hydraulic breather valves; 9. Cleaning tools.		
EVIDENCE REQUIREMENT			
PRACTICAL PERFORMANCE		UNDERPINNING KNOWLEDGE	
The person performing this task must be able do the following: 1. Strictly implement personal safety protection and wear a complete set of labor protection appliances when performing tasks; 2. Select appropriate tools and equipment for this task; 3. Read and record the display of pressure gauges; 4. Read and record the display of temperature gauges; 5. Read and record the display of level gauges; 6. Read and record the display of flow meters; 7. Use and maintain mechanical breather valves; 8. Use and maintain hydraulic breather valves;		Detailed knowledge about: 1.0. Methods The person performing this task must be able to explain how: 1.1. Read and record oil offloading process parameters; 1.2. Monitor pressure fluctuations in tank breather valves. 2.0. Principle The person performing this task must be able to explain the following principles: 2.1. Structures and working principles of commonly used measuring instruments; 2.2. Structures and working principles of commonly used breather valves. 3.0. Theories The person performing this task must be able to explain:	

9. Clean tools, equipment and workplaces; 10. Store tools and equipment safely.	3.1. Pipeline oil transportation process flow; 3.2. Valve use and maintenance. 4.0. Essential skills 4.1. Communication skills; 4.2. Teamwork skills; 4.3. Standard operations; 4.4. Report writing skills.
DESCRIPTION OF END PRODUCTS/SERVICE	The person executing the task must be able to complete the reading and reporting operating data of oil transportation instruments in accordance with the oil offloading operation procedures.
CIRCUMSTANTIAL KNOWLEDGE	Detailed knowledge about: 1. Instrument use and maintenance; 2. Basic knowledge of safety and environmental protection.

OCCUPATION	OIL & GAS STORAGE AND TRANSPORTATION TECHNICIAN	OCCUPATION CODE	
DUTY TITLE	GAS FILTRATION AND PURIFICATION	DUTY NO.	503
TASK TITLE	SMOOTH START-UP PROCESS ACCORDING TO INSTRUCTIONS	TASK NO.	5031
PERFORMANCE CRITERIA	The person performing this task must be able to complete the normal operation and shutdown of the natural gas purification unit in accordance with the operating procedures for natural gas purification units.		
RANGE STATEMENT	This task can be performed in the natural gas purification plant under the supervision of the Senior Oil & Gas Storage and Transportation Technician and the Oil & Gas Storage and Transportation Process Engineer. The following equipment(s) and tool(s) will be used in executing the task: 1. PPE: helmet, safety glasses, self-priming filtering gas mask, hearing protection device, labor protection clothing, gloves, safety shoes; 2. Walkie-talkie; 3. Natural gas desulfurization unit; 4. Natural gas dehydration unit; 5. Sulphur recovery unit; 6. DCS automatic control system for natural gas purification unit.		
EVIDENCE REQUIREMENT			
PRACTICAL PERFORMANCE		UNDERPINNING KNOWLEDGE	
The person performing this task must be able do the following: 1. Strictly implement personal safety protection and wear a complete set of labor protection appliances when performing tasks; 2. Select appropriate tools and equipment for this task; 3. Introduce media such as water, wind, fuel gas, steam, nitrogen, etc.; 4. Fill chemical raw materials according to instructions; 5. Perform purging operations during the start-up of the natural gas purification unit; 6. Perform displacement operations during the start-up of the natural gas purification unit; 7. Conduct pressure testing operations during the start-up of the natural gas purification unit;		Detailed knowledge about: 1.0. Methods The person performing this task must be able to explain how: 1.1. Carry out the start-up of the equipment for the desulfurization unit; 1.2. Carry out the start-up of the equipment for the dehydration unit; 1.3. Carry out the start-up of the equipment for the sulfur recovery unit. 2.0. Principle The person performing this task must be able to explain the following principles: 2.1. Process principle of natural gas desulfurization; 2.2. Process principle of natural gas dehydration; 2.3. Process principle of sulfur recovery. 3.0. Theories The person performing this task must be able to explain: 3.1. Natural gas purification process;	

8. Carry out leak detection operations during the start-up of the natural gas purification unit; 9. Clean tools, equipment and workplaces; 10. Store tools and equipment safely.	3.2. System start-up and purging plans; 3.3. Knowledge of natural gas processing; 3.4. Methods of using and maintenance of natural gas purification equipment. 4.0. Essential skills 4.1. Communication skills; 4.2. Teamwork skills; 4.3. Standard operations.
DESCRIPTION OF END PRODUCTS/SERVICE	The person performing this task must be able to complete the normal operation and shutdown of the natural gas purification unit in accordance with the operating procedures for natural gas purification units.
CIRCUMSTANTIAL KNOWLEDGE	Detailed knowledge about: 1. Instrument use and maintenance; 2. Basic knowledge of safety and environmental protection.

OCCUPATION	OIL & GAS STORAGE AND TRANSPORTATION TECHNICIAN	OCCUPATION CODE	
DUTY TITLE	GAS FILTRATION AND PURIFICATION	DUTY NO.	503
TASK TITLE	COMMISSION NATURAL GAS PURIFICATION EQUIPMENT	TASK NO.	5032
PERFORMANCE CRITERIA	The person performing this task must be able to complete the commissioning of natural gas purification equipment in accordance with the operating procedures for natural gas purification units.		
RANGE STATEMENT	This task can be performed in the natural gas purification plant under the supervision of the Senior Oil & Gas Storage and Transportation Technician and the Oil & Gas Storage and Transportation Process Engineer. The following equipment(s) and tool(s) will be used in executing the task: 1. PPE: helmet, safety glasses, self-priming filtering gas mask, hearing protection device, labor protection clothing, gloves, safety shoes; 2. Walkie-talkie; 3. Natural gas desulfurization unit; 4. Natural gas dehydration unit; 5. Sulphur recovery unit; 6. DCS automatic control system for natural gas purification unit.		
EVIDENCE REQUIREMENT			
PRACTICAL PERFORMANCE		UNDERPINNING KNOWLEDGE	
The person performing this task must be able do the following: 1. Strictly implement personal safety protection and wear a complete set of labor protection appliances when performing tasks; 2. Select appropriate tools and equipment for this task; 3. Set the opening of the circulating pump; 4. Operate the cyclone separator; 5. Operate the activated carbon filter; 6. Control the temperature and pressure of the absorption tower; 7. Operate the blower; 8. Operate the reboiler; 9. Maintain the waste heat boiler; 10. Control the reaction temperature of the converter; 11. Control the liquid flow of the condenser;		Detailed knowledge about: 1.0. Methods The person performing this task must be able to explain how: 1.1. Operate the desulfurization unit; 1.2. Operate the dehydration unit; 1.3. Operate the sulfur recovery unit. 2.0. Principle The person performing this task must be able to explain the following principles: 2.1. Operating procedures for natural gas purification unit; 2.2. Principles of natural gas treatment and purification. 3.0. Theories The person performing this task must be able to explain: 3.1. Process flow of natural gas desulfurization; 3.2. Process flow of natural gas dehydration; 3.3. Process flow of sulfur recovery; 3.4. Use and maintenance of natural gas purification equipment.	

12. Clean tools, equipment and workplaces; 13. Store tools and equipment safely.	4.0. Essential skills 4.1. Communication skills; 4.2. Teamwork skills; 4.3. Standard operations.
DESCRIPTION OF END PRODUCTS/SERVICE	The person performing this task must be able to complete the commissioning of natural gas purification equipment in accordance with the operating procedures for natural gas purification units.
CIRCUMSTANTIAL KNOWLEDGE	Detailed knowledge about: 1. Instrument use and maintenance; 2. Basic knowledge of safety and environmental protection.

OCCUPATION	OIL & GAS STORAGE AND TRANSPORTATION TECHNICIAN	OCCUPATION CODE	
DUTY TITLE	GAS FILTRATION AND PURIFICATION	DUTY NO.	503
TASK TITLE	RECORD THE PRODUCTION PROCESS PARAMETERS OF THE UNIT	TASK NO.	5033
PERFORMANCE CRITERIA	The person performing this task must be able to record the production process parameters of the natural gas purification unit in accordance with the operating procedures for natural gas purification units.		
RANGE STATEMENT	This task can be performed in the natural gas purification plant under the supervision of the Senior Oil & Gas Storage and Transportation Technician and the Oil & Gas Storage and Transportation Process Engineer. The following equipment(s) and tool(s) will be used in executing the task: 1. PPE: helmet, safety glasses, self-priming filtering gas mask, hearing protection device, labor protection clothing, gloves, safety shoes; 2. Walkie-talkie; 3. Natural gas desulfurization unit; 4. Natural gas dehydration unit; 5. Sulphur recovery unit; 6. DCS automatic control system for natural gas purification unit.		
EVIDENCE REQUIREMENT			
PRACTICAL PERFORMANCE		UNDERPINNING KNOWLEDGE	
The person performing this task must be able do the following: 1. Strictly implement personal safety protection and wear a complete set of labor protection appliances when performing tasks; 2. Select appropriate tools and equipment for this task; 3. Adjust the operating parameters of the absorption tower; 4. Replace and maintain the circulating pump; 5. Record the operating parameters of the combustion control furnace; 6. Monitor the operating parameters of the liquid-sealed tank; 7. Control the temperature inside the liquid-sealed tank;		Detailed knowledge about: 1.0. Methods The person performing this task must be able to explain how: 1.1 Control the liquid level, temperature, and pressure of the absorption tower; 1.2 Monitor the temperature and pressure in the combustion control furnace. 2.0. Principle The person performing this task must be able to explain the following principles: 2.1. Principles of natural gas purification process; 2.2. Operating procedures for natural gas purification unit; 2.3. Basic properties of natural gas. 3.0. Theories The person performing this task must be able to explain:	

8. Select catalyst types for heat exchangers; 9. Replace converter catalyst; 10. Clean tools, equipment and workplaces; 11. Store tools and equipment safely.	3.1 Natural gas purification process; 3.2 Process parameter index and control scheme of natural gas purification unit; 3.3 Methods of using and maintenance of natural gas purification equipment. 4.0. Essential skills 4.1. Communication skills; 4.2. Teamwork skills; 4.3. Report writing skills; 4.4. Standard operations.
DESCRIPTION OF END PRODUCTS/SERVICE	The person performing this task must be able to record the production process parameters of the natural gas purification unit in accordance with the operating procedures for natural gas purification units.
CIRCUMSTANTIAL KNOWLEDGE	Detailed knowledge about: 1. Instrument use and maintenance; 2. Basic knowledge of safety and environmental protection.

OCCUPATION	OIL & GAS STORAGE AND TRANSPORTATION TECHNICIAN	OCCUPATION CODE	
DUTY TITLE	GAS FILTRATION AND PURIFICATION	DUTY NO.	503
TASK TITLE	DETERMINATION OF HYDROGEN SULFIDE CONTENT IN NATURAL GAS PURIFICATION SAMPLES	TASK NO.	5034
PERFORMANCE CRITERIA	The person performing this task must be able to determine hydrogen sulfide content in the sample in accordance with the Code of Practice for the Determination of Hydrogen Sulfide Content in Natural Gas Purification Samples.		
RANGE STATEMENT	This task can be performed in the laboratory under the supervision of a senior laboratory technician. The tools and instruments needed include: 1. PPE: lab coat, goggles, rubber acid and alkali resistant gloves; 2. Tools and instruments for determining hydrogen sulfide: length-of-stain detector tubes, calibrated scales, detection tube pumps, gas sampling chambers, needle valves and pressure regulators.		
EVIDENCE REQUIREMENT			
PRACTICAL PERFORMANCE		UNDERPINNING KNOWLEDGE	
The person performing this task must be able to do the following: 1. Strictly implement personal safety protection and wear a complete set of labor protection appliances when performing tasks; 2. Select appropriate tools and instruments for the task; 3. Install needle valve or pressure regulator; 4. Select detection tube; 5. Check for leaks in the detection tube pump; 6. Operate the detection tube; 7. Measure hydrogen sulfide concentration; 8. Read measurement data; 9. Record and process data; 10. Clean tools, instruments, and workplaces; 11. Safely store tools and instruments.		Detailed knowledge about: 1.0. Methods The person performing this task must be able to explain how: 1.1. Install needle valve and pressure regulator; 1.2. Select the appropriate detection tube; 1.3. Operate the detection tube and measure data. 2.0. Principle The person performing this task must be able to explain the following principles: 2.1. Principle of measuring hydrogen sulfide concentration with a length-of-stain detector tube; 2.2. Quality standards for purified natural gas. 3.0. Theories The person performing this task must be able to explain: 3.1. Natural gas purification sample sampling method; 3.2. Method for determination of hydrogen sulfide content in natural gas purification samples. 4.0. Essential skills 4.1. Communication skills; 4.2. Teamwork skills; 4.3. Report writing skills; 4.4. Standard operations.	

DESCRIPTION OF END PRODUCTS/SERVICE	The person performing this task must be able to determine hydrogen sulfide content in the sample in accordance with the Code of Practice for the Determination of Hydrogen Sulfide Content in Natural Gas Purification Samples.
CIRCUMSTANTIAL KNOWLEDGE	Detailed knowledge about: 1. Safe waste recycling scheme; 2. Analysis and Testing Techniques; 3. Occupational health and safety; 4. Basic knowledge of safety and environmental protection.

OCCUPATION	OIL & GAS STORAGE AND TRANSPORTATION TECHNICIAN	OCCUPATION CODE	
DUTY TITLE	GAS FILTRATION AND PURIFICATION	DUTY NO.	503
TASK TITLE	DETERMINATION OF MOISTURE CONTENT IN NATURAL GAS PURIFICATION SAMPLES	TASK NO.	5035
PERFORMANCE CRITERIA	The person performing this task must be able to determine the moisture content in the sample in accordance with the specifications for the analysis of natural gas purification samples.		
RANGE STATEMENT	This task can be performed in the laboratory under the supervision of a senior laboratory technician. The tools and instruments needed include: 1. PPE: lab coat, goggles, rubber acid and alkali resistant gloves; 2. Instrument for determining moisture content: chilled-mirror dew-point hygrometer.		
EVIDENCE REQUIREMENT			
PRACTICAL PERFORMANCE		UNDERPINNING KNOWLEDGE	
The person performing this task must be able to do the following: 1. Strictly implement personal safety protection and wear a complete set of labor protection appliances when performing tasks; 2. Select appropriate tools and instruments for the task; 3. Collect natural gas purification samples; 4. Operate the chilled-mirror dew-point hygrometer to determine dew point; 5. Record and process data; 6. Calculate moisture content; 7. Clean tools, instruments, and workplaces; 8. Safely store tools and instruments.		Detailed knowledge about: 1.0. Methods The person performing this task must be able to explain how: 1.1. Determine the appropriate sampling amount; 1.2. Operate the chilled-mirror dew-point hygrometer; 1.3. Determine the moisture content in natural gas by determining the dew point. 2.0. Principle The person performing this task must be able to explain the following principles: 2.1. Principle of determining moisture in natural gas samples with the chilled-mirror dew-point hygrometer; 2.2. Principle of randomness of sampling; 2.3. Quality standards for purified natural gas. 3.0. Theories The person performing this task must be able to explain: 3.1. Natural gas purification sample sampling method; 3.2. Method for determination of dew point and moisture content in natural gas purification samples. 4.0. Essential skills 4.1. Communication skills; 4.2. Teamwork skills; 4.3. Report writing skills; 4.4. Standard operations.	

DESCRIPTION OF END PRODUCTS/SERVICE	The person performing this task must be able to determine the moisture content in the sample in accordance with the specifications for the analysis of natural gas purification samples.
CIRCUMSTANTIAL KNOWLEDGE	Detailed knowledge about: 1. Analysis and Testing Techniques; 2. Occupational health and safety; 3. Basic knowledge of safety and environmental protection.

OCCUPATION	OIL & GAS STORAGE AND TRANSPORTATION TECHNICIAN	OCCUPATION CODE	
DUTY TITLE	NATURAL GAS EXPORT	DUTY NO.	504
TASK TITLE	PERFORM THE CHARGING OF ODORANT TANK	TASK NO.	5041
PERFORMANCE CRITERIA	The person performing this task must be able to charge the odorant tank in accordance with the operating procedures for natural gas export.		
RANGE STATEMENT	This task can be performed at the gas transmission station under the supervision of the Senior Oil & Gas Storage and Transportation Technician and the Oil & Gas Storage and Transportation Process Engineer. The following equipment(s) and tool(s) will be used in executing the task: 1. PPE: helmet, safety glasses, self-priming filtering gas mask, hearing protection device, labor protection clothing, gloves, safety shoes; 2. Walkie-talkie; 3. Odorant storage tank; 4. Equipment for determining cloud point of organosulfur compound odorant; 5. Cleaning tools.		
EVIDENCE REQUIREMENT			
PRACTICAL PERFORMANCE		UNDERPINNING KNOWLEDGE	
The person performing this task must be able do the following: 1. Strictly implement personal safety protection and wear a complete set of labor protection appliances when performing tasks; 2. Select appropriate tools and equipment for this task; 3. Store odorant and enhance daily management; 4. Equip personal protective equipment to handle odorants; 5. Turn on/off the odorization device; 6. Conduct fully sealed transfer and filling to prevent leakage and spillage; 7. Determine the cloud point of organosulfur compound odorant; 8. Fill in the record for odorization operation; 9. Clean tools, equipment and workplaces;		Detailed knowledge about: 1.0. Methods The person performing this task must be able to explain how: 1.1. Store and manage odorant; 1.2. Supervise and manage odorant filling process. 2.0. Principle The person performing this task must be able to explain the following principles: 2.1. Types and selection principles of odorants; 2.2. Standards for determining organosulfur compounds odorants for natural gas; 2.3. Knowledge of safe transportation of natural gas; 2.4. Natural gas measurement technology. 3.0. Theories The person performing this task must be able to explain: 3.1. Gas pipeline commissioning and operational safety requirements;	

10. Store tools and equipment safely.	3.2. Safety precautions for natural gas odorization operation. 4.0. Essential skills 4.1. Communication skills; 4.2. Teamwork skills; 4.3. Standard operations.
DESCRIPTION OF END PRODUCTS/SERVICE	The person performing this task must be able to charge the odorant tank in accordance with the operating procedures for natural gas export.
CIRCUMSTANTIAL KNOWLEDGE	Detailed knowledge about: 1. Analysis and Testing Techniques; 2. Occupational health and safety; 3. Basic knowledge of safety and environmental protection.

OCCUPATION	OIL & GAS STORAGE AND TRANSPORTATION TECHNICIAN	OCCUPATION CODE	
DUTY TITLE	NATURAL GAS EXPORT	DUTY NO.	504
TASK TITLE	OPEN THE METERING LINE VALVE AND START THE GAS FLOWMETER	TASK NO.	5042
PERFORMANCE CRITERIA	The person performing this task must be able to open the metering line valve and start the gas flowmeter operation in accordance with the operating procedures for natural gas transmission.		
RANGE STATEMENT	This task can be performed at the gas transmission station under the supervision of the Senior Oil & Gas Storage and Transportation Technician and the Oil & Gas Storage and Transportation Process Engineer. The following equipment(s) and tool(s) will be used in executing the task: 1. PPE: helmet, safety glasses, self-priming filtering gas mask, hearing protection device, labor protection clothing, gloves, safety shoes; 2. Walkie-talkie; 3. Gas metering system; 4. Cleaning tools.		
EVIDENCE REQUIREMENT			
PRACTICAL PERFORMANCE		UNDERPINNING KNOWLEDGE	
The person performing this task must be able do the following: 1. Strictly implement personal safety protection and wear a complete set of labor protection appliances when performing tasks; 2. Select appropriate tools and equipment for this task; 3. Select a flowmeter based on performance requirements, fluid characteristics, installation conditions, environmental conditions and economic factors; 4. Check the gas flowmeter before starting and stopping the operation; 5. Start/stop the gas metering system; 6. Record the operating parameters of the gas flowmeter; 7. Fill with lubricating oil; 8. Regularly inspect, repair and maintain flow measurement equipment; 9. Clean tools, equipment and workplaces;		Detailed knowledge about: 1.0. Methods The person performing this task must be able to explain how: 1.1. Start/stop gas metering system; 1.2. Record gas flowmeter data. 2.0. Principle The person performing this task must be able to explain the; following principles: 2.1. Structure and selection principles of commonly used gas flow meters; 2.2. Knowledge of natural gas pipeline transmission and distribution. 3.0. Theories The person performing this task must be able to explain: 3.1. Lubrication material type and filling method; 3.2. Process flow of external natural gas transmission pipeline; 3.3. Configuration requirements for gas pipeline metering systems; 3.4. Natural gas safety production knowledge; 3.5. Methods in maintenance of natural gas transportation equipment;	

10. Store tools and equipment safely.	3.6. Knowledge of natural gas transmission pipeline process flow diagram. 4.0. Essential skills 4.1. Communication skills; 4.2. Teamwork skills; 4.3. Standard operations.
DESCRIPTION OF END PRODUCTS/SERVICE	The person performing this task must be able to open the metering line valve and start the gas flowmeter operation in accordance with the operating procedures for natural gas transmission.
CIRCUMSTANTIAL KNOWLEDGE	Detailed knowledge about: 1. Basic of ecology and environmental protection.

OCCUPATION	OIL & GAS STORAGE AND TRANSPORTATION TECHNICIAN	OCCUPATION CODE	
DUTY TITLE	NATURAL GAS EXPORT	DUTY NO.	504
TASK TITLE	PERFORM NATURAL GAS EXPORT AS PER DISPATCH INSTRUCTIONS	TASK NO.	5043
PERFORMANCE CRITERIA	The person performing this task must be able to complete natural gas transmission operations in accordance with the operating procedures for natural gas transmission.		
RANGE STATEMENT	This task can be performed at the gas transmission station under the supervision of the Senior Oil & Gas Storage and Transportation Technician and the Oil & Gas Storage and Transportation Process Engineer. The following equipment(s) and tool(s) will be used in executing the task: 1. PPE: helmet, safety glasses, self-priming filtering gas mask, hearing protection device, labor protection clothing, gloves, safety shoes; 2. Walkie-talkie; 3. Natural gas storage equipment; 4. Gas pipeline; 5. Gas pipeline valve; 6. Cleaning tools.		
EVIDENCE REQUIREMENT			
PRACTICAL PERFORMANCE		UNDERPINNING KNOWLEDGE	
The person performing this task must be able do the following: 1. Strictly implement personal safety protection and wear a complete set of labor protection appliances when performing tasks; 2. Select appropriate tools and equipment for this task; 3. Open storage facilities and pipeline valves; 4. Carry out the primary coordination of upstream gas sources in time according to the operation status and gas consumption of natural gas pressure to ensure the stability of gas supply pressure and sufficient gas volume; 5. Coordinate with downstream users according to pressure operating conditions, issue gas shutdown and supply orders according to scheduling instructions and adjust the process to ensure pressure		Detailed knowledge about: 1.0. Methods The person performing this task must be able to explain how: 1.1. Monitor the operation of pipeline gas delivery pressure; 1.2. Coordinate with upstream gas sources to ensure stable gas supply pressure and sufficient gas volume. 2.0. Principle The person performing this task must be able to explain the following principles: 2.1. Composition and main functions of gas pipeline system; 2.2. Operating procedures of natural gas export; 2.3. Operating procedures of gas supply safety. 3.0. Theories The person performing this task must be able to explain: 3.1. Precautions for production and operation scheduling of gas pipelines; 3.2. Process flow of external natural gas	

stability; 6. Perform pipeline and equipment inspection; 7. Operate the valve to stop the gas supply; 8. Fill in the record for operation; 9. Clean tools, equipment and workplaces; 10. Store tools and equipment safely.	transmission pipeline; 3.3. Natural gas safety production knowledge; 3.4. Methods of reading and understanding the process flow diagram of natural gas transmission pipeline; 3.5. Basic of natural gas measurement. 4.0. Essential skills 4.1. Communication skills; 4.2. Teamwork skills; 4.3. Report writing skills; 4.4. Standard operations.
DESCRIPTION OF END PRODUCTS/SERVICE	The person performing this task must be able to complete natural gas transmission operations in accordance with the operating procedures for natural gas transmission.
CIRCUMSTANTIAL KNOWLEDGE	Detailed knowledge about: 1. Basic of ecology and environmental protection.

TABLE 1: DACUM CHARTS FOR OIL & GAS STORAGE AND TRANSPORTATION TECHNICIANS - NTA 5

DUTIES	TASKS	ENABLERS
1.0. Operate oil receiving and delivery in the oil depot.	1.1. Opening and closing of solenoid valve 1.2. Startup and shutdown of centrifugal pumps 1.3. Receiving and venting of loading arms 1.4. Fill in oil receiving and delivery (operation tickets) 1.5. Oil comprehensive metering	Generic skills and knowledge ● Use of communication skills to work with others and report to superiors ● Data recording and processing ● Operating procedures for oil receiving and delivery in oil depot ● Centrifugal pump operation skills ● Recording and filling of oil receiving and delivery operation tickets ● Oil metering technology ● Basic properties of oil ● Instrument use and maintenance ● Knowledge of process parameter measurement ● Occupational health and safety philosophy Tools and Equipment ● PPE: helmet, goggles, self-priming filtering gas mask, hearing protection device, labor protection clothing, safety shoes, lab coat and rubber gloves ● Comprehensive oil measurement tools and equipment: dipstick, temperature box, portable density meter, sampler and sampling bottle ● Walkie-talkie ● Solenoid valve ● Flowmeter ● Oil pipeline ● Centrifugal pump ● Oil pipeline ● Oil pipeline valve ● Cleaning tools Materials ● Crude oil ● Refined oil

		Worker behaviors ● Team work ● Integrity, ● Accountability ● Standardized operation ● Strong awareness of safety production
2.0. Offloading oil.	2.1. Start and stop the oil delivery unit 2.2. Perform daily oil tank operations 2.3. Switch the oil transportation process flow 2.4. Reading and reporting operating data of oil transportation instruments	Generic skills and knowledge ● Use of communication skills to work with others and report to superiors ● Data recording and processing ● Oil export operation skills ● Reading of process flow diagrams ● Knowledge of oil loading and unloading operations ● Use and maintenance of oil transportation equipment ● Knowledge of fluid transmission ● Instrument use and maintenance ● Occupational health and safety philosophy Tools and Equipment ● PPE: helmet, safety glasses, self-priming filtering gas mask, hearing protection device, labor protection clothing, gloves and safety shoes ● Walkie-talkie ● Centrifugal pump, screw pump and gear pump ● Oil pipeline ● Oil tank ● Oil pipeline valve ● Pig, launcher and receiver ● Pressure measuring instrument, temperature measuring instrument, liquid level measuring instrument and flow measuring instrument ● Mechanical breather valve and hydraulic breather valve ● Cleaning tools Materials ● Crude oil ● Refined oil

		Worker behaviors ● Team work, ● Integrity and accountability, ● Standardized operation ● Clean production ● Strong awareness of safety production and environmental protection
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3.0. Filter and purify gas.	3.1. Smooth start-up process according to instructions 3.2. Commission natural gas purification equipment 3.3. Record the production process parameters of the unit 3.4. Determination of hydrogen sulfide content in natural gas purification samples 3.5. Determination of moisture content in natural gas purification samples	Generic skills and knowledge ● Use of communication skills to work with others and report to superiors ● Data recording and processing ● Normal operation and shutdown operation skills of natural gas purification unit ● Inspection, comparison and adjustment methods for natural gas process parameter indexes ● Process principle of natural gas purification ● Use and maintenance of natural gas purification equipment ● Standard operating methods for testing instruments ● Analysis and testing techniques ● Methods of waste disposal ● Testing method for impurities in natural gas purification samples ● Occupational health and safety philosophy and HSE management system Tools and Equipment ● Personal protective equipment: helmet, goggles, self-priming filtering gas mask, hearing protection device, labor protection clothing, safety shoes, lab coat and rubber gloves ● Tools and instruments for determining hydrogen sulfide: length-of-stain detector tubes, calibrated scales, detection tube pumps, gas sampling chambers, needle valves and pressure regulators ● Instrument for determining moisture content: chilled-mirror dew-point hygrometer ● Walkie-talkie ● Natural gas desulfurization unit ● Natural gas dehydration unit ● Sulphur recovery unit ● DCS automatic control system for natural gas purification unit Materials ● Natural gas Worker behaviors
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		● Team work ● Integrity ● Accountability ● Standardized operation ● Clean production ● Energy conservation and emission reduction ● Strong awareness of safety production
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4.0. Export natural gas.	4.1. Perform the charging of odorant tank 4.2. Open the metering pipeline valve and start the gas flowmeter 4.3. Perform natural gas export as per dispatch instructions	Generic skills and knowledge ● Use of communication skills to work with others and report to superiors ● Data recording and processing ● Types and selection of odorants ● Configuration of gas pipeline metering system ● Commissioning and operation of gas pipelines ● Cognition of natural gas transmission pipeline process flow diagram ● Knowledge of natural gas pipeline transmission and distribution ● Basic properties of natural gas ● Use and maintenance of natural gas transmission equipment ● Natural gas measurement technology ● Basic of ecology and environmental protection ● Occupational health and safety philosophy Tools and Equipment ● PPE: helmet, safety glasses, self-priming filtering gas mask, hearing protection device, labor protection clothing, gloves and safety shoes ● Walkie-talkie ● Odorant storage tank ● Detection equipment ● Gas flow meter ● Auxiliary equipment for gas flow meter ● Natural gas storage equipment ● Gas pipeline ● Gas pipeline valve ● Cleaning tools Materials ● Natural gas ● Odorant Worker behaviors ● Team work ● Integrity, ● Accountability ● Standardized operation
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		● Clean production ● Strong awareness of safety production and environmental protection
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