



• **HYDRA CRANE**

# Hydra Crane Operator

QP Code: IES/Q0108

NSQF Level: 4

Infrastructure Equipment Skill Council || Infrastructure Equipment Skill Council, Avik Royale-First Floor  
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## Qualification Pack

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## Qualification Pack

### IES/Q0108: Hydra Crane Operator

#### Brief Job Description

A Hydra Crane Operator operates a moving crane to lift, move, position, and reposition loads. Responsible for operating Tele handler to move, locate, relocate, stack & 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 behavior 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/N0122: Carry out pre-operation checks on hydra crane](#)
2. [IES/N0123: Operate Hydra Crane](#)
3. [IES/N0124: Perform routine maintenance and troubleshooting of Hydra Crane](#)
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-2004/8333.18
<b>Minimum Educational Qualification &amp; Experience</b>	8th Class with 2-3 Years of experience In lieu of minimum qualification, the incumbent should have 2 years of experience in operating hydra crane.
<b>Minimum Level of Education for Training in School</b>	

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<b>Pre-Requisite License or Training</b>	1. Certification Training in Hydra Crane operations preferred.2. Must have a valid Heavy Commercial Vehicle Driving License (HCV)
<b>Minimum Job Entry Age</b>	18 Years
<b>Last Reviewed On</b>	31/03/2015
<b>Next Review Date</b>	31/03/2020
<b>NSQC Approval Date</b>	18/06/2015
<b>Version</b>	1.0

## Qualification Pack

### IES/N0122: Carry out pre-operation checks on hydra crane

#### Description

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

#### Scope

This unit/task 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.** inspect the crane body to ensure that the components are free of cracks and wear
- PC3.** checks that all decals are legible and in place as per operation manual
- PC4.** examine the hydraulic oil level to ensure no leaks and oil level are as per manufacturer's indicator
- PC5.** examine battery fluid to ensure proper fluid level as per manufacturer's indicator
- PC6.** check the tyre pressure and lug nut torque to make sure they are as per manufacturer's indicator
- PC7.** confirm for no engine oil leaks and proper fuel and fluid levels, as per manufacturer's indicator
- PC8.** check the holding and control breaks to ensure that they are functioning properly
- PC9.** get the following components checked for areas 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. tires and wheels trailer lights and reflectors parking brake, and electric braking system (including the breakaway system) drive wheel and motor
- PC10.** check to ensure that the following components as per operation manual: hoist wheels limit switches pins, nuts, bolts and other fasteners hitch components safety chains engines their fuel systems and related components hoist personal protective devices
- PC11.** check and ensure that all structural and other critical components are present as per operation manual
- PC12.** approve that all associated fasteners and pins are in place and properly tightened as per operation manual
- PC13.** inspect entire machine for: cracks in welds or structural components excessive rust, corrosion or oxidation dents or damage to machine

##### *Documentation and Reporting*

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

- PC14.** maintain a checking/maintenance logbook to record all activities performed before starting the excavator
- PC15.** report defects precisely to the supervisor if beyond scope of his role

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### 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.** timeframe 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.** hydra cranes and its use and function
- KU12.** introduction to engine, transmission, their use and function
- KU13.** different types of hydraulic mechanisms
- KU14.** significance of greasing and oiling parts of crane that need routine lubrication
- KU15.** instrument panel, their location and operation
- KU16.** hoists and its extensions
- KU17.** controls, levers and switches in order to operate the crane properly
- KU18.** engine, hydraulic & electrical functions of a mobile crane
- KU19.** visual checks to identify damage, defects, cracks or leaks beforehand

### Generic Skills (GS)

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

- GS1.** record any deviations/ incidents as per prescribed norms
- GS2.** read and comprehend basic english to read manuals of operations
- GS3.** read instructions, guidelines/procedures/rules related to the worksite and equipment operations
- GS4.** give clear instructions to co-workers, subordinates and other personnel
- GS5.** use correct technical terms while interacting with supervisor
- 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 hydra crane every day
- GS10.** provide service of the highest order to ensure customer satisfaction
- GS11.** identify immediate or temporary solutions to resolve mechanical issues
- GS12.** judge when to seek assistance from supervisor



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- GS13.** Identify cause and effect relations in his area of work
- 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>Pre- operation checks</i>	<b>6</b>	<b>34</b>	-	-
<b>PC1.</b> adhere to time limits given by supervisor	-	2	-	-
<b>PC2.</b> inspect the crane body to ensure that the components are free of cracks and wear	1	2	-	-
<b>PC3.</b> checks that all decals are legible and in place as per operation manual	1	2	-	-
<b>PC4.</b> examine the hydraulic oil level to ensure no leaks and oil level are as per manufacturer's indicator	-	3	-	-
<b>PC5.</b> examine battery fluid to ensure proper fluid level as per manufacturer's indicator	-	3	-	-
<b>PC6.</b> check the tyre pressure and lug nut torque to make sure they are as per manufacturer's indicator	-	3	-	-
<b>PC7.</b> confirm for no engine oil leaks and proper fuel and fluid levels, as per manufacturer's indicator	-	3	-	-
<b>PC8.</b> check the holding and control breaks to ensure that they are functioning properly	-	3	-	-
<b>PC9.</b> get the following components checked for areas 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. tires and wheels trailer lights and reflectors parking brake, and electric braking system (including the breakaway system) drive wheel and motor	1	3	-	-
<b>PC10.</b> check to ensure that the following components as per operation manual: hoist wheels limit switches pins, nuts, bolts and other fasteners hitch components safety chains engines their fuel systems and related components hoist personal protective devices	1	3	-	-



### Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC11.</b> check and ensure that all structural and other critical components are present as per operation manual	1	2	-	-
<b>PC12.</b> approve that all associated fasteners and pins are in place and properly tightened as per operation manual	-	2	-	-
<b>PC13.</b> inspect entire machine for: cracks in welds or structural components excessive rust, corrosion or oxidation dents or damage to machine	1	3	-	-
<i>Documentation and Reporting</i>	<b>1</b>	<b>4</b>	-	-
<b>PC14.</b> maintain a checking/maintenance logbook to record all activities performed before starting the excavator	-	2	-	-
<b>PC15.</b> report defects precisely to the supervisor if beyond scope of his role	1	2	-	-
<b>NOS Total</b>	<b>7</b>	<b>38</b>	-	-

## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	IES/N0122
<b>NOS Name</b>	Carry out pre-operation checks on hydra 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>	1.0
<b>Last Reviewed Date</b>	31/03/2015
<b>Next Review Date</b>	31/03/2017
<b>NSQC Clearance Date</b>	

## Qualification Pack

### IES/N0123: Operate Hydra Crane

#### Description

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

#### Scope

This unit/task covers the following: Start Hydra Crane operations Loading and hauling of the load Stacking

#### Elements and Performance Criteria

##### *Start Hydra Crane operations*

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

- PC1.** plan and organize the job according to given instructions
- PC2.** position the hook to attach sling, shackle and chains as per operations manual
- PC3.** start the engine as per operations manual
- PC4.** check the assembly and ensure that relevant safety measures as per safety guidelines taken
- PC5.** use the emergency stop button to disable all power to the hydra crane in case of a crisis, as per operator manual
- PC6.** ensure safe working load as per operation manual
- PC7.** check wind speeds are within the crane's operational limits
- PC8.** select the appropriate boom, jib, as per the load, site and lift conditions
- PC9.** ensure appropriate boom extension as per operation manual
- PC10.** hoist and release the load at a small height to check the holding and control breaks are functioning properly, ahead of the actual lifting
- PC11.** carry out lifting of load in coordination with rigger as per the requirement
- PC12.** monitor stability whilst moving a load
- PC13.** ensure good visibility of both ends of the crane arm at all times
- PC14.** ensure no obstacles, personnel or other obstructions during lifting operation
- PC15.** look out for people working and hazards such as trenches, potholes and cables
- PC16.** adhere to time limits given by the supervisors
- PC17.** perform in-operation visual checks on critical temperature and pressure gauges as per operation manual
- PC18.** select and use the right type of brake in different situations and conditions as per the operation manual
- PC19.** ensure that walkway rules e.g. operating the crane within the permissible/ allocated areas are followed
- PC20.** utilize judiciously various signaling devices available in the crane
- PC21.** keep a safe distance from other plant or vehicles
- PC22.** work safely in accordance with operational requirements and associated safe systems of work

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- PC23.** discharge the load safely at the position and in the manner designated by the supervisor
- PC24.** follow the instructions by the rigger
- PC25.** operate and control the boom and extensions as per operation manual
- PC26.** ensure lay down area is sufficient in size to accommodate load
- PC27.** ensure lay down area is clear of any obstruction and
- PC28.** ensure that no other operators travel on or stand near the hydra crane
- PC29.** inform supervisor/rigger of any problems while operating the hydra crane
- PC30.** shut down and secure the machine properly when it is unattended

## 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.** timeframe 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.** the causes of equipment related accidents and associated preventative measures
- KU14.** the manufacturers criteria for equipment operations
- KU15.** the manufacturers criteria for equipment modifications
- KU16.** usage of attachments available as ad-ons with the main crane
- 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.** method of safe rigging
- KU23.** the method of checking holding and control brakes
- KU24.** usage of rigging hardware and tool
- KU25.** multi-crane operations
- KU26.** conditions and hazards that may impact crane stability

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- KU27.** crane tipping prevention techniques.
- KU28.** methods to communicate through hand signals
- KU29.** government rules and other rules prescribed under safety standards related to crane operations
- KU30.** introduction to engine, transmission, their use and function
- KU31.** different types of hydraulic mechanisms
- KU32.** instruments panel, their location and operation
- KU33.** controls, levers and switches in order to operate the hydra 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.** record any deviations/ incidents as per prescribed norms
- GS2.** read and comprehend basic english to read manuals of operations
- 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 compactor and take action accordingly
- GS8.** decide when to perform appropriate driving operations i.e. forward, reverse, 'u' turn, tight spot
- GS9.** work with supervisors/ team mates to carry out work related tasks
- GS10.** plan work according to the required schedule and location
- GS11.** provide service of the highest order to ensure customer 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.** suggest methods to avoid accidents/errors while operating machine
- GS16.** 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>Start Hydra Crane operations</i>	<b>6</b>	<b>64</b>	-	-
<b>PC1.</b> plan and organize the job according to given instructions	1	2	-	-
<b>PC2.</b> position the hook to attach sling, shacklead chains as per operations manual	-	3	-	-
<b>PC3.</b> start the engine as per operations manual	-	2	-	-
<b>PC4.</b> check the assembly and ensure that relevant safety measures as per safety guidelines taken	-	2	-	-
<b>PC5.</b> use the emergency stop button to disable all power to the hydra crane in case of a crisis, as per operator manual	1	2	-	-
<b>PC6.</b> ensure safe working load as per operation manual	-	2	-	-
<b>PC7.</b> check wind speeds are within the crane's operational limits	1	-	-	-
<b>PC8.</b> select the appropriate boom, jib, as per the load, site and lift conditions	-	3	-	-
<b>PC9.</b> ensure appropriate boom extension as per operation manual	1	2	-	-
<b>PC10.</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>PC11.</b> carry out lifting of load in coordination with rigger as per the requirement	-	3	-	-
<b>PC12.</b> monitor stability whilst moving a load	-	2	-	-
<b>PC13.</b> ensure good visibility of both ends of the crane arm at all times	-	2	-	-
<b>PC14.</b> ensure no obstacles, personnel or other obstructions during lifting operation	1	2	-	-
<b>PC15.</b> look out for people working and hazards such as trenches, potholes and cables	-	2	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC16.</b> adhere to time limits given by the supervisors	-	2	-	-
<b>PC17.</b> perform in-operation visual checks on critical temperature and pressure gauges as per operation manual	-	2	-	-
<b>PC18.</b> select and use the right type of brake in different situations and conditions as per the operation manual	1	2	-	-
<b>PC19.</b> ensure that walkway rules e.g. operating the crane within the permissible/ allocated areas are followed	-	2	-	-
<b>PC20.</b> utilize judiciously various signaling devices available in the crane	-	2	-	-
<b>PC21.</b> keep a safe distance from other plant or vehicles	-	2	-	-
<b>PC22.</b> work safely in accordance with operational requirements and associated safe systems of work	-	2	-	-
<b>PC23.</b> discharge the load safely at the position and in the manner designated by the supervisor	-	3	-	-
<b>PC24.</b> follow the instructions by the rigger	-	2	-	-
<b>PC25.</b> operate and control the boom and extensions as per operation manual	-	3	-	-
<b>PC26.</b> ensure lay down area is sufficient in size to accommodate load	-	2	-	-
<b>PC27.</b> ensure lay down area is clear of any obstruction and	-	2	-	-
<b>PC28.</b> ensure that no other operators travel on or stand near the hydra crane	-	2	-	-
<b>PC29.</b> inform supervisor/rigger of any problems while operating the hydra crane	-	2	-	-
<b>PC30.</b> shut down and secure the machine properly when it is unattended	-	2	-	-



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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
NOS Total	6	64	-	-



## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	IES/N0123
<b>NOS Name</b>	Operate Hydra 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>	1.0
<b>Last Reviewed Date</b>	31/03/2015
<b>Next Review Date</b>	31/03/2017
<b>NSQC Clearance Date</b>	

## Qualification Pack

# IES/N0124: Perform routine maintenance and troubleshooting of Hydra Crane

## Description

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

## Scope

This unit/task covers the following: Routine maintenance Basic diagnostics and troubleshooting Documentation and Reporting

## Elements and Performance Criteria

### *Routine maintenance*

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

- PC1.** assess the right service schedule by tracking machine operating hours
- 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 guardrails.
- 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 wire ropes for wear and tear
- PC7.** 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 structure
- PC8.** check the following in the lattice boom extension boom extension alignment cords lattices end connections
- PC9.** replenish coolants, lubricants and fluids as per operation & maintenance manual
- PC10.** grease all greasing pins and pivot points as per operation & maintenance manual
- PC11.** check battery levels and condition of the terminals and carry out minor adjustments as per manufacturers indicators
- PC12.** check and maintain the tire rims, air pressure, wheel nuts and treads as per manufacturers 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

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- PC14.** complete timely and legibly daily/ weekly maintenance sheets as provided by the company
- PC15.** ensure that suitable props/ support devices are used while performing maintenance
- PC16.** ensure that no maintenance task on the engine is performed when running or still hot
- PC17.** assess when the problem is beyond his competence and report the problem to suitably qualified and competent persone
- PC18.** diagnose the problem
- PC19.** handle and dispose waste based on environmental guidelines at the work place

### *Documentation and Reporting*

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

- 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.** timeframe 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.** various components of the equipment and their functions
- KU12.** control and switches needed to operate the hydra crane properly
- KU13.** basic physics and mechanics involved in various functions of the hydra crane
- KU14.** common defects and general causes of breakdown
- KU15.** the optimal levels of control indicators e.g. fuel gauge, engine oil pressure and temperature
- KU16.** possible sources of any unusual sound emanating from the engine

## Generic Skills (GS)

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

- GS1.** record any deviations/ incidents as per prescribed norms
- GS2.** read and comprehend basic english to read manuals of operations

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- GS3.** read instructions, guidelines/procedures/rules related to the worksite and equipment operations
- GS4.** give clear instructions to co-workers, subordinates and other personnel
- GS5.** use correct technical terms while interacting with supervisor
- 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.** provide service of the highest order to ensure customer 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 hydra crane and take relevant action
- GS16.** 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>Routine maintenance</i>	7	29	-	-
<b>PC1.</b> assess the right service schedule by tracking machine operating hours	1	2	-	-
<b>PC2.</b> check crane structure and the following accessories as per operation & maintenance manual	-	2	-	-
<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 guardrails.	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 wire ropes for wear and tear	-	2	-	-
<b>PC7.</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 structure	1	3	-	-
<b>PC8.</b> check the following in the lattice boom extension boom extension alignment cords lattices end connections	1	3	-	-
<b>PC9.</b> replenish coolants, lubricants and fluids as per operation & maintenance manual	-	2	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC10.</b> grease all greasing pins and pivot points as per operation & maintenance manual	-	2	-	-
<b>PC11.</b> check battery levels and condition of the terminals and carry out minor adjustments as per manufacturers indicators	1	2	-	-
<b>PC12.</b> check and maintain the tire rims, air pressure, wheel nuts and treads as per manufacturers indicators	-	2	-	-
<i>Basic diagnostics and troubleshooting</i>	<b>1</b>	<b>15</b>	-	-
<b>PC13.</b> track machine operating hours to assess the right service schedule	-	3	-	-
<b>PC14.</b> complete timely and legibly daily/ weekly maintenance sheets as provided by the company	-	2	-	-
<b>PC15.</b> ensure that suitable props/ support devices are used while performing maintenance	-	2	-	-
<b>PC16.</b> ensure that no maintenance task on the engine is performed when running or still hot	-	2	-	-
<b>PC17.</b> assess when the problem is beyond his competence and report the problem to suitably qualified and competent persone	-	2	-	-
<b>PC18.</b> diagnose the problem	1	2	-	-
<b>PC19.</b> handle and dispose waste based on environmental guidelines at the work place	-	2	-	-
<i>Documentation and Reporting</i>	-	<b>8</b>	-	-
<b>PC20.</b> follow reporting procedures as laid down by the employer	-	2	-	-
<b>PC21.</b> complete all documentation in the prescribed standards in a timely manner	-	2	-	-
<b>PC22.</b> report and escalate problems/ incidents as required in a timely manner	-	2	-	-
<b>PC23.</b> report defects precisely to the supervisor if beyond scope of his role	-	2	-	-

### Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>NOS Total</b>	<b>8</b>	<b>52</b>	<b>-</b>	<b>-</b>

## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	IES/N0124
<b>NOS Name</b>	Perform routine maintenance and troubleshooting of Hydra 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>	1.0
<b>Last Reviewed Date</b>	31/03/2015
<b>Next Review Date</b>	31/03/2017
<b>NSQC Clearance Date</b>	



## 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

This unit/task 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 such as seat belt, body protection, respiratory protection, eye protection, ear protection and hand protection
- 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 manufacturers 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.** follow safety regulations and procedures with regard to worksite hazards and risks
- PC7.** operate various grades of fire extinguishers, as applicable
- PC8.** support in administering basic first aid and report to concerned team members, as required, in case of an accident
- PC9.** respond promptly and appropriately to an accident/ incident or emergency situation, within limits of your role and responsibility

#### 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
- KU2.** the importance of complying with health, safety, environmental and security guidelines at the worksite and during operations
- KU3.** contact details of personnel responsible for health, safety and environment (hse) related matters
- KU4.** location of worksite storage, site team and safe assembly points
- KU5.** concerned personnel to reach out in case of emergencies and accidents/ incidents
- KU6.** reporting and documentation procedures for hse and security matters
- KU7.** manufacturers guidelines related to health and safety requirements

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- KU8.** common types of health, safety, environment and security risks related to the worksite and operations
- KU9.** types, use and importance of personal protective equipment (ppe) and other safety gear
- KU10.** safe working practices to avoid common hazards and risks
- KU11.** guidelines for transport, storage and disposal of hazardous materials and waste
- KU12.** types of common hazards and risks at the worksite including fire, electrical, gas emergencies, accidents, incidents, structure collapse, machine breakdown
- KU13.** knowledge of safe lockdown/ stop of machinery use in case of emergencies and incidents/ accidents
- KU14.** types of fire extinguishers and their use
- KU15.** common injuries and appropriate basic first aid treatment eg. 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
- GS15.** document and report any health and safety related incidents/ accidents
- GS16.** read and comprehend basic english to read manuals of operations
- GS17.** read all organizational and equipment related health and safety manuals and documents
- GS18.** read instructions, guidelines/procedures/rules related to the worksite and equipment operations
- GS19.** give clear instructions to co-workers, subordinates and other personnel
- GS20.** use correct technical terms while interacting with supervisor
- GS21.** make an appropriate timely decision in responding to emergencies/accidents in line with organizational/ worksite guidelines

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- GS22.** use correct ppe and other safety gear while at the worksite
- GS23.** work with supervisors/ team mates to carry out work related tasks
- GS24.** plan work according to the required schedule and location
- GS25.** build and maintain positive and effective relationships with colleagues and customers
- GS26.** seek appropriate assistance from other sources to resolve problems
- GS27.** assess the intensity of the fire accident and operate fire extinguishers
- GS28.** 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>6</b>	<b>24</b>	-	-
<b>PC1.</b> comply with safety, health, security and environment related regulations/ guidelines at the work site	-	2	-	-
<b>PC2.</b> use personal protective equipment (ppe) and other safety gear such as seat belt, body protection, respiratory protection, eye protection, ear protection and hand protection	1	3	-	-
<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	1	3	-	-
<b>PC4.</b> carry out operations as per the manufacturers and worksite related health and safety guidelines	1	2	-	-
<b>PC5.</b> handle the transport, storage and disposal of hazardous materials and waste in compliance with worksite health, safety and environmental guidelines	1	3	-	-
<b>PC6.</b> follow safety regulations and procedures with regard to worksite hazards and risks	1	2	-	-
<b>PC7.</b> operate various grades of fire extinguishers, as applicable	-	3	-	-
<b>PC8.</b> support in administering basic first aid and report to concerned team members, as required, in case of an accident	1	3	-	-
<b>PC9.</b> respond promptly and appropriately to an accident/ incident or emergency situation, within limits of your role and responsibility	-	3	-	-
<b>NOS Total</b>	<b>6</b>	<b>24</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>	1.0
<b>Last Reviewed Date</b>	31/03/2015
<b>Next Review Date</b>	31/03/2017
<b>NSQC Clearance Date</b>	18/06/2015

## Qualification Pack

### 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.

**Recommended Pass % : 70**

#### Assessment Weightage

##### Compulsory NOS

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
IES/N0122.Carry out pre-operation checks on hydra crane	7	38	-	-	45	22
IES/N0123.Operate Hydra Crane	6	64	-	-	70	34
IES/N0124.Perform routine maintenance and troubleshooting of Hydra Crane	8	52	-	-	60	29

### Qualification Pack

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
IES/N7601. Comply with worksite health and safety guidelines	6	24	-	-	30	15
<b>Total</b>	<b>27</b>	<b>178</b>	<b>-</b>	<b>-</b>	<b>205</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.

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<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.