

## QUALIFICATION PACK – OCCUPATIONAL STANDARD FOR INFRASTRUCTURE EQUIPMENT INDUSTRY

### What are Occupational Standards(OS)?

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

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### Introduction

## Qualification Pack - Bore Well Drilling Machine Operator

<b>SECTOR:</b>	Infrastructure Equipment
<b>SUB SECTOR:</b>	Equipment Operations
<b>OCCUPATION:</b>	Machine Operation
<b>REFERENCE ID:</b>	IES/Q0124
<b>ALIGNED TO:</b>	NCO-2015/8113.0800

**Brief Job Description:** A bore well drilling machine operator is responsible for setting up and operating portable drilling rig to drill wells, starting and controlling the drilling actions by lowering of well casing into the well bore.

**Personal Attributes:** The job requires an individual to be physically agile, strong and should have good eye sight and not be color blind. He should maintain constant alertness to the multiple concurrent activities during drilling operations.

<b>Qualifications Pack Code</b>	<b>IES/Q0124</b>		
<b>Job Role</b>	<b>Bore Well Drilling Machine Operator</b>		
<b>Credits(NSQF)</b>	<b>TBD</b>	<b>Version number</b>	<b>1.0</b>
<b>Sector</b>	<b>Infrastructure Equipment</b>	<b>Drafted on</b>	<b>09/08/16</b>
<b>Sub-sector</b>	<b>Equipment Operations</b>	<b>Last reviewed on</b>	<b>20/12/17</b>
<b>Occupation</b>	<b>Machine Operation</b>	<b>Next review date</b>	<b>26/12/20</b>
<b>NSQC Clearance on</b>	<b>19/12/18</b>		

<b>Job Role</b>	<b>Bore Well Drilling Machine Operator</b>
<b>Role Description</b>	A bore well drilling machine operator is responsible for setting up and operating portable drilling rig to drill wells, starting and controlling the drilling actions by lowering of well casing into the well bore.
<b>NSQF level</b>	4
<b>Minimum Educational Qualifications</b>	Class VIII
<b>Maximum Educational Qualifications</b>	NA
<b>Prerequisite license for Training</b>	
<b>Minimum Job Entry Age</b>	18 years
<b>Experience</b>	2- 3 years of experience as junior operator in drilling operations
<b>Applicable National Occupational Standards (NOS)</b>	<p><b>Compulsory</b></p> <ol style="list-style-type: none"> <li><a href="#">IES/N0170 Carry out pre-operation checks on bore well drilling equipment</a></li> <li><a href="#">IES/N0171 Carry out bore well drilling operation</a></li> <li><a href="#">IES/N0172 Carry out maintenance and troubleshooting of the bore well drilling equipment</a></li> <li><a href="#">IES/N7601 Comply with worksite health and safety guidelines</a></li> </ol>
<b>Performance Criteria</b>	As described in the relevant OS units

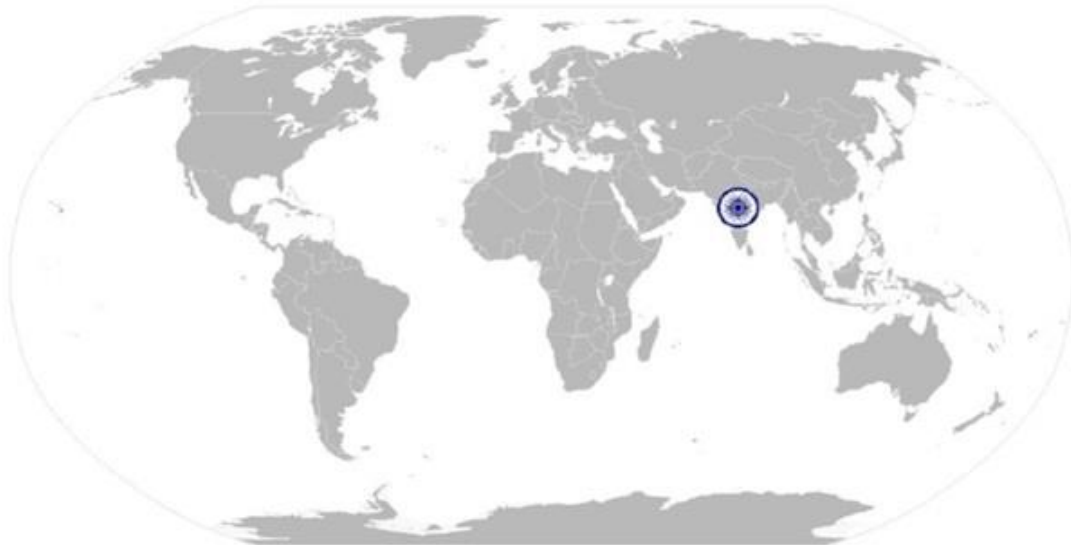
Keywords /Terms	Description
Sector	Sector is a conglomeration of different business operations having similar businesses and interests. It may also be defined as a distinct subset of the economy whose components share similar characteristics and interests.
Sub-sector	Sub-sector is derived from a further breakdown based on the characteristics and interests of its components.
Vertical	Vertical may exist within a sub-sector representing different domain areas or the client industries served by the industry.
Occupation	Occupation is a set of job roles, which perform similar/related set of functions in an industry.
Function	Function is an activity necessary for achieving the key purpose of the sector, occupation, or area of work, which can be carried out by a person or a group of persons. Functions are identified through functional analysis and form the basis of OS.
Sub-functions	Sub-functions are sub-activities essential to fulfil achieving the objectives of the function.
Job role	Job role defines a unique set of functions that together form a unique employment opportunity in an organization.
Occupational Standards (OS)	OS specify the standards of performance an individual must achieve when carrying out a function in the workplace, together with the knowledge and understanding; he/she needs to meet that standard consistently. Occupational Standards are applicable both in the Indian and global contexts.
Performance Criteria	Performance Criteria are statements that together specify the standard of performance required when carrying out a task.
National Occupational Standards (NOS)	NOS are Occupational Standards which apply uniquely in the Indian context.
Qualifications Pack Code	Qualifications Pack Code is a unique reference code that identifies a qualifications pack.
Qualifications Pack(QP)	Qualifications Pack comprises the set of OS, together with the educational, training and other criteria required to perform a job role. A Qualifications Pack is assigned a unique qualification pack code.
Unit Code	Unit Code is a unique identifier for an Occupational Standard, which is denoted by an 'N'.
Unit Title	Unit Title gives a clear overall statement about what the incumbent should be able to do.
Description	Description gives a short summary of the unit content. This would be helpful to anyone searching on a database to find the required one.
Scope	Scope is the set of statements specifying the range of variables that an individual may have to deal with in carrying out the function which have a critical impact on the quality of required performance.
Knowledge and Understanding	Knowledge and Understanding are statements which together specify the technical, generic, professional and organizational specific knowledge that an individual needs in order to perform up to the required standard.

Acronyms	Keywords /Terms	Description
	OS	Occupational Standard(s)
	NOS	National Occupational Standard(s)
	QP	Qualifications Pack
	NSQF	National Skill Qualifications Framework
	ITI	Industrial Training Institute
	HCV	Heavy Commercial Vehicle
	SHE	Safety Health and Environment
	SOP	Standard Operating Procedure
	TBD	To Be Determined

**IES/N0170 Carry out pre-operation checks on bore well drilling equipment**

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# National Occupational Standard



## Overview

This unit provides Performance Criteria, Knowledge & Understanding and Skills & Ability for activities that are required for conducting pre-checks on the bore well drilling machine before starting the bore well drilling operations.

**IES/N0170 Carry out pre-operation checks on bore well drilling equipment**

<b>Unit Code</b>	<b>IES/N0170</b>
<b>Unit Title (Task)</b>	<b>Carry out pre-operation checks on bore well drilling equipment</b>
<b>Description</b>	This unit provides insight into activities that are required for conducting pre-checks on the bore well machine before starting the operations.
<b>Scope</b>	This unit/task covers the following: <ul style="list-style-type: none"> <li>• Pre-operation checks</li> <li>• Reporting and documentation</li> </ul>
<b>Performance Criteria(PC) w.r.t. the Scope</b>	
<b>Element</b>	<b>Performance Criteria</b>
<b>Pre- operation checks</b>	To be competent, the user/individual on the job must be able to: <ul style="list-style-type: none"> <li>PC1. check for tires-damages, wheels-loose lug bolts, bent rims, cracks and bulges and replace if required as per the set procedures</li> <li>PC2. check for leveling of the machine as per the slope on the ground</li> <li>PC3. inspect if levers and control cables are in proper working conditions</li> <li>PC4. check if all mounting bolts are tightened</li> <li>PC5. check the mast for proper greasing, cracks, bolts and breaks in chain</li> <li>PC6. check fluid levels of engine crank case, radiator coolant and battery electrolyte levels fill up if needed</li> <li>PC7. check rear axle- Steer cylinders for damage, leaks, secure pivot pins, damaged hydraulic hoses etc.</li> <li>PC8. check if gauges, switches, joysticks, foot controls and horn are in operational condition</li> <li>PC9. inspect the condition of hose/pipes/clamps for normal functioning</li> <li>PC10. check for the availability of casing pipes and drill bits to start the process</li> <li>PC11. check for service brake and parking brake operation</li> </ul>
<b>Reporting and documentation</b>	<ul style="list-style-type: none"> <li>PC12. maintain a pre-operational check logbook to record all activities performed before starting the drilling operation</li> <li>PC13. report the defects precisely to the supervisor if beyond scope of role</li> </ul>
<b>Knowledge and Understanding (K)</b>	
<b>A. Organizational Context</b> (Knowledge of the company / organization and its processes)	The user/individual on the job needs to know and understand: <ul style="list-style-type: none"> <li>KA1. the organization operations, maintenance and safety related guidelines</li> <li>KA2. the operational standards &amp; procedures followed in the company in timeframe in which the complaint/problem should be resolved</li> <li>KA3. reporting structure of the company</li> <li>KA4. location of specialized tools and the equipment</li> <li>KA5. location and process for storage and disposal of waste material</li> </ul>
<b>B. Technical Knowledge</b>	The user/individual on the job needs to know and understand: <ul style="list-style-type: none"> <li>KB1. overview of types of bore well drilling and the general applications with respect to each machine</li> <li>KB2. technical specifications, features and performance of different types of bore well drilling machines</li> <li>KB3. components of Drilling machine and its functioning</li> </ul>

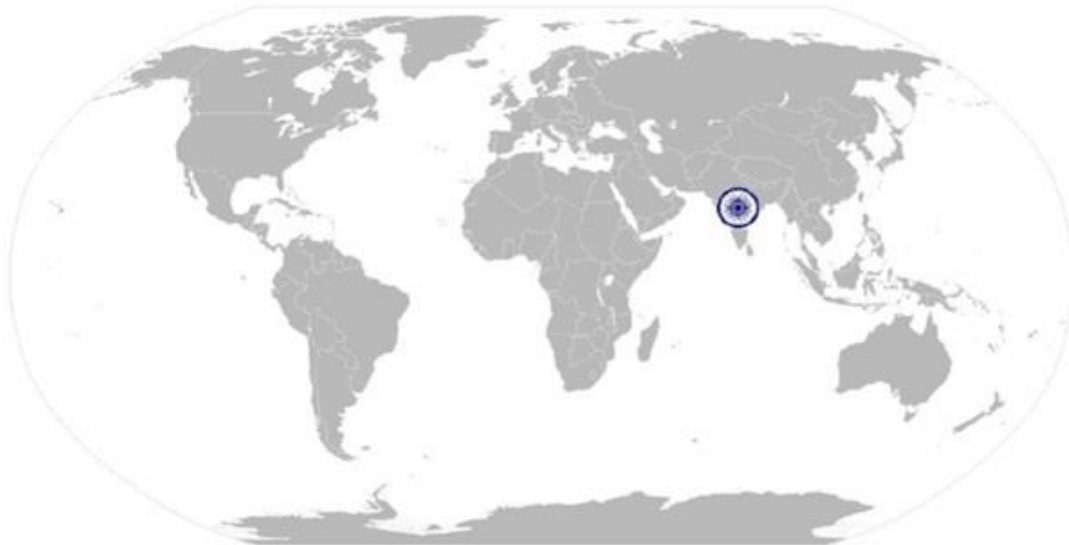
**IES/N0170 Carry out pre-operation checks on bore well drilling equipment**

	<p>KB4. basics of engine and sub systems; fuel, lubrication and cooling systems</p> <p>KB5. basics of transmission, auto-electrical functioning and repairs</p> <p>KB6. different types of hydraulic mechanisms</p> <p>KB7. controls, levers and switches in order to operate drilling equipment</p> <p>KB8. procedure of topping up fuel, lube oil and coolant in the machine</p> <p>KB9. optimal working parameters- engine oil pressure, hydraulic oil pressure and temperatures</p> <p>KB10. manufacturer’s specifications for tools and supplies</p>
<b>Skills (S)</b>	
<b>A. Core Skills / Generic Skills</b>	<b>Writing Skills</b>
	The user/ individual on the job needs to know and understand how to: SA1. record information/observations on activities/incidents as per the prescribed norms
	<b>Reading Skills</b>
	The user/ individual on the job needs to know and understand how to: SA2. read and comprehend basic signs, symbols, diagrams, charts and decals on the equipment & at work site SA3. read and understand the applicable relevant aspects of the equipment operation & maintenance manuals
	<b>Oral Communication (Listening and Speaking Skills)</b>
	The user/ individual on the job needs to know and understand how to: SA4. use correct technical terms/phrases while interacting with other co-workers & supervisor SA5. explain/instruct other team members effectively in a clear and concise manner SA6. listen attentively and understand the queries /comments raised by other team members
<b>B. Professional Skills</b>	<b>Decision Making</b>
	The user/ individual on the job needs to know and understand how to: SB1. decide when to escalate and seek assistance if the problem is beyond scope
	<b>Plan and Organize</b>
	The user/ individual on the job needs to know and understand how to: SB2. prioritize and schedule maintenance activity on equipment to support operational needs SB3. plan and organise the work schedule in coordination with other team members & supervisor SB4. execute the tasks efficiently within the time frame allotted and prescribed quality norms; with minimal supervision
	<b>Customer Centricity</b>
	The user/ individual on the job needs to know and understand how to: SB5. ensure quality service is delivered as committed to achieve high levels of customer satisfaction
	<b>Problem Solving</b>
	The user/ individual on the job needs to know and understand how to:

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**IES/N0170 Carry out pre-operation checks on bore well drilling equipment**

	SB6. evaluate the possible solutions and initiate appropriate remedial measures and actions
	<b>Analytical Thinking</b>
	The user/ individual on the job needs to know and understand how to: SB7. apply common sense and reasoning skills to identify the cause of delays and difficulties in execution
	<b>Critical Thinking</b>
	The user/ individual on the job needs to know and understand how to: SB8. apply knowledge and judgement acquired through experience and awareness to execute tasks efficiently



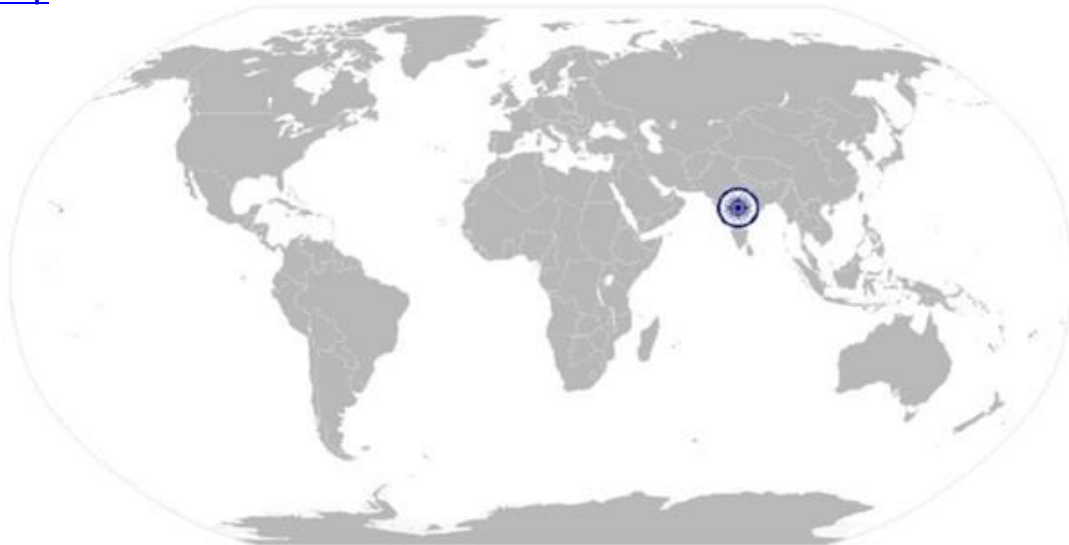


**IES/N0170 Carry out pre-operation checks on bore well drilling equipment**

**NOS Version Control**

NOS Code	IES/N0170		
Credits (NSQF)	TBD	Version number	1.0
Sector	Infrastructure Equipment	Drafted on	09/08/16
Industry Sub-sector	Equipment Operations	Last reviewed on	20/12/17
Occupation	Machine Operation	Next review date	26/12/20

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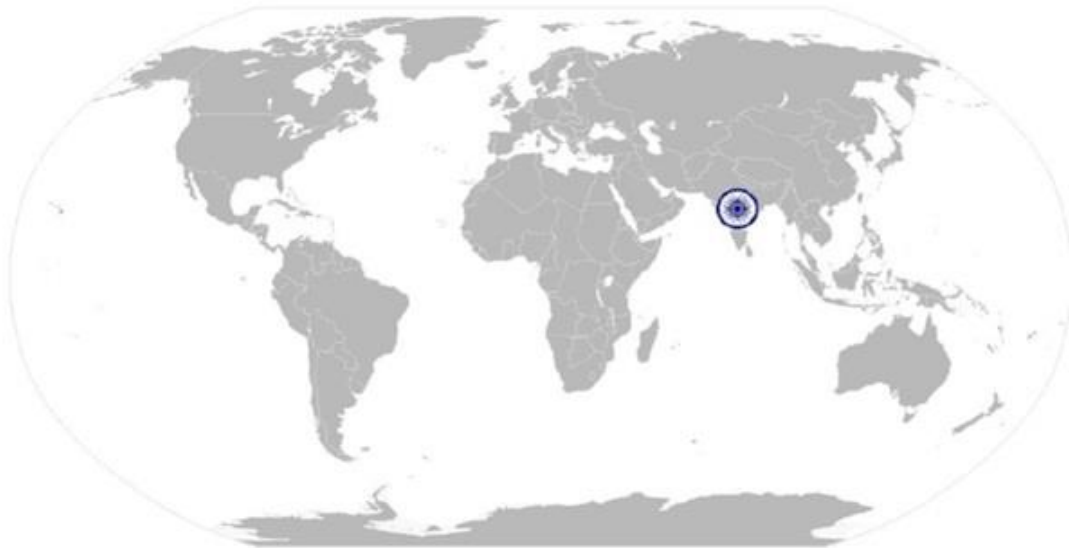


IES/N0171

Carry out bore well drilling operation

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# National Occupational Standard



## Overview

This unit provides Performance Criteria, Knowledge & Understanding and Skills & Ability for activities that are required for performing the bore well drilling operations.

**IES/N0171**

**Carry out bore well drilling operation**

National Occupational Standard

<b>Unit Code</b>	<b>IES/N0171</b>
<b>Unit Title (Task)</b>	<b>Carry out bore well drilling operation</b>
<b>Description</b>	This unit provides insight into activities that are required for performing the bore well drilling operations.
<b>Scope</b>	<p>This unit/task covers the following:</p> <ul style="list-style-type: none"> <li>• Start the drilling machine</li> <li>• Bore well drilling operations</li> <li>• Shutdown procedures</li> <li>• Reporting and documentation</li> </ul>
<b>Performance Criteria(PC) w.r.t. the Scope</b>	
<b>Element</b>	<b>Performance Criteria</b>
<b>Starting the drilling machine</b>	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. inspect the site visually for any source of obstruction or for any personnel in the circumference/ check for near high raise natural or man-made structure / high voltage lines/wind pattern</p> <p>PC2. park the vehicle at the drilling point and pull the lever to extend the stabilizer legs to stabilize the vehicle</p> <p>PC3. start the engine and check the controls of operating panel for normal functioning</p>
<b>Bore well drilling operations</b>	<p>PC4. choose the appropriate casing pipe as per the requirement</p> <p>PC5. attach the pipe to the gripper casing pipe and connect it to the rotate motor attached to the rig mast</p> <p>PC6. drill the casing pipe into the ground until it reaches the surface of the hard rock and leave the pipe inside the ground</p> <p>PC7. choose the appropriate drill rods and connect them to the rotator motor</p> <p>PC8. connect the appropriate drill bit to the hammer that is attached to the drill rod</p> <p>PC9. start the drilling of drill rods inside the casing pipe</p> <p>PC10. monitor air &amp; hydraulic pressure gauge, engine &amp; compressor temperature gauge</p> <p>PC11. monitor RPM, air discharge temperature and pressure, engine water temperature and pressure and sump pressure displayed in the compressor unit</p> <p>PC12. monitor hydraulic oil filter clog indicator, air filter element and compressor air filter elements</p> <p>PC13. provide the appropriate inputs to the machine through controls for connecting the drill rods safely to the next drill rod until the required output is achieved</p> <p>PC14. coordinate with junior operators at regular intervals while operating the machine for better performance</p> <p>PC15. change the drill bits if the drilling process slows down by monitoring the rotations per minute (RPM) levels</p>
<b>Shutdown procedures</b>	PC16. ensure that the drill rod is removed from the ground

**IES/N0171**

**Carry out bore well drilling operation**

	<p>PC17. stop the rotator motor PC18. detach the drill bits from the rotator motor PC19. take mast and stabilizer legs to the home position PC20. turn off the engine and remove the ignition key</p>
<b>Reporting and documentation</b>	<p>PC21. maintain a logbook to record all activities performed PC22. report the defects precisely to the supervisor if beyond scope of the role</p>
<b>Knowledge and Understanding (K)</b>	
<b>A. Organizational Context</b> (Knowledge of the company / organization and its processes)	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. the organization operations, maintenance and safety related guidelines KA2. the operational standards &amp; procedures followed in the company in timeframe in which the complaint/problem should be resolved KA3. reporting structure of the company KA4. location of specialized tools and the equipment KA5. location and process for storage and disposal of waste material KA6. contact person/area in case of emergency</p>
<b>B. Technical Knowledge</b>	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. technical specifications, features and performance of different types of bore well drilling machines KB2. factors that affect equipment stability, such as ground and supporting conditions KB3. different types of drilling techniques depending on the requirement KB4. radius requirements of rods and equipment setup requirements KB5. indicators pertaining to compressor such as Rotations Per Minute (RPM), air discharge, water temperature and pressures during the drilling process KB6. controls, levers and switches in order to operate the bore well drilling machine KB7. safety controls and equipment such as emergency stop switches and fire extinguishers KB8. actual and potential hazards, such as overhead utilities, guide wires, other equipment, personnel and vehicular traffic KB9. roles of personnel on site, such as supervisor, helpers and others</p>
<b>Skills (S)</b>	
<b>A. Core Skills / Generic Skills</b>	<b>Writing Skills</b>
	The user/ individual on the job needs to know and understand how to: SA1. record information/observations on activities/incidents as per the prescribed norms
	<b>Reading Skills</b>
	The user/ individual on the job needs to know and understand how to: SA2. read and comprehend basic signs, symbols, diagrams, charts and decals on the equipment & at work site SA3. read and understand the applicable relevant aspects of the equipment operation & maintenance manuals
	<b>Oral Communication (Listening and Speaking Skills)</b>
	The user/ individual on the job needs to know and understand how to:

**IES/N0171**

**Carry out bore well drilling operation**

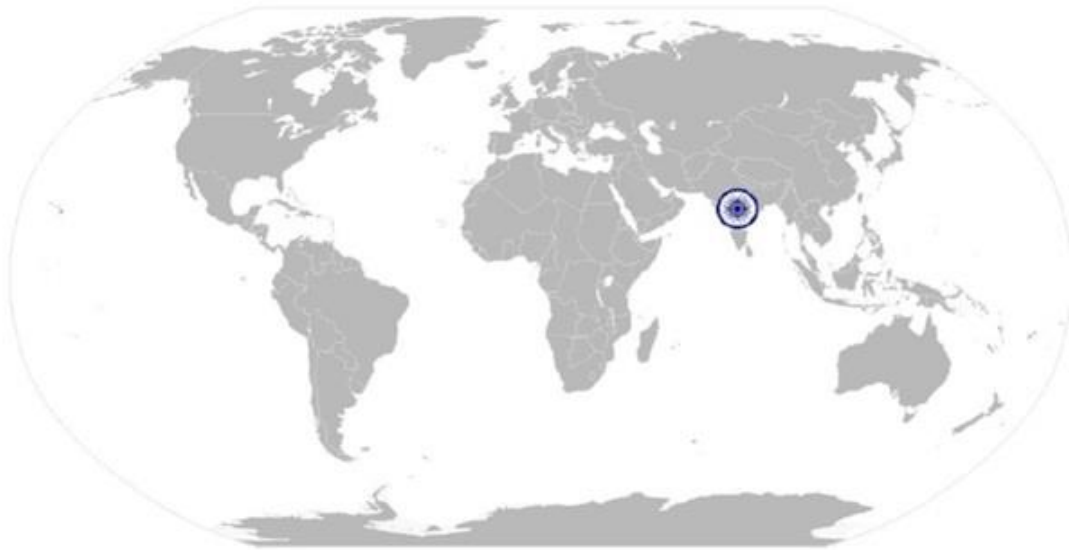
	<p>SA4. use correct technical terms/phrases while interacting with other co-workers &amp; supervisor</p> <p>SA5. explain/instruct other team members effectively in a clear and concise manner</p> <p>SA6. listen attentively and understand the queries /comments raised by other team members</p>
<b>B. Professional Skills</b>	<b>Decision Making</b>
	The user/ individual on the job needs to know and understand how to:
	SB1. decide when to escalate and seek assistance if the problem is beyond scope
	<b>Plan and Organize</b>
	The user/ individual on the job needs to know and understand how to:
	SB2. prioritize and schedule maintenance activity on equipment to support operational needs
	SB3. plan and organise the work schedule in coordination with other team members & supervisor
	SB4. execute the tasks efficiently within the time frame allotted and prescribed quality norms; with minimal supervision
	<b>Customer Centricity</b>
	The user/ individual on the job needs to know and understand how to:
SB5. ensure quality service is delivered as committed to achieve high levels of customer satisfaction	
<b>Problem Solving</b>	
The user/ individual on the job needs to know and understand how to:	
SB6. evaluate the possible solutions and initiate appropriate remedial measures and actions	
<b>Analytical Thinking</b>	
The user/ individual on the job needs to know and understand how to:	
SB7. apply common sense and reasoning skills to identify the cause of delays and difficulties in execution	
<b>Critical Thinking</b>	
The user/ individual on the job needs to know and understand how to:	
SB8. apply knowledge and judgement acquired through experience and awareness to execute tasks efficiently	



IES/N0172 Carry out maintenance and troubleshooting of the bore well drilling equipment

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# National Occupational Standard



## Overview

This unit provides Performance Criteria, Knowledge & Understanding and Skills & Ability for activities that are required for performing routine maintenance and troubleshooting of a bore well drilling equipment.

**IES/N0172 Carry out maintenance and troubleshooting of the bore well drilling equipment**

National Occupational Standard

<b>Unit Code</b>	<b>IES/N0172</b>
<b>Unit Title (Task)</b>	<b>Carry out maintenance and troubleshooting of the bore well drilling equipment</b>
<b>Description</b>	This unit provides insight into activities that are required for performing routine maintenance and troubleshooting of a bore well drilling equipment.
<b>Scope</b>	This unit/task covers the following: <ul style="list-style-type: none"> <li>• Preventive maintenance</li> <li>• Repair and troubleshooting</li> <li>• Reporting and documentation</li> </ul>
<b>Performance Criteria(PC) w.r.t. the Scope</b>	
<b>Element</b>	<b>Performance Criteria</b>
<b>Preventive maintenance</b>	To be competent, the user/individual on the job must be able to: <ul style="list-style-type: none"> <li>PC1. determine the service requirement for the equipment as per the scheduled maintenance</li> <li>PC2. replenish coolants, lubricants and fluids as per the running of the machine or as per the operational manual</li> <li>PC3. service lubrications system, electrical service system, and stabilizing system of the bore well drilling machine</li> <li>PC4. service mast as per the usage of the equipment</li> <li>PC5. check battery levels and condition of the terminals and carry out minor adjustments if required</li> <li>PC6. ensure all the tools are kept in the designated place after usage as per the organizational guidelines</li> </ul>
<b>Repair and troubleshooting</b>	<ul style="list-style-type: none"> <li>PC7. ensure the main power is turned off from panel completely before carrying out maintenance work</li> <li>PC8. ensure that appropriate tools are used while troubleshooting</li> <li>PC9. diagnose the problem and identify appropriate repair procedures</li> <li>PC10. report defects precisely to the supervisor if beyond scope of his role</li> <li>PC11. dispose waste as per the guidelines of the site/ organization</li> </ul>
<b>Reporting and documentation</b>	<ul style="list-style-type: none"> <li>PC12. complete all documentation as per the prescribed standards in a timely manner</li> <li>PC13. report defects precisely to the supervisor if beyond scope of role</li> </ul>
<b>Knowledge and Understanding (K)</b>	
<b>A. Organizational Context</b> (Knowledge of the company / organization and its processes)	The user/individual on the job needs to know and understand: <ul style="list-style-type: none"> <li>KA1. the organization operations, maintenance and safety related guidelines</li> <li>KA2. the operational standards &amp; procedures followed in the company in timeframe in which the complaint/problem should be resolved</li> <li>KA3. reporting structure of the company</li> <li>KA4. location of specialized tools and the equipment</li> <li>KA5. location and process for storage and disposal of waste material</li> </ul>
<b>B. Technical Knowledge</b>	The user/individual on the job needs to know and understand: <ul style="list-style-type: none"> <li>KB1. maintenance schedule of the equipment</li> <li>KB2. basics of engine and sub systems; fuel, lubrication and cooling systems</li> <li>KB3. basics of transmission, auto-electrical functioning and repairs</li> </ul>

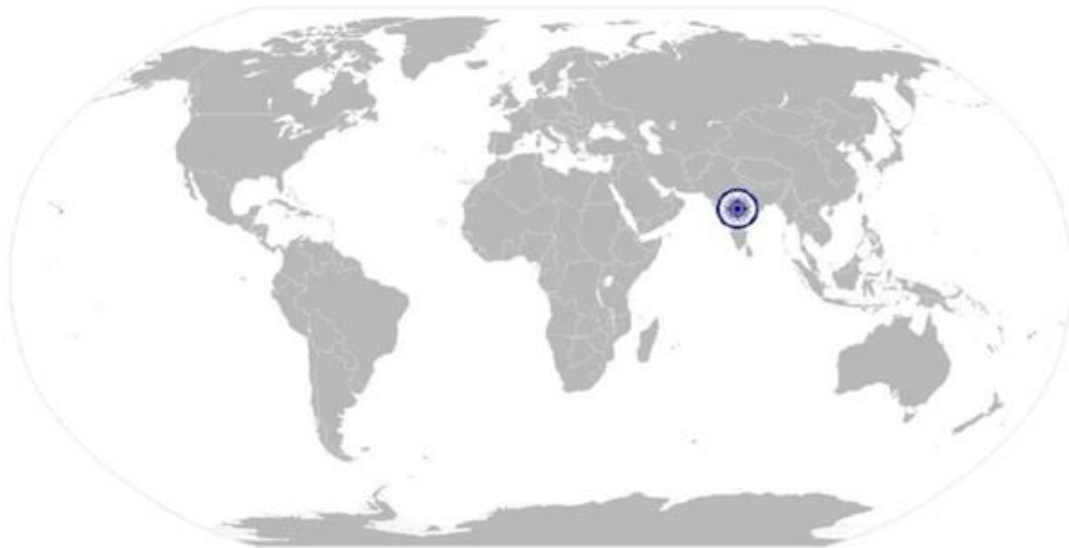


## IES/N0172 Carry out maintenance and troubleshooting of the bore well drilling equipment

	<p>KB4. different types of hydraulic mechanisms, and principles of friction</p> <p>KB5. basics of electrical systems including control panel</p> <p>KB6. control and switches needed to operate the bore well drilling machine appropriately</p> <p>KB7. common defects and general causes of breakdown</p> <p>KB8. Spill kit procedures</p>
<b>Skills (S)</b>	
<b>A. Core Skills / Generic Skills</b>	<b>Writing Skills</b>
	The user/ individual on the job needs to know and understand how to: SA1. record information/observations on activities/incidents as per the prescribed norms
	<b>Reading Skills</b>
	The user/ individual on the job needs to know and understand how to: SA2. read and comprehend basic signs, symbols, diagrams, charts and decals on the equipment & at work site SA3. read and understand the applicable relevant aspects of the equipment operation & maintenance manuals
	<b>Oral Communication (Listening and Speaking Skills)</b>
	The user/ individual on the job needs to know and understand how to: SA4. use correct technical terms/phrases while interacting with other co-workers & supervisor SA5. explain/instruct other team members effectively in a clear and concise manner SA6. listen attentively and understand the queries /comments raised by other team members
<b>B. Professional Skills</b>	<b>Decision Making</b>
	The user/ individual on the job needs to know and understand how to: SB1. decide when to escalate and seek assistance if the problem is beyond scope
	<b>Plan and Organize</b>
	The user/ individual on the job needs to know and understand how to: SB2. prioritize and schedule maintenance activity on equipment to support operational needs SB3. plan and organise the work schedule in coordination with other team members & supervisor SB4. execute the tasks efficiently within the time frame allotted and prescribed quality norms; with minimal supervision
	<b>Customer Centricity</b>
	The user/ individual on the job needs to know and understand how to: SB5. ensure quality service is delivered as committed to achieve high levels of customer satisfaction
<b>Problem Solving</b>	The user/ individual on the job needs to know and understand how to: SB6. evaluate the possible solutions and initiate appropriate remedial measures and actions
	<b>Analytical Thinking</b>

## IES/N0172 Carry out maintenance and troubleshooting of the bore well drilling equipment

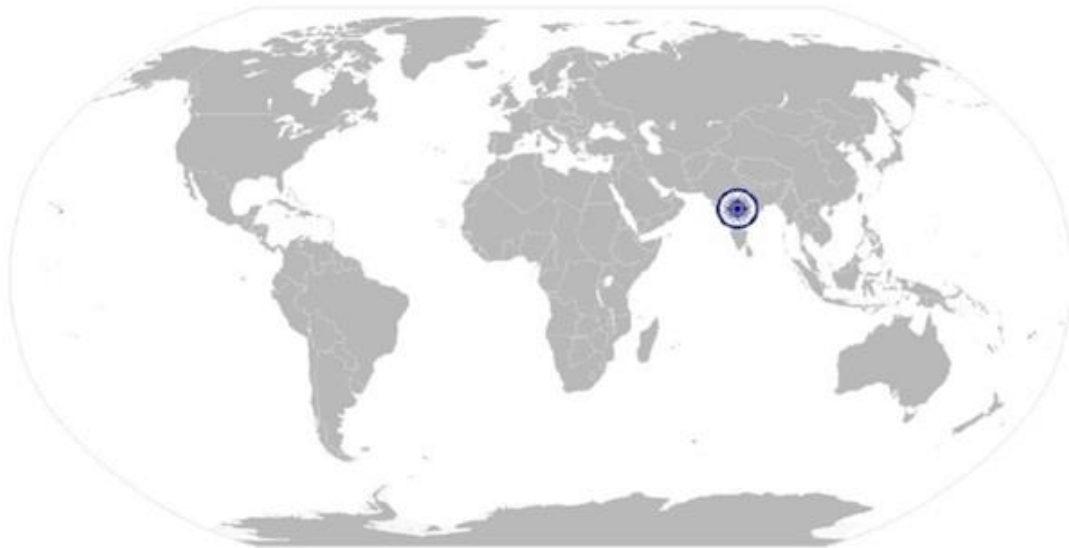
	The user/ individual on the job needs to know and understand how to: SB7. apply common sense and reasoning skills to identify the cause of delays and difficulties in execution
	<b>Critical Thinking</b>
	The user/ individual on the job needs to know and understand how to: SB8. apply knowledge and judgement acquired through experience and awareness to execute tasks efficiently



## IES/N0172 Carry out maintenance and troubleshooting of the bore well drilling equipment NOS Version Control

NOS Code	IES/N0172		
Credits (NSQF)	TBD	Version number	1.0
Sector	Infrastructure Equipment	Drafted on	09/08/16
Industry Sub-sector	Equipment Operations	Last reviewed on	20/12/17
Occupation	Machine Operation	Next review date	26/12/20

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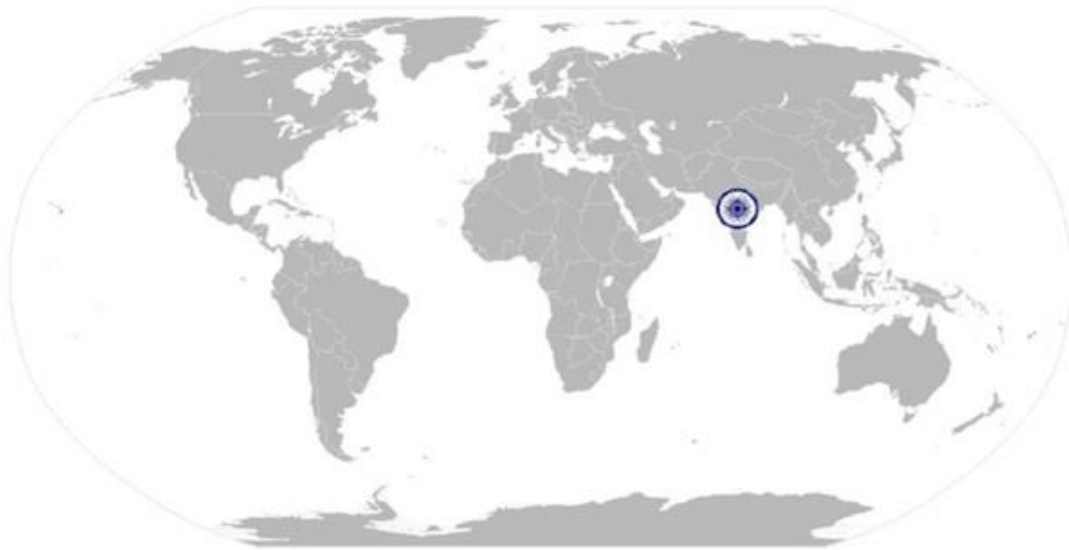


IES/N7601

Comply with worksite health and safety guidelines

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# National Occupational Standard



## Overview

This unit is about adhering to health and safety requirements at the worksite during equipment operations.

**IES/N7601**

**Comply with worksite health and safety guidelines**

<b>Unit Code</b>	<b>IES/N7601</b>
<b>Unit Title (Task)</b>	<b>Comply with worksite health and safety guidelines</b>
<b>Description</b>	This unit is about adhering to health and safety requirements at the worksite during equipment operations.
<b>Scope</b>	This unit/task covers the following: <ul style="list-style-type: none"> <li>• Worksite health and safety</li> </ul>
<b>Performance Criteria(PC) w.r.t. the Scope</b>	
<b>Element</b>	<b>Performance Criteria</b>
<b>Worksite health and safety</b>	To be competent, the user/individual on the job must be able to: <p>PC1. comply with safety, health, security and environment related regulations/ guidelines at the work site</p> <p>PC2. use Personal Protective Equipment (PPE) and other safety gear as applicable to the equipment and the worksite</p> <p>PC3. follow safety measures during operations to ensure that the health and safety of self or others (including members of the public) is not at risk</p> <p>PC4. carry out operations as per the manufacturer's and worksite related health and safety guidelines</p> <p>PC5. handle the transport, storage and disposal of hazardous materials and waste in compliance with worksite health, safety and environmental guidelines</p> <p>PC6. operate various grades of fire extinguishers, as applicable</p> <p>PC7. Support in administering basic first aid and report to concerned team members, as required, in case of an accident</p> <p>PC8. respond promptly and appropriately to an accident/ incident or emergency situation, within limits of role and responsibility</p> <p>PC9. record and report details related to operations, incidents or accidents, as applicable</p>
<b>Knowledge and Understanding (K)</b>	
<b>A. Organizational Context</b> (Knowledge of the company / organization and its processes)	The user/individual on the job needs to know and understand: <p>KA1. health, safety, environmental(HSE) and security related policies/ guidelines of the organization and the worksite and its importance</p> <p>KA2. personnel responsible for Health, Safety and environment (HSE) related matters and their contact details</p> <p>KA3. location of worksite storage, HSE team and safe assembly points</p> <p>KA4. reporting and documentation procedures for HSE and security matters</p>
<b>B. Technical Knowledge</b>	The user/individual on the job needs to know and understand: <p>KB1. manufacturer's guidelines related to health and safety requirements</p> <p>KB2. common types of health, safety, environment and security risks related to the worksite and operations</p> <p>KB3. types, use and importance of Personal Protective Equipment (PPE) and other safety gear</p> <p>KB4. safe working practices to avoid common hazards and risks</p> <p>KB5. guidelines for transport, storage and disposal of hazardous materials and waste</p> <p>KB6. types of common hazards and risks at the worksite including fire,</p>

**IES/N7601**

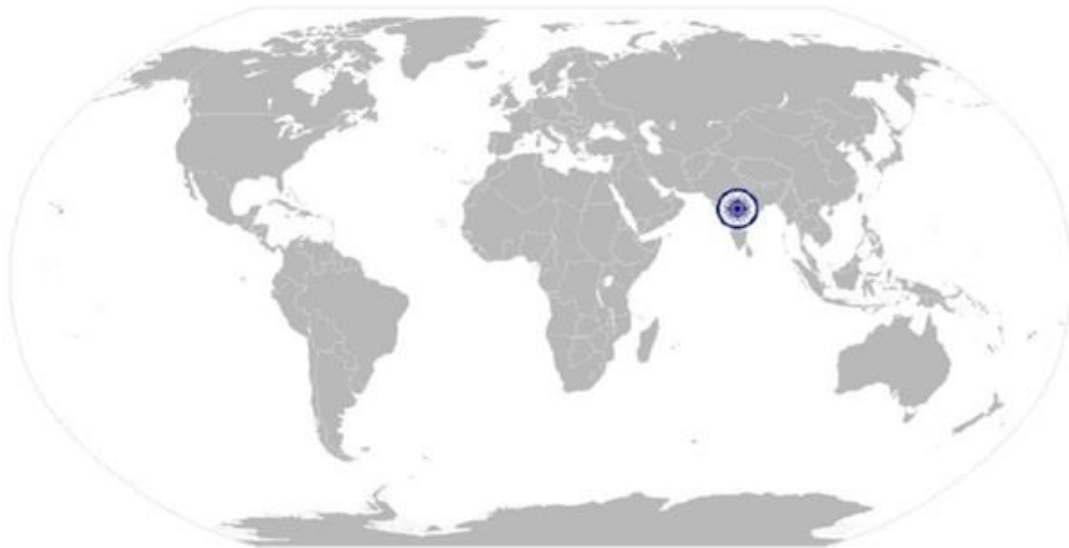
**Comply with worksite health and safety guidelines**

	<p>electrical, gas emergencies, accidents, incidents, structure collapse, machine breakdown</p> <p>KB7. safe lockdown/ stopping of machinery use in case of emergencies and incidents/ accidents</p> <p>KB8. types of fire extinguishers and their use</p> <p>KB9. common injuries and appropriate basic first aid treatment e.g. electrical shock, bleeding, wounds, fractures, minor burns, eye injuries</p>
<b>Skills (S)</b>	
<b>A. Core Skills / Generic Skills</b>	<b>Writing Skills</b>
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA1. record information/observations on any health and safety related incidents/activities as per the prescribed norms</p>
	<b>Reading Skills</b>
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA2. read and comprehend basic signs, symbols, charts and decals related to health and safety at work site</p> <p>SA3. read and understand the applicable relevant safety aspects of equipment operation at work site</p>
	<b>Oral Communication (Listening and Speaking Skills)</b>
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA4. use correct technical terms/phrases while interacting with other co-workers &amp; supervisor</p> <p>SA5. explain/instruct other team members effectively in a clear and concise manner</p> <p>SA6. listen attentively and understand the queries /comments raised by other team members</p>
<b>B. Professional Skills</b>	<b>Decision Making</b>
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SB1. respond in time to emergencies / accidents in line with organisational /worksite procedures</p> <p>SB2. decide when to escalate and seek assistance if the problem is beyond scope</p>
	<b>Plan and Organize</b>
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SB3. plan and organise the work schedule adhering to all safety guidelines and instructions</p> <p>SB4. execute the tasks in a safe manner by ensuring proper use of PPE and other safety gear ; with minimal supervision</p>
	<b>Customer Centricity</b>
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SB5. ensure quality service is delivered as committed to achieve high levels of customer satisfaction</p>
<b>Problem Solving</b>	
<p>The user/ individual on the job needs to know and understand how to:</p> <p>SB6. evaluate the possible solutions and initiate appropriate remedial measures and actions</p>	

**IES/N7601**

### **Comply with worksite health and safety guidelines**

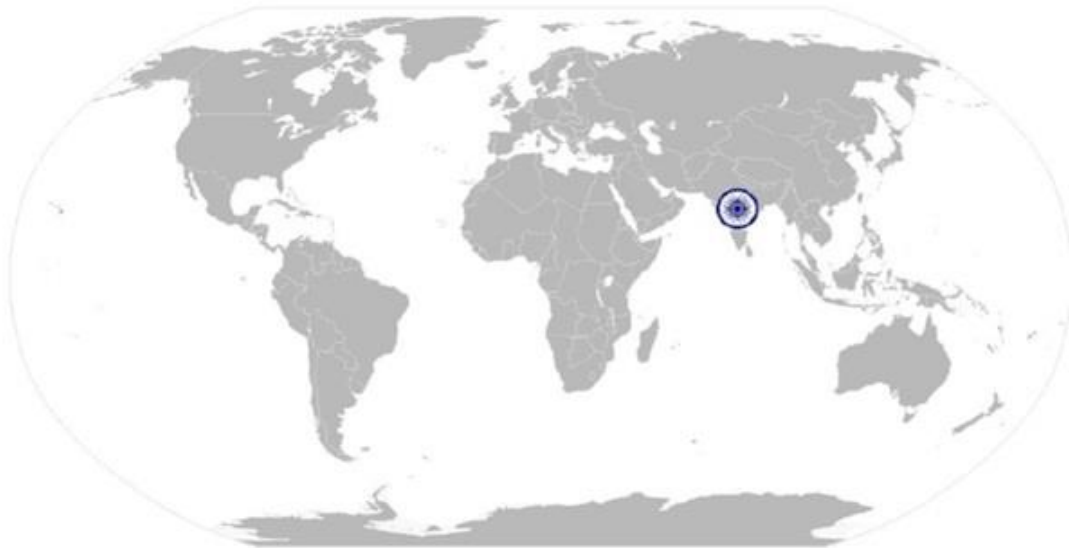
	<b>Analytical Thinking</b>
	The user/ individual on the job needs to know and understand how to: SB7. apply common sense and reasoning skills to identify the cause of delays and difficulties in execution
	<b>Critical Thinking</b>
	The user/ individual on the job needs to know and understand how to: SB8. apply knowledge and judgement acquired through experience and awareness to execute tasks efficiently



**IES/N7601**                      **Comply with worksite health and safety guidelines**  
**NOS Version Control**

<b>NOS Code</b>	<b>IES/N7601</b>		
<b>Credits (NSQF)</b>	<b>TBD</b>	<b>Version number</b>	<b>1.0</b>
<b>Sector</b>	<b>Infrastructure Equipment</b>	<b>Drafted on</b>	<b>09/08/16</b>
<b>Industry Sub-sector</b>	<b>Equipment Operations</b>	<b>Last reviewed on</b>	<b>20/12/17</b>
<b>Occupation</b>	<b>Machine Operation</b>	<b>Next review date</b>	<b>26/12/20</b>

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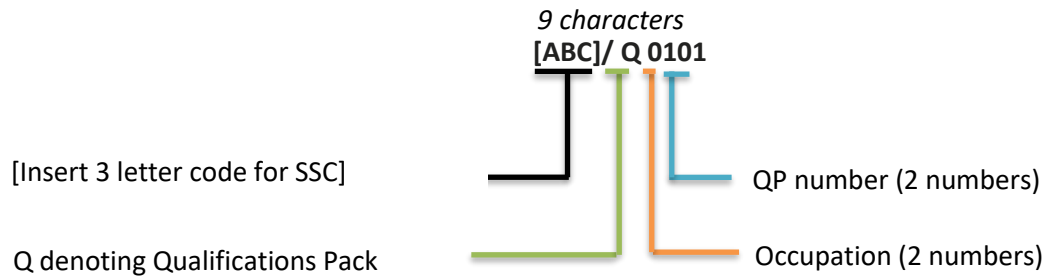




## Annexure

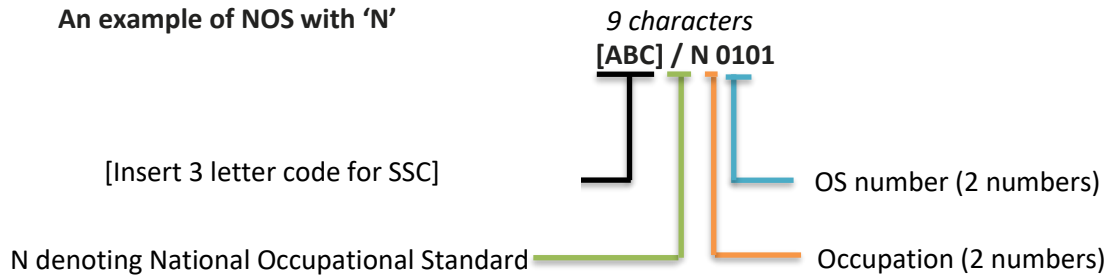
### Nomenclature for QP and NOS

#### Qualifications Pack



#### Occupational Standard

##### An example of NOS with 'N'



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

Sub-sector	Range of Occupation numbers
Equipment Operations	1 to 10
Equipment Service and spares	11 to 20
Equipment Production	21 to 40
Equipment Sales	41 to 50
Equipment Financing	51 to 55
Core Enablers	56 to 65
Other Enablers	66 to 75
Common Occupations	76 to 85

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

## CRITERIA FOR ASSESSMENT OF TRAINEES

**Job Role** Bore Well Drilling Machine Operator

**Qualification Pack Code** IES/Q0124

**Sector Skill Council** IESC

### Guidelines for Assessment

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

Compulsory NOS				Marks Allocation	
Total Marks: 100					
Assessment outcomes	Assessment Criteria for outcomes	Total Marks	Out Of	Theory	Skills Practical
1. IES/N0170 Carry out Pre-operation checks on bore well drilling equipment	PC1. check for tires-damages, wheels-loose lug bolts, bent rims, cracks and bulges and replace if required as per the set procedures	<b>30</b>	2	1	1
	PC2. check for leveling of the machine as per the slope on the ground		2.5	0.5	2
	PC3. inspect if levers and control cables are in proper working conditions		3	1	2
	PC4. check if all mounting bolts are tightened		2.5	0.5	2
	PC5. check the mast for proper greasing, cracks, bolts and breaks in chain		2.5	0.5	2
	PC6. check fluid levels of engine crank case, radiator coolant and battery electrolyte levels fill up if needed		2	1	1

	PC7. check rear axle- Steer cylinders for damage, leaks, secure pivot pins, damaged hydraulic hoses etc.		3	1	2
	PC8. check if gauges, switches, joysticks, foot controls and horn are in operational condition		3	1	2
	PC9. inspect the condition of hose/pipes/clamps for normal functioning		2.5	0.5	2
	PC10. check for the availability of casing pipes and drill bits to start the process		1.5	0.5	1
	PC11. check for service brake and parking brake operation		1.5	0.5	1
	PC12. maintain a pre-operational check logbook to record all activities performed before starting the drilling operation		2	1	1
	PC13. report the defects precisely to the supervisor if beyond scope of role		2	1	1
	<b>Total</b>		<b>30</b>	<b>10</b>	<b>20</b>
2. IES/N0171 Carry out bore well drilling operation	PC1. inspect the site visually for any source of obstruction or for any personnel in the circumference/ check for near high raise natural or man-made structure / high voltage lines/wind pattern	<b>35</b>	2	1	1
	PC2. park the vehicle at the drilling point and pull the lever to extend the stabilizer legs to stabilize the vehicle		1	0	1
	PC3. start the engine and check the controls of operating panel for normal functioning		1	0	1
	PC4. choose the appropriate casing pipe as per the requirement		1	0	1
	PC5. attach the pipe to the gripper casing pipe and connect it to the rotate motor attached to the rig mast		1.5	0	1.5
	PC6. drill the casing pipe into the ground until it reaches the surface of the hard rock and leave the pipe inside the ground		2	1	1
	PC7. choose the appropriate drill rods and connect them to the rotator motor		2	1	1
	PC8. connect the appropriate drill bit to the hammer that is attached to the drill rod		2	1	1
	PC9. start the drilling of drill rods inside the casing pipe		1.5	0	1.5
	PC10. monitor air & hydraulic pressure gauge, engine & compressor temperature		2	0.5	1.5

	gauge				
	PC11. monitor RPM, air discharge temperature and pressure, engine water temperature and pressure and sump pressure displayed in the compressor unit	2.5	1	1.5	
	PC12. monitor hydraulic oil filter clog indicator, air filter element and compressor air filter elements	2.5	1	1.5	
	PC13. provide the appropriate inputs to the machine through controls for connecting the drill rods safely to the next drill rod until the required output is achieved	2	1	1	
	PC14. coordinate with junior operators at regular intervals while operating the machine for better performance	2	1	1	
	PC15. change the drill bits if the drilling process slows down by monitoring the rotations per minute (RPM) levels	2	1	1	
	PC16. ensure that the drill rod is removed from the ground	1.5	0.5	1	
	PC17. stop the rotator motor	0.5	0	0.5	
	PC18. detach the drill bits from the rotator motor	1	0	1	
	PC19. take mast and stabilizer legs to the home position	1	0.5	0.5	
	PC20. turn off the engine and remove the ignition key	1	0	1	
	PC21. maintain a logbook to record all activities performed	1.5	0.5	1	
	PC22. report the defects precisely to the supervisor if beyond scope of the role	1.5	1	0.5	
	<b>Total</b>	<b>35</b>	<b>12</b>	<b>23</b>	
3. IES/N0172 Carry out maintenance and troubleshooting of the bore well drilling equipment	PC1. determine the service requirement for the equipment as per the scheduled maintenance	<b>20</b>	1.5	0.5	1
	PC2. replenish coolants, lubricants and fluids as per the running of the machine or as per the operational manual		1.5	0.5	1
	PC3. service lubrications system, electrical service system, and stabilizing system of the bore well drilling machine		1.5	0.5	1
	PC4. service mast as per the usage of the equipment		1.5	0.5	1

	PC5. check battery levels and condition of the terminals and carry out minor adjustments if required		1.5	0.5	1
	PC6. ensure all the tools are kept in the designated place after usage as per the organizational guidelines		1.5	0.5	1
	PC7. ensure the main power is turned off from panel completely before carrying out maintenance work		1.5	0.5	1
	PC8. ensure that appropriate tools are used while troubleshooting		1.5	0.5	1
	PC9. diagnose the problem and identify appropriate repair procedures		1.5	0.5	1
	PC10. report defects precisely to the supervisor if beyond scope of his role		1.5	0.5	1
	PC11. dispose waste as per the guidelines of the site/ organization		2	0.5	1.5
	PC12. complete all documentation as per the prescribed standards in a timely manner		1	0.5	0.5
	PC13. report defects precisely to the supervisor if beyond scope of role		2	1	1
	<b>Total</b>		<b>20</b>	<b>7</b>	<b>13</b>
4. IES/N7601 Comply with worksite health and safety guidelines	PC1. comply with safety, health, security and environment related regulations/ guidelines at the work site	<b>15</b>	1.5	0.5	1
	PC2. use Personal Protective Equipment (PPE) and other safety gear as applicable to the equipment and the worksite		2.5	0.5	2
	PC3. follow safety measures during operations to ensure that the health and safety of self or others (including members of the public) is not at risk		2	1	1
	PC4. carry out operations as per the manufacturer's and worksite related health and safety guidelines		1.5	0.5	1
	PC5. handle the transport, storage and disposal of hazardous materials and waste in compliance with worksite health, safety and environmental guidelines		1.5	0.5	1
	PC6. operate various grades of fire extinguishers, as applicable		1.5	0.5	1
	PC7. Support in administering basic first aid and report to concerned team members, as required, in case of an accident		1.5	0.5	1

	PC8. respond promptly and appropriately to an accident/ incident or emergency situation, within limits of role and responsibility	1.5	0.5	1
	PC9. record and report details related to operations, incidents or accidents, as applicable	1.5	0.5	1
	<b>Total</b>	<b>15</b>	<b>5</b>	<b>10</b>
<b>Grand Total</b>		<b>100</b>	<b>34</b>	<b>66</b>