

## Qualification Pack



# Crawler Crane Operator

QP Code: IES/Q0110

Version: 2.0

NSQF Level: 4

Infrastructure Equipment Skill Council || Avik Royale - First Floor (Next of Vijaya Bank), No.6, 50 feet  
Main Road, Avalahalli Extension, Girinagar  
Bengaluru 560026

## Qualification Pack

### Contents

IES/Q0110: Crawler Crane Operator .....	3
<i>Brief Job Description</i> .....	3
Applicable National Occupational Standards (NOS) .....	3
<i>Compulsory NOS</i> .....	3
<i>Qualification Pack (QP) Parameters</i> .....	3
IES/N0128: Carry out pre-op checks on Crawler Crane .....	5
IES/N0129: Operate a Crawler Crane .....	11
IES/N0130: Carry out routine maintenance & trouble shooting .....	19
IES/N7601: Comply with worksite health and safety guidelines .....	25
Assessment Guidelines and Weightage .....	28
<i>Assessment Guidelines</i> .....	28
<i>Assessment Weightage</i> .....	29
Acronyms .....	30
Glossary .....	31

## Qualification Pack

### IES/Q0110: Crawler Crane Operator

#### Brief Job Description

A Crawler Crane Operator operates a moving crane to lift, move, position, and reposition loads. He is responsible for operating crawler crane to move, locate, relocate, stack and count merchandise.

#### Personal Attributes

This job requires the individual to have good hand eye coordination as also comply with industry regulations. Willingness to work, strong work ethics and courteous behaviour with co workers are equally desirable. He should also be physically agile, strong, have good eye sight and not suffer from colour-blindness.

#### Applicable National Occupational Standards (NOS)

##### Compulsory NOS:

1. [IES/N0128: Carry out pre-op checks on Crawler Crane](#)
2. [IES/N0129: Operate a Crawler Crane](#)
3. [IES/N0130: Carry out routine maintenance & trouble shooting](#)
4. [IES/N7601: Comply with worksite health and safety guidelines](#)

#### Qualification Pack (QP) Parameters

<b>Sector</b>	Infrastructure Equipment
<b>Sub-Sector</b>	Equipment Operations
<b>Occupation</b>	Operator
<b>Country</b>	India
<b>NSQF Level</b>	4
<b>Aligned to NCO/ISCO/ISIC Code</b>	NCO-2015/8343.0500 Mobile Crane Operator

## Qualification Pack

<b>Minimum Educational Qualification &amp; Experience</b>	8th Class (OR 8th Class Pass + ITI (2years) + 2 years of relevant experience OR 10th Class Pass with 2 years of relevant experience OR 10th Class Pass + ITI (1year after Class 10th) with 1 year of relevant experience OR 10th Class Pass + ITI (2years after Class 10th) OR 10th Class Pass and pursuing continuous regular schooling OR 12th Class + 6 months of relevant experience OR 3 Year Diploma (After 10th) OR Previous relevant Qualification of NSQF Level 3 with 2 years of relevant experience ) with 2 Years of experience
<b>Minimum Level of Education for Training in School</b>	
<b>Pre-Requisite License or Training</b>	Light Commercial Vehicle Driving License (LCV) is preferred
<b>Minimum Job Entry Age</b>	18 Years
<b>Last Reviewed On</b>	26/05/2022
<b>Next Review Date</b>	26/05/2025
<b>NSQF Approval Date</b>	26/05/2022
<b>Version</b>	2.0
<b>Reference code on NQR</b>	2022/IS/IESC/05904
<b>NQR Version</b>	1.0

## Qualification Pack

### IES/N0128: Carry out pre-op checks on Crawler Crane

#### Description

This unit provides Performance Criteria, Knowledge & Understanding and Skills & Ability for activities that need to be carried out to prepare the Crawler crane for operation.

#### Scope

The scope covers the following :

- Pre-operation checks
- Documentation and Reporting

#### Elements and Performance Criteria

##### *Pre-Operation Checks*

To be competent, the user/individual on the job must be able to:

- PC1.** adhere to time limits given by supervisor
- PC2.** visually inspect entire machine for: cracks in welds or structural components Excessive rust, corrosion or oxidation Dents or damage to machine
- PC3.** ensure that all decals are legible and in place as per operation manual
- PC4.** check any hydraulic oil leaks and make sure that the oil level is adequate according to the manufacturer's indication
- PC5.** ascertain proper oil level as per manufacturers indicator
- PC6.** Examine the battery for leaks and ensure that the fluid level is correct according to the manufacturer's indicator
- PC7.** check for engine oil leaks and fluid levels as indicated by the manufacturer's indication
- PC8.** check the holding and control breaks to ensure that they are functioning properly
- PC9.** Ensure proper fuel and fluid levels as per manufacturer's indicator
- PC10.** check the following components for damage, improperly installed or missing parts as per the manufacturer s manual: Electrical components, wiring and electrical cables Hydraulic power unit, reservoir, hoses, fittings, cylinders and manifolds Platform, tower, turntable, scissor stack structures, their components and wear pads, lights and reflectors
- PC11.** Get the following components checked as per operation manual: Hoist Limit switches Pins, nuts, bolts and other fasteners Hitch components Safety chains Engines their fuel systems and related components Hoist Crawler track Personal protective devices
- PC12.** ensure that all structural and other critical components are present as per operation manual
- PC13.** check that all associated fasteners and pins are in position and properly fastened in accordance with the operating handbook
- PC14.** keep inspection/maintenance logbook in which all actions conducted prior to operating the crane are recorded

##### *Documentation and Reporting*

To be competent, the user/individual on the job must be able to:

- PC15.** if a defect is found that is outside the scope of his duty, notify the supervisor immediately

## Qualification Pack

### Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** the organizations procedures and guidelines related to breakdown & maintenance services
- KU2.** understand the importance of routine maintenance checklist
- KU3.** common hazards in the work area and workplace procedures to deal with them
- KU4.** safety policy of the company
- KU5.** emergency organization of the specific work site
- KU6.** risk and impact of not following defined procedures/ work instructions
- KU7.** the company's performance criteria and processes
- KU8.** reporting structure in the company
- KU9.** escalation matrix for reporting unresolved problems
- KU10.** schedule for resolving the complaint/problem
- KU11.** implications of delays in process to the company
- KU12.** cost of equipment and loss for the company that result from damage of equipment and direct/ indirect cost of accidents
- KU13.** review mechanism and work goals with supervisor for obtaining/ giving feedback related to performance process
- KU14.** location of tools
- KU15.** contact person in case of queries on procedure or products
- KU16.** location and procedure for storage and disposal of waste material
- KU17.** different types of cranes and their applications and functions
- KU18.** working of engine, transmission, their use and function
- KU19.** various types of hydraulic mechanisms
- KU20.** the relevance of greasing and oiling crane components that require routine lubrication
- KU21.** the location and operation of instrument
- KU22.** hoists mechanism and its usage
- KU23.** controls, levers and switches in order to operate the crane properly
- KU24.** engine, hydraulic & electrical functions of a crawler crane
- KU25.** ways to find leaks, defects and damages in advance

### Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** keep note of any deviations or occurrences that do not conform to the established criteria
- GS2.** read and comprehend basic English in order to read and interpret machine/manual operator's decals/indicators
- GS3.** read instructions, guidelines/procedures/rules related to the worksite and equipment operations
- GS4.** communicate efficiently with operators to explain instructions and other concerned people

## Qualification Pack

- GS5.** when communicating with the operator and other employees, use appropriate technical terms
- GS6.** decide when to conduct maintenance checks
- GS7.** work with supervisors/ team mates to carry out work related tasks
- GS8.** plan work according to the required schedule and location
- GS9.** plan for cleaning and lubricating the crawler crane every day
- GS10.** deliver first-class service to ensure client satisfaction
- GS11.** identify immediate or temporary solutions to resolve mechanical issues
- GS12.** judge when to seek assistance from supervisor
- GS13.** identify cause and effect relations in his area of work
- GS14.** examine, evaluate and apply knowledge acquired from observation, experience, logic or communication in order to act efficiently

## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Pre-Operation Checks</i>	<b>6</b>	<b>26</b>	-	-
<b>PC1.</b> adhere to time limits given by supervisor	1	1	-	-
<b>PC2.</b> visually inspect entire machine for: cracks in welds or structural components Excessive rust, corrosion or oxidation Dents or damage to machine	-	1	-	-
<b>PC3.</b> ensure that all decals are legible and in place as per operation manual	-	1	-	-
<b>PC4.</b> check any hydraulic oil leaks and make sure that the oil level is adequate according to the manufacturer's indication	1	1	-	-
<b>PC5.</b> ascertain proper oil level as per manufacturers indicator	-	3	-	-
<b>PC6.</b> Examine the battery for leaks and ensure that the fluid level is correct according to the manufacturer's indicator	1	3	-	-
<b>PC7.</b> check for engine oil leaks and fluid levels as indicated by the manufacturer's indication	-	1	-	-
<b>PC8.</b> check the holding and control breaks to ensure that they are functioning properly	-	3	-	-
<b>PC9.</b> Ensure proper fuel and fluid levels as per manufacturer's indicator	-	3	-	-
<b>PC10.</b> check the following components for damage, improperly installed or missing parts as per the manufacturer s manual: Electrical components, wiring and electrical cables Hydraulic power unit, reservoir, hoses, fittings, cylinders and manifolds Platform, tower, turntable, scissor stack structures, their components and wear pads, lights and reflectors	1	3	-	-



### Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC11.</b> Get the following components checked as per operation manual: Hoist Limit switches Pins, nuts, bolts and other fasteners Hitch components Safety chains Engines their fuel systems and related components Hoist Crawler track Personal protective devices	-	1	-	-
<b>PC12.</b> ensure that all structural and other critical components are present as per operation manual	-	1	-	-
<b>PC13.</b> check that all associated fasteners and pins are in position and properly fastened in accordance with the operating handbook	1	3	-	-
<b>PC14.</b> keep inspection/maintenance logbook in which all actions conducted prior to operating the crane are recorded	1	1	-	-
<i>Documentation and Reporting</i>	<b>1</b>	<b>2</b>	-	-
<b>PC15.</b> if a defect is found that is outside the scope of his duty, notify the supervisor immediately	1	2	-	-
<b>NOS Total</b>	<b>7</b>	<b>28</b>	-	-

## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	IES/N0128
<b>NOS Name</b>	Carry out pre-op checks on Crawler Crane
<b>Sector</b>	Infrastructure Equipment
<b>Sub-Sector</b>	Equipment Operations
<b>Occupation</b>	Operator
<b>NSQF Level</b>	4
<b>Credits</b>	TBD
<b>Version</b>	2.0
<b>Last Reviewed Date</b>	26/05/2022
<b>Next Review Date</b>	26/05/2025
<b>NSQC Clearance Date</b>	26/05/2022

## Qualification Pack

### IES/N0129: Operate a Crawler Crane

#### Description

This unit provides Performance Criteria, Knowledge & Understanding and Skills & Ability for activities that are required for operating a Crawler Crane.

#### Scope

The scope covers the following :

- Start Crawler Crane operations
- Loading hauling of the load
- Stacking

#### Elements and Performance Criteria

##### *Start Crawler Crane operations*

To be competent, the user/individual on the job must be able to:

- PC1.** plan and organise the work in accordance with the instructions
- PC2.** position the hook in accordance with the operations handbook to attach the sling, shackle and chains
- PC3.** start the engine as specified in the manufacturer's operating manual
- PC4.** ensure coolant and hydraulic fluid warm up to operating temperatures as per operating manual
- PC5.** examine the assembly and confirm that all necessary safety precautions have been taken in accordance with the safety guidelines

##### *Loading and hauling of the load*

To be competent, the user/individual on the job must be able to:

- PC6.** use the emergency stop button to disable all power to the crawler crane in case of a crisis, as per operator manual
- PC7.** ensure safe working load as per operation manual
- PC8.** check wind speeds are within the crane's operational limits
- PC9.** select the appropriate hook, jib, as per the load, site and lift conditions
- PC10.** ensure appropriate boom extension as per operation manual
- PC11.** hoist and release the load at a small height to check the holding and control breaks are functioning properly, ahead of the actual lifting
- PC12.** carry out lifting of load in coordination with rigger as per the requirement
- PC13.** monitor stability whilst moving a load
- PC14.** ensure good visibility of both ends of the crane arm at all times
- PC15.** ensure no obstacles, personnel or other obstructions during lifting operation
- PC16.** look out for people working and hazards such as trenches, potholes and cables
- PC17.** adhere to time limits given by the supervisors

## Qualification Pack

- PC18.** perform in-operation visual checks on critical temperature and pressure gauges as per operation manual
- PC19.** select and use the right type of brake in different situations and conditions as per the operation manual
- PC20.** ensure that walkway rules e.g. operating the crane within the permissible/ allocated areas are followed
- PC21.** utilize judiciously various signaling devices available in the crane
- PC22.** keep a safe distance from other plant or vehicles
- PC23.** work safely in accordance with operational requirements and associated safe systems of work

### Stacking

To be competent, the user/individual on the job must be able to:

- PC24.** discharge the load safely at the position and in the manner designated by the supervisor
- PC25.** follow the instructions by the rigger
- PC26.** operate and control the boom and extensions as per operation manual
- PC27.** ensure that the laydown area is large enough to support the load
- PC28.** ensure laydown area is clear of any obstruction and
- PC29.** ensure that no other operators travel on or stand near the crawler crane
- PC30.** inform supervisor/rigger of any problems while operating the crawler crane
- PC31.** when the equipment is left unattended, make sure it is properly shut down and secured

### Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** the organizations procedures and guidelines related to breakdown & maintenance services
- KU2.** the performance standards & procedures followed in the company
- KU3.** reporting structure in the company
- KU4.** escalation matrix for reporting unresolved problems
- KU5.** time frame in which the complaint/problem should be resolved
- KU6.** work target and review mechanism with supervisor for obtaining / giving feedback related to performance process
- KU7.** location of tools
- KU8.** contact person in case of queries on procedure or products
- KU9.** location and process for storage and disposal of waste material
- KU10.** safety policy of the company
- KU11.** equipment load capacity limitations
- KU12.** methods to read load charts and accurately determine the load to be lifted
- KU13.** terrain appropriate for crawler crane function
- KU14.** the causes of equipment related accidents and associated preventative measures
- KU15.** the manufacturers criteria for equipment operations
- KU16.** the manufacturers criteria for equipment modifications

## Qualification Pack

- KU17.** method of appropriate rigging hardware and slings
- KU18.** usage of different types of rigging configurations
- KU19.** load hook-up points
- KU20.** types of material, methods and tools involved in the construction or repair of buildings, roads, heavy engineering equipment, oil wells, metro etc. where cranes are used
- KU21.** techniques of hoisting operation
- KU22.** the method of checking holding and control brakes
- KU23.** method of safe rigging
- KU24.** usage of rigging hardware and tool
- KU25.** multi-crane operations
- KU26.** conditions and hazards that may impact crane stability
- KU27.** crane tipping prevention techniques
- KU28.** methods to communicate through hand signals
- KU29.** government regulations and other regulations imposed by crane safety standards
- KU30.** introduction to engine, transmission, their use and function
- KU31.** various types of hydraulic mechanisms
- KU32.** instruments panel, their location and operation
- KU33.** controls, levers and switches in order to operate the crawler crane properly
- KU34.** visual checks to identify damage, defects or leaks beforehand
- KU35.** usage of all safety signs and other emergency signals
- KU36.** the location and use of the emergency stop button

## Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** keep note of any deviations or occurrences that do not conform to the established criteria
- GS2.** read and comprehend basic English in order to read and interpret machine/manual operator's decals/indicators
- GS3.** interpret stakes and signage on the road and during worksite operations
- GS4.** read instructions, guidelines/procedures/rules related to the worksite and equipment operations
- GS5.** give clear instructions to co-workers, subordinates and other personnel
- GS6.** use correct technical terms while interacting with supervisor
- GS7.** assess for any damage/faulty component in the crawler crane and take action accordingly
- GS8.** decide when to perform appropriate driving operations i.e forward, reverse, tight spot
- GS9.** work with supervisors/team members to complete job-related tasks
- GS10.** plan work according to the required schedule and location
- GS11.** plan for regular maintenance on a daily basis before machine operations
- GS12.** provide service of the highest order to ensure customer satisfaction
- GS13.** identify immediate or temporary solutions to resolve mechanical issues



## Qualification Pack

- GS14.** judge when to seek assistance from supervisor
- GS15.** identify possible ways to improve operational efficiency
- GS16.** suggest methods to avoid accidents/errors while operating the crawler crane
- GS17.** examine, evaluate and apply knowledge acquired from observation, experience, logic or communication in order to act efficiently

## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Start Crawler Crane operations</i>	<b>1</b>	<b>9</b>	-	-
<b>PC1.</b> plan and organise the work in accordance with the instructions	-	1	-	-
<b>PC2.</b> position the hook in accordance with the operations handbook to attach the sling, shackle and chains	1	3	-	-
<b>PC3.</b> start the engine as specified in the manufacturer's operating manual	-	1	-	-
<b>PC4.</b> ensure coolant and hydraulic fluid warm up to operating temperatures as per operating manual	-	3	-	-
<b>PC5.</b> examine the assembly and confirm that all necessary safety precautions have been taken in accordance with the safety guidelines	-	1	-	-
<i>Loading and hauling of the load</i>	<b>5</b>	<b>26</b>	-	-
<b>PC6.</b> use the emergency stop button to disable all power to the crawler crane in case of a crisis, as per operator manual	-	1	-	-
<b>PC7.</b> ensure safe working load as per operation manual	-	1	-	-
<b>PC8.</b> check wind speeds are within the crane's operational limits	-	1	-	-
<b>PC9.</b> select the appropriate hook, jib, as per the load, site and lift conditions	-	3	-	-
<b>PC10.</b> ensure appropriate boom extension as per operation manual	-	1	-	-
<b>PC11.</b> hoist and release the load at a small height to check the holding and control breaks are functioning properly, ahead of the actual lifting	-	3	-	-
<b>PC12.</b> carry out lifting of load in coordination with rigger as per the requirement	1	1	-	-

### Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC13.</b> monitor stability whilst moving a load	-	1	-	-
<b>PC14.</b> ensure good visibility of both ends of the crane arm at all times	-	1	-	-
<b>PC15.</b> ensure no obstacles, personnel or other obstructions during lifting operation	-	1	-	-
<b>PC16.</b> look out for people working and hazards such as trenches, potholes and cables	1	1	-	-
<b>PC17.</b> adhere to time limits given by the supervisors	-	1	-	-
<b>PC18.</b> perform in-operation visual checks on critical temperature and pressure gauges as per operation manual	1	1	-	-
<b>PC19.</b> select and use the right type of brake in different situations and conditions as per the operation manual	-	1	-	-
<b>PC20.</b> ensure that walkway rules e.g. operating the crane within the permissible/ allocated areas are followed	-	3	-	-
<b>PC21.</b> utilize judiciously various signaling devices available in the crane	1	1	-	-
<b>PC22.</b> keep a safe distance from other plant or vehicles	-	3	-	-
<b>PC23.</b> work safely in accordance with operational requirements and associated safe systems of work	1	1	-	-
<i>Stacking</i>	<b>1</b>	<b>8</b>	-	-
<b>PC24.</b> discharge the load safely at the position and in the manner designated by the supervisor	-	1	-	-
<b>PC25.</b> follow the instructions by the rigger	-	1	-	-
<b>PC26.</b> operate and control the boom and extensions as per operation manual	-	1	-	-
<b>PC27.</b> ensure that the laydown area is large enough to support the load	-	1	-	-



### Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC28.</b> ensure laydown area is clear of any obstruction and	-	1	-	-
<b>PC29.</b> ensure that no other operators travel on or stand near the crawler crane	-	1	-	-
<b>PC30.</b> inform supervisor/rigger of any problems while operating the crawler crane	1	1	-	-
<b>PC31.</b> when the equipment is left unattended, make sure it is properly shut down and secured	-	1	-	-
<b>NOS Total</b>	<b>7</b>	<b>43</b>	-	-

## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	IES/N0129
<b>NOS Name</b>	Operate a Crawler Crane
<b>Sector</b>	Infrastructure Equipment
<b>Sub-Sector</b>	Equipment Operations
<b>Occupation</b>	Operator
<b>NSQF Level</b>	4
<b>Credits</b>	TBD
<b>Version</b>	2.0
<b>Last Reviewed Date</b>	26/05/2022
<b>Next Review Date</b>	26/05/2025
<b>NSQC Clearance Date</b>	26/05/2022

## Qualification Pack

# IES/N0130: Carry out routine maintenance & trouble shooting

## Description

This unit provides Performance Criteria, Knowledge & Understanding and Skills & Ability for activities that are required for performing routine maintenance and troubleshooting on the Crawler Crane.

## Scope

The scope covers the following :

- Routine Maintenance
- Basic Diagnostics and Maintenance

## Elements and Performance Criteria

### *Routine maintenance*

To be competent, the user/individual on the job must be able to:

- PC1.** by monitoring the machine working hours plan the correct service schedule
- PC2.** check crane structure and the following accessories as per operation & maintenance manual
- PC3.** check crane structure for deformed, cracked or corroded members in the structure and boom loose bolts or rivets excessive wear on brake and clutch system parts, deformed wedges, defective cotter keys, pins and guard rails
- PC4.** check for the following in hydraulic system of Crane as per operation & maintenance manual: Deterioration or leakage in air or hydraulic systems, safe and effective operation on hoses, pumps and motors, Levels of fluid, Air cleaners for replacement or cleaning
- PC5.** check for the following Control Mechanisms and Monitoring Devices as per operation & maintenance manual: Cables, brakes and levers for poor adjustment or excessive wear. Marking on the load/radius indicator over full range. Load moment indicator, Boom angle indicator, Boom length indicator and Anti two-block system
- PC6.** check crawler track as per operation manual
- PC7.** check wire ropes for wear and tear
- PC8.** Check the following in the main boom as per operation manual lift cylinder(s) telescoping cylinder(s) hydraulic hoses / tubing & fittings holding device boom sections alignment auxiliary boom head and structure
- PC9.** Check the following in the Lattice boom extension boom extension alignment cords lattices end connections
- PC10.** replenish coolants, lubricants and fluids as per operation & maintenance manual
- PC11.** grease all greasing pins and pivot points as per operation & maintenance manual
- PC12.** check battery levels and condition of the terminals and carry out minor adjustments as per manufacturer's indicators

### *Basic diagnostics and troubleshooting*

To be competent, the user/individual on the job must be able to:

- PC13.** track machine operating hours to assess the right service schedule
- PC14.** complete timely and legibly daily/ weekly maintenance sheets as provided by the company

## Qualification Pack

- PC15.** ensure that suitable props/ support devices are used and the bucket is not raised while performing maintenance
- PC16.** make certain that no engine repair is conducted while the engine is running or remains hot
- PC17.** assess when the problem is beyond his competence and report the problem to suitably qualified and competent personnel
- PC18.** diagnose the problem
- PC19.** handle and dispose waste based on environmental guidelines at the work place
- PC20.** follow reporting procedures as laid down by the employer
- PC21.** complete all documentation in the prescribed standards in a timely manner
- PC22.** report and escalate problems/ incidents as required in a timely manner
- PC23.** report defects precisely to the supervisor if beyond scope of his role

## Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** the organizations procedures and guidelines related to breakdown & maintenance services
- KU2.** the performance standards & procedures followed in the company
- KU3.** reporting structure in the company
- KU4.** escalation matrix for reporting unresolved problems
- KU5.** schedule for resolving the complaint/problem
- KU6.** work objective and review procedure with supervisor for obtaining/giving feedback on performance process
- KU7.** location of tools
- KU8.** contact person in case of queries on procedure or products
- KU9.** location and process for storage and disposal of waste material
- KU10.** safety policy of the company
- KU11.** various components of the equipment and their functions
- KU12.** control and switches needed to operate the crawler crane properly
- KU13.** the underlying physics and mechanics involved in the crawler crane's various functions
- KU14.** common defects and general causes of breakdown
- KU15.** response to emergency situations
- KU16.** the optimal levels of control indicators e.g. fuel gauge, engine oil pressure and temperature
- KU17.** possible sources of any unusual sound emanating from the engine

## Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** keep note of any deviations or occurrences that do not conform to the established criteria
- GS2.** read and comprehend basic english to read manuals of operations

## Qualification Pack

- GS3.** read instructions, guidelines/procedures/rules related to the worksite and equipment operations
- GS4.** communicate efficiently with operators to explain instructions and other concerns
- GS5.** when communicating with the operator and other employees, use appropriate technical terms
- GS6.** decide when to conduct maintenance checks
- GS7.** evaluate the decision and conduct basic trouble shooting
- GS8.** work with supervisors/ team mates to carry out work related tasks
- GS9.** plan work according to the required schedule and location
- GS10.** plan for regular maintenance on a daily basis before machine operations
- GS11.** deliver first-class service to ensure client satisfaction
- GS12.** identify immediate or temporary solutions to resolve mechanical issues
- GS13.** judge when to seek assistance from supervisor
- GS14.** identify possible ways to improve operational efficiency
- GS15.** check for damages and diagnose common problems in the crawler crane and take relevant action
- GS16.** examine, evaluate and apply knowledge acquired from observation, experience, logic or communication in order to act efficiently

## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Routine maintenance</i>	<b>6</b>	<b>28</b>	-	-
<b>PC1.</b> by monitoring the machine working hours plan the correct service schedule	-	1	-	-
<b>PC2.</b> check crane structure and the following accessories as per operation & maintenance manual	-	1	-	-
<b>PC3.</b> check crane structure for deformed, cracked or corroded members in the structure and boom loose bolts or rivets excessive wear on brake and clutch system parts, deformed wedges, defective cotter keys, pins and guard rails	1	3	-	-
<b>PC4.</b> check for the following in hydraulic system of Crane as per operation & maintenance manual: Deterioration or leakage in air or hydraulic systems, safe and effective operation on hoses, pumps and motors, Levels of fluid, Air cleaners for replacement or cleaning	1	3	-	-
<b>PC5.</b> check for the following Control Mechanisms and Monitoring Devices as per operation & maintenance manual: Cables, brakes and levers for poor adjustment or excessive wear. Marking on the load/radius indicator over full range. Load moment indicator, Boom angle indicator, Boom length indicator and Anti two-block system	1	3	-	-
<b>PC6.</b> check crawler track as per operation manual	1	1	-	-
<b>PC7.</b> check wire ropes for wear and tear	-	3	-	-
<b>PC8.</b> Check the following in the main boom as per operation manual lift cylinder(s) telescoping cylinder(s) hydraulic hoses / tubing & fittings holding device boom sections alignment auxiliary boom head and structure	1	3	-	-
<b>PC9.</b> Check the following in the Lattice boom extension boom extension alignment cords lattices end connections	-	3	-	-

### Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC10.</b> replenish coolants, lubricants and fluids as per operation & maintenance manual	-	2	-	-
<b>PC11.</b> grease all greasing pins and pivot points as per operation & maintenance manual	-	3	-	-
<b>PC12.</b> check battery levels and condition of the terminals and carry out minor adjustments as per manufacturer's indicators	1	2	-	-
<i>Basic diagnostics and troubleshooting</i>	<b>4</b>	<b>12</b>	-	-
<b>PC13.</b> track machine operating hours to assess the right service schedule	-	1	-	-
<b>PC14.</b> complete timely and legibly daily/ weekly maintenance sheets as provided by the company	1	1	-	-
<b>PC15.</b> ensure that suitable props/ support devices are used and the bucket is not raised while performing maintenance	-	1	-	-
<b>PC16.</b> make certain that no engine repair is conducted while the engine is running or remains hot	-	2	-	-
<b>PC17.</b> assess when the problem is beyond his competence and report the problem to suitably qualified and competent personnel	1	1	-	-
<b>PC18.</b> diagnose the problem	-	1	-	-
<b>PC19.</b> handle and dispose waste based on environmental guidelines at the work place	-	1	-	-
<b>PC20.</b> follow reporting procedures as laid down by the employer	-	1	-	-
<b>PC21.</b> complete all documentation in the prescribed standards in a timely manner	-	1	-	-
<b>PC22.</b> report and escalate problems/ incidents as required in a timely manner	1	1	-	-
<b>PC23.</b> report defects precisely to the supervisor if beyond scope of his role	1	1	-	-
<b>NOS Total</b>	<b>10</b>	<b>40</b>	-	-

## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	IES/N0130
<b>NOS Name</b>	Carry out routine maintenance & trouble shooting
<b>Sector</b>	Infrastructure Equipment
<b>Sub-Sector</b>	Equipment Operations
<b>Occupation</b>	Operator
<b>NSQF Level</b>	4
<b>Credits</b>	TBD
<b>Version</b>	2.0
<b>Last Reviewed Date</b>	26/05/2022
<b>Next Review Date</b>	26/05/2025
<b>NSQF Clearance Date</b>	26/05/2022



## Qualification Pack

### IES/N7601: Comply with worksite health and safety guidelines

#### Description

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

#### Scope

The scope covers the following :

- Worksite health and safety

#### Elements and Performance Criteria

##### *Worksite health and safety*

To be competent, the user/individual on the job must be able to:

- PC1.** Comply with safety, health, security and environment related regulations/guidelines at the work site
- PC2.** use personal protective equipment (ppe) and other safety gear as applicable to the equipment and the worksite
- 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
- PC4.** Carry out operations as per the manufacturer's and worksite related health and safety guidelines
- PC5.** Handle the transport, storage and disposal of hazardous materials and waste in compliance with worksite health, safety and environmental guidelines
- PC6.** operate various grades of fire extinguishers, as applicable
- PC7.** support in administering basic first aid and report to concerned team members, as required, in case of an accident
- PC8.** respond promptly and appropriately to an accident/ incident or emergency, within limits of your role and responsibility
- PC9.** record and report details related to operations, incidents or accidents, as applicable

#### Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** health, safety, environmental (HSE) and security related policies/guidelines of the organization and the worksite and its importance
- KU2.** personnel responsible for health, safety and environment (HSE) related matters and their contact details
- KU3.** location of worksite storage, she team and safe assembly points
- KU4.** reporting and documentation procedures for HSE and security matters
- KU5.** manufacturers guidelines related to health and safety requirements

## Qualification Pack

- KU6.** common types of health, safety, environment and security risks related to the worksite and operations
- KU7.** types, use and importance of personal protective equipment (PPE) and other safety gear
- KU8.** safe working practices to avoid common hazards and risks
- KU9.** guidelines for transport, storage and disposal of hazardous materials and waste
- KU10.** types of common hazards and risks at the worksite including fire, electrical, gas emergencies, accidents, incidents, structure collapse, machine breakdown
- KU11.** knowledge of safe lockdown/stop of machinery use in case of emergencies and incidents/accidents
- KU12.** types of fire extinguishers and their use
- KU13.** common injuries and appropriate basic first aid treatment e.g. electrical shock, bleeding, wounds, fractures, minor burns, eye injuries

## Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** document and report any health and safety related incidents/accidents
- GS2.** read and comprehend basic English to read manuals of operations
- GS3.** read all organizational and equipment related health and safety manuals and documents
- GS4.** read instructions, guidelines / procedures /rules related to the worksite and equipment operations
- GS5.** Give clear instructions to co-workers, subordinates and other personnel
- GS6.** Use correct technical terms while interacting with supervisor
- GS7.** Make an appropriate timely decision in responding to emergencies/accidents in line with organizational/worksite guidelines
- GS8.** Use correct PPE and other safety gear while at the worksite
- GS9.** Work with supervisors/ team mates to carry out work related tasks
- GS10.** Plan work according to the required schedule and location
- GS11.** Build and maintain positive and effective relationships with colleagues and customers
- GS12.** Seek appropriate assistance from other sources to resolve problems
- GS13.** Assess the intensity of the fire accident and operate fire extinguishers
- GS14.** Analyse, evaluate and apply the information gathered from observation, experience, reasoning, or communication to act efficiently

## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Worksite health and safety</i>	<b>5</b>	<b>10</b>	-	-
<b>PC1.</b> Comply with safety, health, security and environment related regulations/guidelines at the work site	0.5	1	-	-
<b>PC2.</b> use personal protective equipment (ppe) and other safety gear as applicable to the equipment and the worksite	0.5	1	-	-
<b>PC3.</b> 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	0.5	1	-	-
<b>PC4.</b> Carry out operations as per the manufacturer's and worksite related health and safety guidelines	0.5	1	-	-
<b>PC5.</b> Handle the transport, storage and disposal of hazardous materials and waste in compliance with worksite health, safety and environmental guidelines	1	1	-	-
<b>PC6.</b> operate various grades of fire extinguishers, as applicable	0.5	2	-	-
<b>PC7.</b> support in administering basic first aid and report to concerned team members, as required, in case of an accident	0.5	1	-	-
<b>PC8.</b> respond promptly and appropriately to an accident/ incident or emergency, within limits of your role and responsibility	0.5	1	-	-
<b>PC9.</b> record and report details related to operations, incidents or accidents, as applicable	0.5	1	-	-
<b>NOS Total</b>	<b>5</b>	<b>10</b>	-	-

## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	IES/N7601
<b>NOS Name</b>	Comply with worksite health and safety guidelines
<b>Sector</b>	Infrastructure Equipment
<b>Sub-Sector</b>	Equipment Operations
<b>Occupation</b>	Operator
<b>NSQF Level</b>	4
<b>Credits</b>	TBD
<b>Version</b>	2.0
<b>Last Reviewed Date</b>	26/05/2022
<b>Next Review Date</b>	31/05/2025
<b>NSQC Clearance Date</b>	26/05/2022

## Assessment Guidelines and Assessment Weightage

### Assessment Guidelines

1. Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Element/ 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 Element/ 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 these criteria.
6. To pass the Qualification Pack assessment, every trainee should score the Recommended Pass % aggregate for the QP.
7. In case of unsuccessful completion, the trainee may seek reassessment on the Qualification Pack.

## Qualification Pack

### Minimum Aggregate Passing % at QP Level : 70

(Please note: Every Trainee should score a minimum aggregate passing percentage as specified above, to successfully clear the Qualification Pack assessment.)

### Assessment Weightage

Compulsory NOS

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
IES/N0128.Carry out pre-op checks on Crawler Crane	7	28	0	0	35	25
IES/N0129.Operate a Crawler Crane	7	43	0	0	50	30
IES/N0130.Carry out routine maintenance & trouble shooting	10	40	0	0	50	30
IES/N7601.Comply with worksite health and safety guidelines	5	10	0	0	15	15
<b>Total</b>	<b>29</b>	<b>121</b>	<b>0</b>	<b>0</b>	<b>150</b>	<b>100</b>

## Acronyms

<b>NOS</b>	National Occupational Standard(s)
<b>NSQF</b>	National Skills Qualifications Framework
<b>QP</b>	Qualifications Pack
<b>TVET</b>	Technical and Vocational Education and Training

## Qualification Pack

### Glossary

<b>Sector</b>	Sector is a conglomeration of different business operations having similar business and interests. It may also be defined as a distinct subset of the economy whose components share similar characteristics and interests.
<b>Sub-sector</b>	Sub-sector is derived from a further breakdown based on the characteristics and interests of its components.
<b>Occupation</b>	Occupation is a set of job roles, which perform similar/ related set of functions in an industry.
<b>Job role</b>	Job role defines a unique set of functions that together form a unique employment opportunity in an organisation.
<b>Occupational Standards (OS)</b>	OS specify the standards of performance an individual must achieve when carrying out a function in the workplace, together with the Knowledge and Understanding (KU) they need to meet that standard consistently. Occupational Standards are applicable both in the Indian and global contexts.
<b>Performance Criteria (PC)</b>	Performance Criteria (PC) are statements that together specify the standard of performance required when carrying out a task.
<b>National Occupational Standards (NOS)</b>	NOS are occupational standards which apply uniquely in the Indian context.
<b>Qualifications Pack (QP)</b>	QP comprises the set of OS, together with the educational, training and other criteria required to perform a job role. A QP is assigned a unique qualifications pack code.
<b>Unit Code</b>	Unit code is a unique identifier for an Occupational Standard, which is denoted by an 'N'
<b>Unit Title</b>	Unit title gives a clear overall statement about what the incumbent should be able to do.
<b>Description</b>	Description gives a short summary of the unit content. This would be helpful to anyone searching on a database to verify that this is the appropriate OS they are looking for.
<b>Scope</b>	Scope is a 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 quality of performance required.

## Qualification Pack

<b>Knowledge and Understanding (KU)</b>	Knowledge and Understanding (KU) are statements which together specify the technical, generic, professional and organisational specific knowledge that an individual needs in order to perform to the required standard.
<b>Organisational Context</b>	Organisational context includes the way the organisation is structured and how it operates, including the extent of operative knowledge managers have of their relevant areas of responsibility.
<b>Technical Knowledge</b>	Technical knowledge is the specific knowledge needed to accomplish specific designated responsibilities.
<b>Core Skills/ Generic Skills (GS)</b>	Core skills or Generic Skills (GS) are a group of skills that are the key to learning and working in today's world. These skills are typically needed in any work environment in today's world. These skills are typically needed in any work environment. In the context of the OS, these include communication related skills that are applicable to most job roles.
<b>Electives</b>	Electives are NOS/set of NOS that are identified by the sector as contributive to specialization in a job role. There may be multiple electives within a QP for each specialized job role. Trainees must select at least one elective for the successful completion of a QP with Electives.
<b>Options</b>	Options are NOS/set of NOS that are identified by the sector as additional skills. There may be multiple options within a QP. It is not mandatory to select any of the options to complete a QP with Options.