



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

Qualifications Pack- Cast House Senior Operator

SECTOR: Iron & Steel

SUB-SECTOR: Steel

REFERENCE ID: ISC/Q0407

ALIGNED TO: NCO-2004/NIL

Title of Job: The job is all about to operate cast house equipments e.g. cast house crane, mud-gun, tap hole drill machine, trough heating, preparation of mud-gun clay and necessary preparation for maintaining the cast schedule.

Personal Attributes: This job requires the individual to work independently as well as in teams. He should be physically fit, not having colour blindness , having analytical skills, problem solving attitude, high concentration levels and willingness to work in a factory environment. Some of other key attributes includes openness to learning, ability to plan and organize own work and understanding the need to take initiative and manage self and work to improve efficiency and effectiveness.



Job Details	Qualifications Pack Code	ISC/Q0407		
	Job Role	Cast House Senior Operator		
	Credits(NSQF)	TBD	Version number	1.0
	Industry	Iron & Steel	Drafted on	12/11/2014
	Sub-sector	Steel	Last reviewed on	25/03/2015
	Occupation	Iron Making	Next review date	25/03/2016

Job Role	Cast House Senior Operator
Role Description	The job is all about to operate cast house equipments e.g. cast house crane, mud-gun, tap hole drill machine, trough heating, preparation of mud-gun clay and necessary preparation for maintaining the cast schedule.
NSQF level	4
Minimum Educational Qualifications	Class 10 th Pass
Maximum Educational Qualifications	ITI Pass
Training (Suggested but not mandatory)	<ul style="list-style-type: none"> • Reading, writing and interpretation of log book report • 2 weeks on job training for cast house equipment (mandatory) • Induction training of Cast House operation • Trough hitting practice preparation of mud gun clay and tap hole drill machine (including opening and closing) and safety practices • Cast house crane functioning • 5S and safety practices
Experience	<ul style="list-style-type: none"> • 1-2 years of experience in similar function • In lieu of minimum qualification the incumbent should have minimum 4 to 5 years' experience as as assistant to furnace foreman



Occupational Standards (OS)	<p>Compulsory:</p> <p>ISC/N0424: Understand the assigned job for cast house preparation and operation</p> <p>ISC/N0425: Understand the operational practice of blast furnace stoves</p> <p>ISC/N0426: Understand the operational practice of stock house</p> <p>ISC/N0008: Use basic health and safety practices at the workplace</p> <p>ISC/N0009: Work effectively with others</p> <p>Optional;</p> <p>N/A</p>
Performance Criteria	As described in the relevant NOS units



Definitions

Keywords /Terms	Description
Core Skills/Generic Skills	Core Skills or Generic Skills are a group of skills that are key to learning and working in today's world. These skills are typically needed in any work environment. In the context of the NOS, these include communication related skills that are applicable to most job roles.
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 NOS.
Job role	Job role defines a unique set of functions that together form a unique employment opportunity in an organization.
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 to the required standard.
National Occupational Standards (NOS)	NOS are Occupational Standards which apply uniquely in the Indian context
Occupation	Occupation is a set of job roles, which perform similar/related set of functions in an industry.
Organisational Context	Organisational Context includes the way the organization is structured and how it operates, including the extent of operative knowledge managers have of their relevant areas of responsibility.
Performance Criteria	Performance Criteria are statements that together specify the standard of performance required when carrying out a task.
Qualifications Pack(QP)	Qualifications Pack comprises the set of NOS, together with the educational, training and other criteria required to perform a job role. A Qualifications Pack is assigned a unique qualification pack code.
Qualifications Pack Code	Qualifications Pack Code is a unique reference code that identifies a qualifications pack.
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 performance required.
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.
Sub-functions	Sub-functions are sub-activities essential to fulfil the achieving the objectives of the function.
Technical Knowledge	Technical Knowledge is the specific knowledge needed to accomplish specific designated responsibilities.
Unit Code	Unit Code is a unique identifier for a NOS unit, which can be denoted with an 'N'.
Unit Title	Unit Title gives a clear overall statement about what the incumbent should be able to do.
Vertical	Vertical may exist within a sub-sector representing different domain areas or the client industries served by the industry.
Keywords /Terms	Description
NOS	National Occupational Standard(s)
NSQF	National Skills Qualifications Framework
OEM	Original Equipment Manufacturer
OS	Occupational Standard(s)
QP	Qualifications Pack
5 S	Technique of maintaining orderliness –Japanese terminology
CP	Control Plan
WI	Work Instructions
CNC	Computer numerically controlled
OD	Outer diameter
ID	Inner diameter
DTI	Dial test indicators
CO2	Carbon dioxide
CPR	Cardiac pulmonary resuscitation
PPE	Personal protective equipment

Acronyms



ISC/N0424: Understand the assigned job for cast house preparation and operation



National Occupational Standards

Overview

This unit covers the understanding of the cast house preparation and operation along with its equipment operation for maintaining casting schedule.



Unit Code	ISC/N0424
Unit Title (Task)	Understand the assigned job for cast house preparation and operation
Description	This unit covers the understanding of the cast house preparation and operation along with its equipment operation for maintaining casting schedule, as per the checklist received from supervisor, seek any clarification on the requirements of the cast house preparation and identify the area of work in cast house.
Scope	This unit/task covers the following: <ul style="list-style-type: none"> • Understand the job/operations, processes including cast house accessories before cast • Open the tap hole for casting along with all necessary preparation • Maintain smooth casting to run steady operation of blast furnace
Performance Criteria (PC) w.r.t. the Scope	
Element	Performance Criteria
Understand the job/operations, processes including cast house accessories before cast	To be competent, the user /individual on the job must be able to: <p>PC1. Interpret the log book report for the previous shift</p> <p>PC2. Ensure the cleanliness of the cast house including hot metal and slag runners including:</p> <ul style="list-style-type: none"> • Tap hole maintenance • Trough preparation (desirable and non-desirable) • Metal runner preparation • Slag runner preparation • Diamond crossing preparation • Spout jam removal <p>PC3. Plan as appropriate to carry out the casting schedule as per Standard Operating Procedure (SOP) e.g. making hook, clay spoon dally etc.</p> <p>PC4. Ensure proper operation of cast house equipment (mud gun, tap hole drill machine, overhead crane etc.) including mud gun cleaning/filling and EOT crane operation (remote or pendant)</p> <p>PC5. Ensure disposing the scrap and debris as per standard practice including house keeping</p>
Open the tap hole for casting along with all necessary preparation	To be competent, the user /individual on the job must be able to: <p>PC6. Ensure the tap hole is ready for opening the cast</p> <p>PC7. Ensure that the hot metal ladle, cast house granulation plant is ready / slag ladles are ready for opening the cast</p> <p>PC8. Open the cast with the help of tap hole drill machine</p>
Maintain smooth casting to run steady operation of blast furnace	To be competent, the user /individual on the job must be able to: <p>PC9. Ensure casting schedule and practices</p> <p>PC10. Ensure closing the tap hole properly with the help of mud gun after finishing of</p>



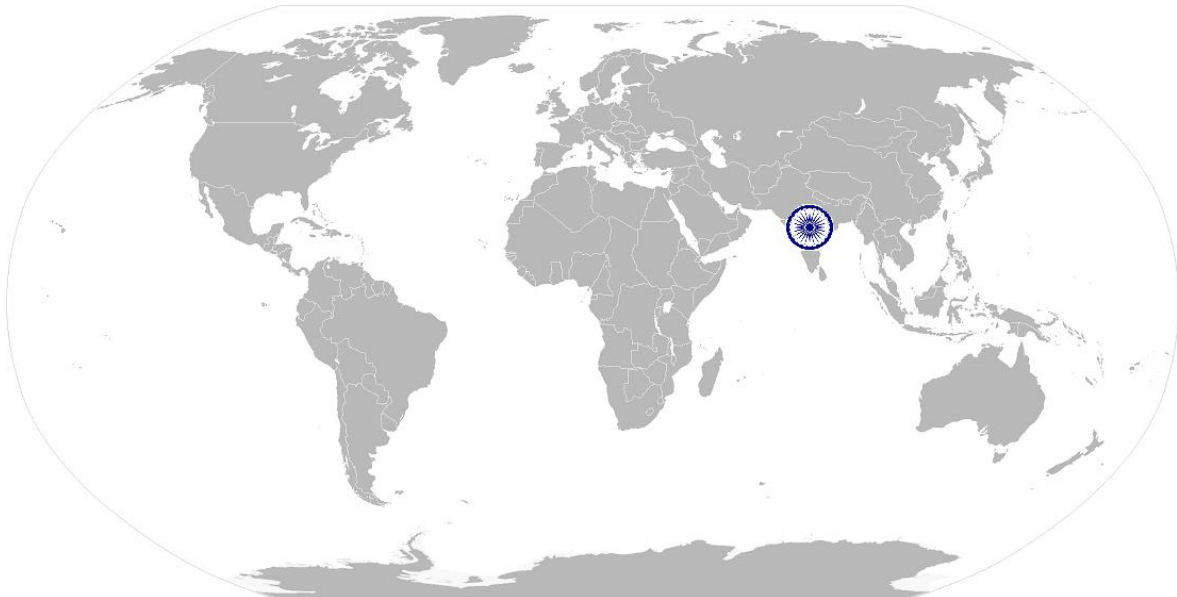
	cast including trough discharge, discharge hole cleaning and closing, discharge runner preparation etc. PC11. Ensure lancing of tap hole and tuyer during shutdown and break down PC12. Carry out tuyer muddling and cleaning during shutdown
Element	Knowledge and Understanding
A. Organisational Context (Knowledge of the Company/ Organisation and its processes)	The user/individual on the job needs to know and understand: KA1. Job specific documents e.g. daily maintenance checklist and importance of the same KA2. Safety policy of the company KA3. Emergency organisation of the specific work site KA4. Risk and impact of not following defined procedures/work instructions KA5. Escalation matrix for reporting identified problems KA6. Cost of equipment and loss for the company that result from damage of equipment and direct / indirect cost of accidents KA7. Implications of delays in operational process
B. Technical Knowledge	The user/individual on the job needs to know and understand: KB1. Capacity of handling equipment KB2. Working practices with the equipment and its applications KB3. Tools and tackles required for handling equipments KB4. Normal running characteristics of relevant equipment KB5. Operate the cast house crane, if required KB6. Operation of cast house equipment e.g. mud gun, tap hole drill machine, overhead crane etc. KB7. Functioning of blast furnace stove including valve operation (hot and cold blast valve) KB8. Functioning of blower, chimney valves and stove changing KB9. Implication of safe working practices throughout KB10. Blow stock and tuyer stock charging activities during shutdown
Skills (S) w.r.t. the scope	
Element	Skills
A. Core Skills/ Generic Skills	Writing Skills The user/ individual on the job needs to know and understand how to: SA1. Construct simple sentences and express ideas clearly through written communication SA2. Fill up appropriate activity logs in required format of the company
	Reading and Understanding Skills The user/individual on the job needs to know and understand how to: SA3. Read and interpret previous shift log book / report



	SA4. Read and understand health and safety instructions, memos, reports, job cards etc.	
	<p>Oral Communication (Listening and Speaking skills)</p> <p>The user/individual on the job needs to know and understand how to:</p> <p>SA5. Express statements, opinions or information clearly so that others can hear and understand SA6. Respond appropriately to queries SA7. Communicate with team members and supervisor</p>	
B. Professional Skills	<p>Problem Solving</p> <p>The user/individual on the job needs to know and understand how to:</p> <p>SB1. Identify problems with work planning, procedures, output, behaviour and their implications, prioritize and plan for problem solving SB2. Communicate problems appropriately to others SB3. Identify sources of information and support for problem solving SB4. Seek assistance and support from other sources to solve problems SB5. Identify effective resolution techniques SB6. Select and apply resolution techniques SB7. Seek evidence for problem resolution</p>	
	<p>Plan and Organise</p> <p>The user/individual on the job needs to know and understand how to:</p> <p>SB8. Plan, organize and prioritize the job as received from the supervisor SB9. Manage the schedule plan for the operators and helpers on the line/shift SB10. Validate all process/ equipment manuals so that the final process selected is appropriate SB11. Organize information, tools & tackles required for the job, manuals etc. on the shop floor SB12. Reorganize resources on the line/ shift in case of change of plans</p>	
	<p>Initiative and Enterprise</p> <p>The user/individual on the job needs to know and understand how to:</p> <p>SB13. Initiative and enterprise for achieving better results impacts self, others and organization SB14. Undertake and express new ideas and initiatives to others SB15. Modify work plan to overcome unforeseen difficulties or developments that occur as work progresses SB16. Participate in improvement procedures including process and quality</p>	
	<p>Self-Management</p> <p>The user/individual on the job needs to know and understand how to:</p>	



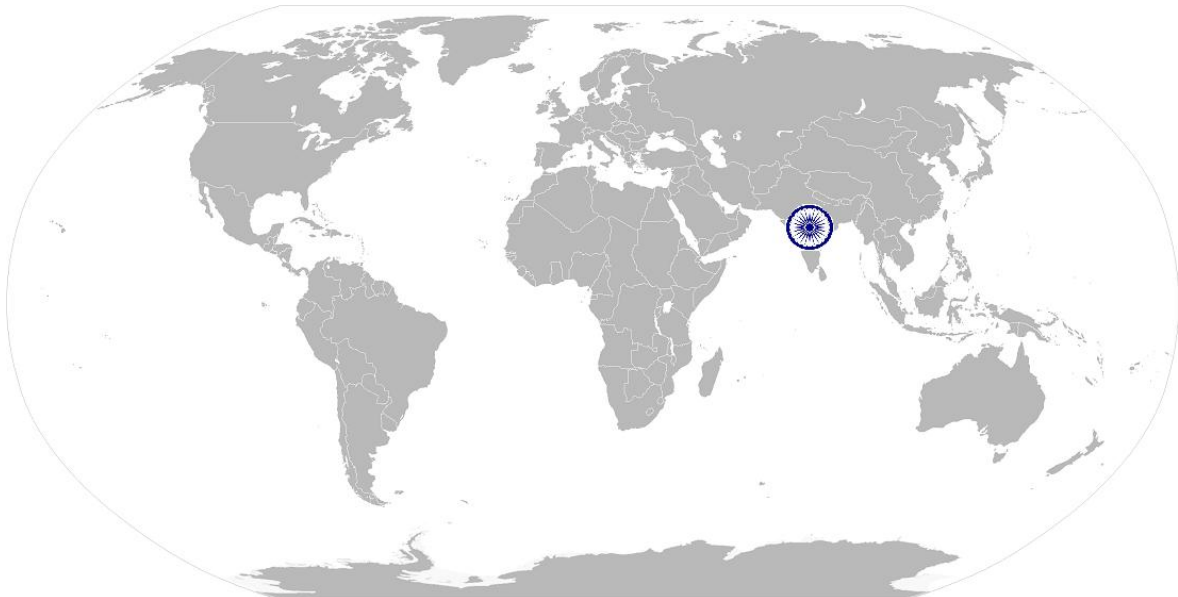
	<p>SB17. Take responsibility for own work outcomes SB18. Adhere to work timings, dress code and other organizational policies SB19. Follow laid down rules, procedures, instructions and policies SB20. Exercise restraint while expressing dissent and during conflict situations SB21. Avoid and manage distractions to be disciplined at work SB22. Carry out time management for achieving better results</p>
	Team Work
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB23. Work in a team in order to achieve better results SB24. Identify and clarify work roles within a team SB25. Communicate and cooperate with others in the team SB26. Seek assistance from fellow team members</p>





NOS Version Control:

NOS Code	ISC/N0424		
Credits(NSQF)	TBD	Version number	1.0
Industry	Iron and Steel	Drafted on	12/11/2014
Industry Sub-sector	Steel	Last reviewed on	25/03/2015
Occupation	Iron Making	Next review date	25/03/2016





ISC/N0425: Understand the operational practice of blast furnace stoves

National Occupational Standards



Overview

This unit covers the operating practices for blast furnace stoves.



Unit Code	ISC/N0425
Unit Title (Task)	Understand the operational practice of blast furnace stoves
Description	This unit covers the operating practices for blast furnace stoves.
Scope	This unit/task covers the following: <ul style="list-style-type: none"> • Ensure steady operation of blast furnace stoves • Ensure functioning of all blast furnace stove valves • Maintain heating schedule of blast furnace stoves
Performance Criteria (PC) w.r.t. the Scope	
Element	Performance Criteria
Ensure steady operation of blast furnace stoves	To be competent, the user /individual on the job must be able to: <p>PC1. Ensure to maintain the temperature and blast pressure steady for smooth operation of blast furnace</p> <p>PC2. Ensure supply of blast furnace gas steadily for stove heating</p> <p>PC3. Ensure steady air pressure and volume is available from the blower</p>
Ensure functioning of all blast furnace stove valves	To be competent, the user /individual on the job must be able to: <p>PC4. Ensure proper functioning of all stove valves e.g. hot blast, clod blast, chimney valves, control/ measuring instruments and automatic regulators</p>
Maintain heating schedule of blast furnace stoves	To be competent, the user /individual on the job must be able to: <p>PC5. Ensure stove changing as per norms (one and half hour on blast, three hours on gas)</p> <p>PC6. Ensure blast furnace gas is properly clean with respect to dust and moisture</p> <p>PC7. Ensure proper ratio of blast gas and air for combustion</p>
Element	Knowledge and Understanding
A. Organisational Context (Knowledge of the Company/ Organisation and its processes)	The user/individual on the job needs to know and understand: <p>KA1. Job specific documents e.g. daily maintenance checklist and importance of the same</p> <p>KA2. Safety policy of the company</p> <p>KA3. Emergency organisation of the specific work site</p> <p>KA4. Risk and impact of not following defined procedures/work instructions</p> <p>KA5. Escalation matrix for reporting identified problems</p> <p>KA6. Cost of equipment and loss for the company that result from damage of equipment and direct / indirect cost of accidents</p> <p>KA7. Implications of delays in operational process</p>
B. Technical	The user/individual on the job needs to know and understand:



Knowledge	<p>KB1. Capacity of handling equipment KB2. Work practices with the equipment and its applications KB3. Tools and tackles required for handling equipments KB4. Normal running characteristics of relevant equipment KB5. Operate the cast house crane, if required KB6. Operation of cast house equipment e.g. mud gun, tap hole drill machine, overhead crane etc. KB7. Function of blast furnace stove including valve operation (hot and cold blast valve) KB8. Function of blower, chimney valves and stove changing KB9. Implication of safe working practices throughout</p>
Skills (S) w.r.t. the scope	
Element	Skills
A. Core Skills/ Generic Skills	Writing Skills
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA1. Construct simple sentences and express ideas clearly through written communication SA2. Fill up appropriate activity logs in required format of the company</p>
	Reading and Understanding Skills
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SA3. Read and interpret previous shift log book / report SA4. Read and understand health and safety instructions, memos, reports, job cards etc.</p>
B. Professional Skills	Oral Communication (Listening and Speaking skills)
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SA5. Express statements, opinions or information clearly so that others can hear and understand SA6. Respond appropriately to queries SA7. Communicate with team members and supervisor</p>
	Problem Solving
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB1. Identify problems with work planning, procedures, output, behaviour and their implications, prioritize and plan for problem solving SB2. Communicate problems appropriately to others SB3. Identify sources of information and support for problem solving SB4. Seek assistance and support from other sources to solve problems SB5. Identify effective resolution techniques SB6. Select and apply resolution techniques</p>

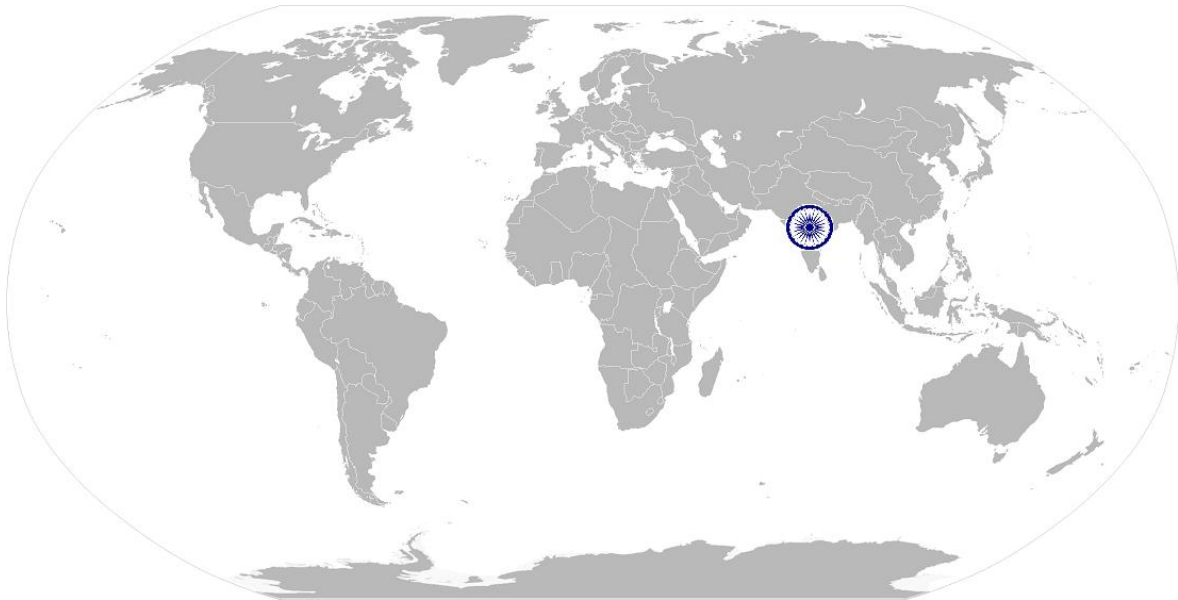


	SB7. Seek evidence for problem resolution
	Plan and Organise
	The user/individual on the job needs to know and understand how to:
	SB8. Plan, organize and prioritize the job as received from the supervisor
	SB9. Manage the schedule plan for the operators and helpers on the line/shift
	SB10. Validate all process/ equipment manuals so that the final process selected is appropriate
	SB11. Organize information, tools & tackles required for the job, manuals etc. on the shop floor
	SB12. Reorganize resources on the line/ shift in case of change of plans
	Initiative and Enterprise
	The user/individual on the job needs to know and understand how to:
	SB13. Initiative and enterprise for achieving better results impacts self, others and organization
	SB14. Undertake and express new ideas and initiatives to others
	SB15. Modify work plan to overcome unforeseen difficulties or developments that occur as work progresses
	SB16. Participate in improvement procedures including process and quality
	Self-Management
	The user/individual on the job needs to know and understand how to:
	SB17. Take responsibility for own work outcomes
	SB18. Adhere to work timings, dress code and other organizational policies
	SB19. Follow laid down rules, procedures, instructions and policies
	SB20. Exercise restraint while expressing dissent and during conflict situations
	SB21. Avoid and manage distractions to be disciplined at work
	SB22. Carry out time management for achieving better results
	Team Work
	The user/individual on the job needs to know and understand how to:
	SB23. Work in a team in order to achieve better results
	SB24. Identify and clarify work roles within a team
	SB25. Communicate and cooperate with others in the team
	SB26. Seek assistance from fellow team members



NOS Version Control

NOS Code	ISC/N0425		
Credits(NSQF)	TBD	Version number	1.0
Industry	Iron and Steel	Drafted on	12/11/2014
Industry Sub-sector	Steel	Last reviewed on	25/03/2015
Occupation	Iron Making	Next review date	25/03/2016





ISC/N0426: Understand the operational practice of stock house



National Occupational Standards

Overview

This unit covers the operating practices of stock house.



Unit Code	ISC/N0426
Unit Title (Task)	Understand the operational practice of stock house
Description	This unit covers the operating practices of stock house.
Scope	<p>This unit/task covers the following:</p> <ul style="list-style-type: none"> • Ensure steady operation of stock house charging system • Maintain steady stock level in the blast furnace • Regulate proper charge sequence for utilization of thermal and chemical energies
Performance Criteria (PC) w.r.t. the Scope	
Element	Performance Criteria
Ensure steady operation of stock house charging system	<p>To be competent, the user /individual on the job must be able to:</p> <p>PC1. Ensure steady operation of skip car, scale car and stock level at the bunker PC2. Ensure charging through conveyor system steadily</p>
Maintain steady stock level in the blast furnace	<p>To be competent, the user /individual on the job must be able to:</p> <p>PC3. Ensure steady stock level as per furnace operating condition</p>
Regulate proper charge sequence for utilization of thermal and chemical energies	<p>To be competent, the user /individual on the job must be able to:</p> <p>PC4. Ensure proper sequence of charge mix e.g. Coke-Coke-Ore-Ore-Stone (C-C-O-O-S) depending on the temperature and peripheral gas pressure PC5. Ensure CO₂ contain in blast furnace gas along the radius and centre of the furnace is same or 1-2% less</p>
Element	Knowledge and Understanding
A. Organisational Context (Knowledge of the Company/ Organisation and its processes)	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. Job specific documents e.g. daily maintenance checklist and importance of the same KA2. Safety policy of the company KA3. Emergency organisation of the specific work site KA4. Risk and impact of not following defined procedures/work instructions KA5. Escalation matrix for reporting identified problems KA6. Cost of equipment and loss for the company that result from damage of equipment and direct / indirect cost of accidents KA7. Implications of delays in operational process</p>
B. Technical Knowledge	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. Capacity of handling equipment KB2. Working practices with the equipment and its applications</p>



	<p>KB3. Tools and tackles required for handling equipments KB4. Normal running characteristics of relevant equipment KB5. Operate the cast house crane, if required KB6. Operation of cast house equipment e.g. mud gun, tap hole drill machine, overhead crane etc. KB7. Functioning of blast furnace stove including valve operation (hot and cold blast valve) KB8. Functioning of blower, chimney valves and stove changing KB9. Implication of safe working practices throughout</p>
Skills (S) w.r.t. the scope	
Element	Skills
A. Core Skills/ Generic Skills	Writing Skills
	The user/ individual on the job needs to know and understand how to:
	SA1. Construct simple sentences and express ideas clearly through written communication SA2. Fill up appropriate activity logs in required format of the company
	Reading and Understanding Skills
	The user/individual on the job needs to know and understand how to:
	SA3. Read and interpret previous shift log book / report SA4. Read and understand health and safety instructions, memos, reports, job cards etc.
	Oral Communication (Listening and Speaking skills)
The user/individual on the job needs to know and understand how to:	
SA5. Express statements, opinions or information clearly so that others can hear and understand SA6. Respond appropriately to queries SA7. Communicate with team members and supervisor	
B. Professional Skills	Problem Solving
	The user/individual on the job needs to know and understand how to:
	SB1. Identify problems with work planning, procedures, output, behaviour and their implications, prioritize and plan for problem solving SB2. Communicate problems appropriately to others SB3. Identify sources of information and support for problem solving SB4. Seek assistance and support from other sources to solve problems SB5. Identify effective resolution techniques SB6. Select and apply resolution techniques SB7. Seek evidence for problem resolution

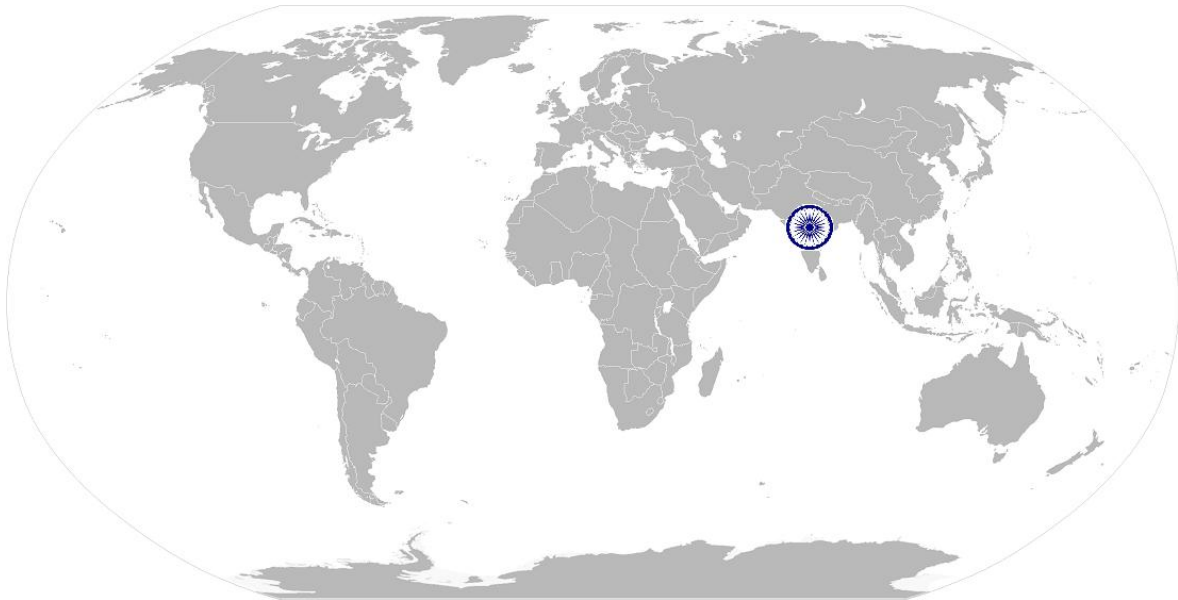


	Plan and Organise
	The user/individual on the job needs to know and understand how to:
	SB8. Plan, organize and prioritize the job as received from the supervisor
	SB9. Manage the schedule plan for the operators and helpers on the line/shift
	SB10. Validate all process/ equipment manuals so that the final process selected is appropriate
SB11. Organize information, tools & tackles required for the job, manuals etc. on the shop floor	
SB12. Reorganize resources on the line/ shift in case of change of plans	
Initiative and Enterprise	
The user/individual on the job needs to know and understand how to:	
SB13. Initiative and enterprise for achieving better results impacts self, others and organization	
SB14. Undertake and express new ideas and initiatives to others	
SB15. Modify work plan to overcome unforeseen difficulties or developments that occur as work progresses	
SB16. Participate in improvement procedures including process and quality	
Self-Management	
The user/individual on the job needs to know and understand how to:	
SB17. Take responsibility for own work outcomes	
SB18. Adhere to work timings, dress code and other organizational policies	
SB19. Follow laid down rules, procedures, instructions and policies	
SB20. Exercise restraint while expressing dissent and during conflict situations	
SB21. Avoid and manage distractions to be disciplined at work	
SB22. Carry out time management for achieving better results	
Team Work	
The user/individual on the job needs to know and understand how to:	
SB23. Work in a team in order to achieve better results	
SB24. Identify and clarify work roles within a team	
SB25. Communicate and cooperate with others in the team	
SB26. Seek assistance from fellow team members	



NOS Version Control

NOS Code	ISC/N0426		
Credits(NSQF)	TBD	Version number	1.0
Industry	Iron and Steel	Drafted on	12/11/2014
Industry Sub-sector	Steel	Last reviewed on	25/03/2015
Occupation	Iron Making	Next review date	25/03/2016





ISC/N0008: Use basic health and safety practices at the workplace



National Occupational Standards

Overview

This unit covers health, safety and security at the workplace. This includes procedures and practices that candidates need to follow to help maintain a healthy, safe and secure work environment.



Unit Code	ISC/N0008
Unit Title (Task)	Use basic health and safety practices at the work place
Description	<p>This OS unit is about knowledge and practices relating to health, safety and security that candidates need to use in the workplace. It covers responsibilities towards self, others, assets and the environment.</p> <p>It includes understanding of risks and hazards in the workplace, along with common techniques to minimize risk, deal with accidents, emergencies, etc.</p>
Scope	<p>This unit/task covers the following:</p> <ul style="list-style-type: none"> • Health and safety procedures • Fire safety procedures • Emergencies, rescue and first aid procedures
Performance Criteria (PC) w.r.t. the Scope	
Element	Performance Criteria
Health and safety procedures	<p>The user/individual on the job should be able to:</p> <p>PC1. Use protective clothing/equipment for specific tasks and work conditions</p> <p>Protective clothing includes:</p> <ul style="list-style-type: none"> • Leather or asbestos gloves • Flame proof aprons • Flame proof overalls buttoned to neck • Cuff less (without folds) trousers • Reinforced footwear • Helmets/hard hats • Cap and shoulder covers • Ear defenders/plugs • Safety boots • Knee pads • Particle masks • Glasses/gloves/visors <p>Equipment includes:</p> <ul style="list-style-type: none"> • Hand shields • Machine guards • Residual current devices • Shields • Dust sheets • Respirator <p>PC2. State the name and location of people responsible for health and safety in the workplace</p>



Various areas are listed below:

- On chemical containers
- Equipment
- Packages
- Inside buildings
- Open areas, public places etc.

PC3. State the names and location of documents that refer to health and safety in the workplace

PC4. Identify job-site hazardous work and state possible causes of risk or accident in the workplace

Hazards include:

- Working with electrical and thermal tools and equipment
- Sharp edged and heavy tools
- Heated metals
- Oxyfuel and gas cylinders
- Welding radiation
- Surfaces: sharp, slippery, uneven, chipped, broken, etc.
- Substances: chemicals, gas, oxy-fuel, fumes, dust, etc.
- Physical: working at heights, large and heavy objects and machines, sharp and piercing objects, tools and machines, intense light, load noise, obstructions in corridors, by doors, blind turns, noise, over stacked shelves and packages, etc.
- Electrical: power supply and points, loose and naked cables and wires, electrical machines and appliances, etc.

PC5. Carry out safe working practices while dealing with hazards to ensure the safety of self and others state methods of accident prevention in the work environment of the job role

Safe working practices include:

- Using protective clothing and equipment
- Putting up and reading safety signs
- Handle tools in the correct manner and store and maintain them properly
- Keep work area clear of clutter, spillage and unsafe object lying casually
- While working with electricity take all electrical precautions like insulated clothing, adequate equipment insulation, use of control equipment, dry work area, switch off the power supply when not required, etc.
- Safe lifting and carrying practices
- Use equipment that is working properly and is well maintained
- Take due measures for safety while working in confined places, trenches or at heights, etc. Including safety harness, fall arrestors etc.

Methods are:

- Training in health and safety procedures
- Using health and safety procedures
- Use of equipment and working practices (such as safe carrying procedures)
- Safety notices, advice
- Instruction from colleagues and supervisors



	<p>PC6. State location of general health and safety equipment in the workplace PC7. Inspect for faults, set up and safely use steps and ladders in general use</p> <p>Faults :</p> <ul style="list-style-type: none"> • Corrosion of metal components • Deterioration • Splits and cracks timber components • Imbalance • Loose rungs • Nuts or bolts, etc. <p>Set up:</p> <ul style="list-style-type: none"> • Firm/level base • Clip/lash down • Leaning at the correct angle, etc. <p>PC8. Work safely in and around trenches, elevated places and confined areas PC9. Lift heavy objects safely using correct procedures PC10. Apply good housekeeping practices at all times. Good housekeeping practices:</p> <ul style="list-style-type: none"> • Clean/tidy work areas • Removal/disposal of waste products • Protect surfaces <p>PC11. Identify common hazard signs displayed in various areas PC12. Retrieve and/or point out documents that refer to health and safety in the workplace</p>
<p>Fire safety procedures</p>	<p>The user/individual on the job should be able to:</p> <p>PC13. Use the various appropriate fire extinguishers on different types of fires correctly.</p> <p>Fire extinguishers:</p> <ul style="list-style-type: none"> • Sand • Water • Foam • Co2 • Dry powder <p>Fires:</p> <ul style="list-style-type: none"> • Class A: Ordinary solid combustibles, e.g. wood, paper, cloth, plastic, charcoal etc. • Class B: Flammable liquids and gases, e.g. gasoline, propane, diesel fuel, tar, cooking oil and similar substances • Class C: Electrical equipment e.g. appliances, wiring, breaker panels etc. (these categories of fires become Class A, B, and D fires when the electrical equipment that initiated the fire is no longer receiving electricity) • Class D: Combustible metals such as magnesium, titanium, and sodium (these fires burn at extremely high temperatures and require special suppression agents) <p>Causes of fires:</p> <ul style="list-style-type: none"> • Heating of metal



	<ul style="list-style-type: none"> • Spontaneous ignition • Sparking, • Electrical heating • Loose fires (e.g. Smoking, welding, etc.) • Chemical fires, etc. <p>PC14. Demonstrate rescue techniques applied during fire hazard PC15. Demonstrate good housekeeping in order to prevent fire hazards PC16. Demonstrate the correct use of a fire extinguisher</p>
<p>Emergencies, rescue and first-aid procedures</p>	<p>The user/individual on the job should be able to:</p> <p>PC17. Demonstrate how to free a person from electrocution PC18. Administer appropriate first aid to victims as required e.g. in case of bleeding, burns, choking, electric shock, poisoning etc. PC19. Demonstrate basic techniques of bandaging PC20. Respond promptly and appropriately to an accident situation or medical emergency in real or simulated environments . few General health and safety equipment are mentioned below :</p> <ul style="list-style-type: none"> • Fire extinguishers • First aid equipment • Safety instruments and clothing • Safety installations, e.g. Fire exits, exhaust fans etc. <p>PC21. Perform and organize loss minimization or rescue activity during an accident in real or simulated environments PC22. Administer first aid to victims in case of a heart attack or cardiac arrest due to electric shock, before the arrival of emergency services in real or simulated cases PC23. Demonstrate the artificial respiration and the CPR Process PC24. Participate in emergency procedures. Emergency procedures are:</p> <ul style="list-style-type: none"> • Raising alarm • Safe/efficient evacuation • Correct means of escape • Correct assembly point • Roll call • Correct return to work <p>PC25. Complete a written accident/incident report or dictate a report to another person, and send report to person responsible Incident Report should capture:</p> <ul style="list-style-type: none"> • Name • Date/time of incident • Date/time of report, • Location • Environment conditions • Persons involved • Sequence of events • Injuries sustained • Damage sustained • Actions taken • Witnesses



	<ul style="list-style-type: none"> • Supervisor/manager notified <p>Documents:</p> <ul style="list-style-type: none"> • Fire notices • Accident reports • Safety instructions for equipment and procedures • Company notices and documents • Legal documents (e.g. Government notices) <p>Job titles:</p> <ul style="list-style-type: none"> • Health and safety officer • First aid officer • Fire officer <p>PC26. Demonstrate correct method to move injured people and others during an emergency</p>
Element	Knowledge and Understanding
<p>A. Organisational Context (Knowledge of the Company/ Organisation and its processes)</p>	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. State the names (and job titles if applicable), and describe where to find, all the people responsible for health and safety in a workplace</p> <p>KA2. State the names and location of documents that refer to health and safety in the workplace</p>
<p>B. Technical Knowledge</p>	<p>The user/individual on the job needs to know and understand:</p> <p>KB3. Meaning of “hazards” and “risks”</p> <p>KB4. Health and safety hazards commonly present in the work environment and related precautions</p> <p>KB5. Possible causes of risk, hazard or accident in the workplace and why risk and/or accidents are possible</p> <p>KB6. Activities and causes of risk and accident</p> <p>KB7. Methods of accident prevention</p> <p>KB8. Safe working practices when working with tools and machines</p> <p>KB9. Safe working practices while working at various hazardous sites</p> <p>KB10. Where to find all the general health and safety equipment in the workplace</p> <p>KB11. Various dangers associated with the use of electrical equipment</p> <p>KB12. Preventative and remedial actions to be taken in the case of exposure to toxic materials.</p> <ul style="list-style-type: none"> • Exposure: ingested, contact with skin, inhaled • Preventative action: ventilation, masks, protective clothing/equipment • Remedial action: immediate first aid, report to supervisor • Materials: solvents, flux, lead <p>KB13. Importance of using protective clothing/equipment while working</p> <p>KB14. Precautionary activities to prevent the fire accident</p> <p>Activities and causes:</p> <ul style="list-style-type: none"> • Physical actions • Reading • Listening to and giving instructions



	<ul style="list-style-type: none"> • Inattention • Sickness and incapacity (e.g. Drunkenness) • Health hazards (e.g. Untreated injuries and contagious illness) <p>KB15. Various causes of fire KB16. Techniques of using the different fire extinguishers KB17. Different methods of extinguishing fire KB18. Rescue techniques applied during a fire hazard KB19. Various types of safety signs and what they mean KB20. Appropriate basic first aid treatment relevant to the condition e.g. Shock, electrical shock, bleeding, breaks to bones, minor burns, resuscitation, poisoning, eye injuries KB21. Content of written accident report KB22. Potential injuries and ill health associated with incorrect manual handling KB23. Safe lifting and carrying practices KB24. Personal safety, health and dignity issues relating to the movement of a person by others KB25. Potential impact to a person who is moved incorrectly</p>
Skills (S) w.r.t. the scope	
Element	Skills
A. Core Skills/ Generic Skills	Reading and Writing Skills
	The user/individual on the job needs to know and understand how to: SA1. Read and comprehend basic content to read labels, charts, signages SA2. Read and comprehend basic English to read manuals of operations SA3. Read and write an accident/incident report in local language or English
	Oral Communication (Listening and Speaking skills)
	The user/individual on the job needs to know and understand how to: SA4. Question co-workers appropriately in order to clarify instructions and other issues SA5. Give clear instructions to co-workers, subordinates others
	Decision Making
	The user/individual on the job needs to know and understand how to: SA6. Make appropriate decisions pertaining to the concerned area of work with respect to intended work objective, span of authority, responsibility, laid down procedure and guidelines
B. Professional Skills	Plan and Organize
	The user/individual on the job needs to know and understand: SB1. Plan and organize their own work schedule, work area, tools, equipment and materials to maintain decorum and for improved productivity

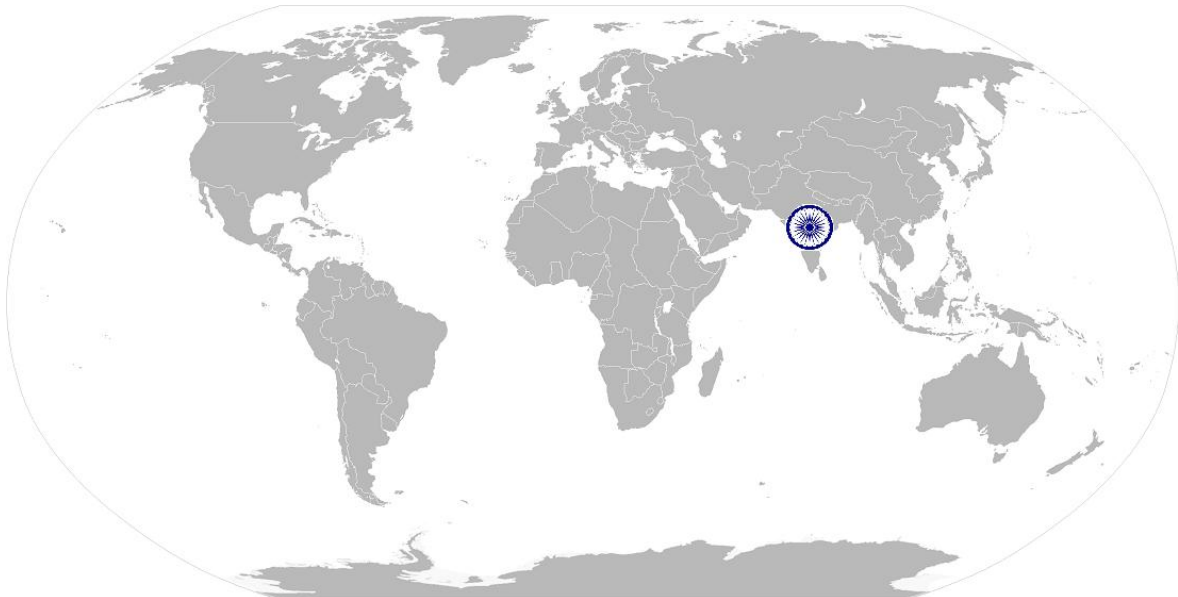


	Working with others
	The user/individual on the job needs to know and understand how to: SB2. Remain congenial while discussing and debating issues with co-workers SB3. Follow appropriate protocols for communication based on situation, hierarchy, organizational culture and practice SB4. Ask for, provide and receive required assistance where possible to ensure achievement of work related objectives SB5. Thank co-workers for any assistance received SB6. Offer appropriate respect based on mutuality and respect for fellow workmanship and authority
	Problem Solving
	The user/individual on the job needs to know and understand how to: SB7. Think through the problem, evaluate the possible solution(s) and suggest an optimum /best possible solution(s) SB8. Identify immediate or temporary solutions to resolve delays SB9. Identify sources of support that can be availed of for problem solving for various kind of problems SB10. Seek appropriate assistance from other sources to resolve problems SB11. Report problems that you cannot resolve to appropriate authority
	Analytical Thinking
	The user/individual on the job needs to know and understand how to: SB12. Identify cause and effect relations in their area of work SB13. Use cause and effect relations to anticipate potential problems and their solution



NOS Version Control

NOS Code	ISC/N0008		
Credits(NSQF)	TBD	Version number	1.0
Industry	Iron and Steel	Drafted on	23/07/2014
Industry Sub-sector	All Departments	Last reviewed on	30/12/2014
Occupation	Iron Making	Next review date	30/12/2015





National Occupational Standards



Overview

This unit covers basic practices that improve effectiveness of working with others in an organisational set-up.



Unit Code	ISC/N0009
Unit Title (Task)	Work effectively with others
Description	This unit covers basic etiquette and competencies that a candidate is required to possess and demonstrate in their behaviour and interactions with others at the workplace.
Scope	This unit/task covers the following: <ul style="list-style-type: none"> • Ensure appropriate communication with superiors, peers and others as applicable at work place • Demonstrate appropriate behaviour and etiquette at work place
Performance Criteria (PC) w.r.t. the Scope	
Element	Performance Criteria
Ensure appropriate communication with superiors, peers and others as applicable at work place	The user/individual on the job should be able to: <p>PC1. Accurately receive information and instructions from the supervisor and fellow workers, getting clarification where required</p> <p>PC2. Accurately pass on information to authorized persons who require it and within agreed timescale and confirm its receipt</p> <p>PC3. Provide information to others clearly, at a pace and in a manner that helps them to understand</p>
Demonstrate appropriate behaviour and etiquette at work place	The user/individual on the job should be able to: <p>PC4. Display helpful behaviour by assisting others in performing tasks in a positive manner, where required and possible</p> <p>PC5. Consult with and assist others to maximize effectiveness and efficiency in carrying out tasks</p> <p>PC6. Display appropriate communication etiquette while working</p> <p>PC7. Display active listening skills while interacting with others at work</p> <p>PC8. Use appropriate tone, pitch and language to convey politeness, assertiveness, care and professionalism</p> <p>PC9. Demonstrate responsible and disciplined behaviours at the workplace</p> <p>PC10. Escalate grievances and problems to</p>
Element	Knowledge and Understanding
A. Organisational Context (Knowledge of the Company/ Organisation and its processes)	The user/individual on the job needs to know and understand: <p>KA1. Legislation, standards, policies, and procedures followed in the company relevant to own employment and performance conditions</p> <p>KA2. Reporting structure, inter-dependent functions, lines and procedures in the work area</p> <p>KA3. Relevant people and their responsibilities within the work area</p> <p>KA4. Escalation matrix and procedures for reporting work and employment related issues</p>



<p>B. Technical Knowledge</p>	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. Various categories of people that one is required to communicate and co-ordinate with in the organization KB2. Importance of effective communication in the workplace KB3. Importance of teamwork in organizational and individual success KB4. Various components of effective communication KB5. Key elements of active listening KB6. Value and importance of active listening and assertive communication KB7. Barriers to effective communication KB8. Importance of tone and pitch in effective communication KB9. Importance of avoiding casual expletives and unpleasant terms while communicating professional circles KB10. How poor communication practices can disturb people, environment and cause problems for the employee, the employer and the customer KB11. Importance of ethics for professional success – KB12. Importance of discipline for professional success KB13. What constitutes disciplined behaviour for a working professional KB14. Common reasons for interpersonal conflict KB15. Importance of developing effective working relationships for professional success KB16. Expressing and addressing grievances appropriately and effectively KB17. Importance and ways of managing interpersonal conflict effectively</p>
<p>Skills (S) w.r.t. the scope</p>	
<p>Element</p>	<p>Skills</p>
<p>A. Core Skills/ Generic Skills</p>	<p>Reading and Writing Skills</p> <p>The user/individual on the job needs to know and understand how to:</p> <p>SA1. Read and comprehend basic content to read labels, charts, signage's SA2. Read and comprehend basic English to read manuals of operations SA3. Read and write an accident/incident report in local language or English</p> <p>Oral Communication (Listening and Speaking skills)</p> <p>The user/individual on the job needs to know and understand how to:</p> <p>SA4. Question co-workers appropriately in order to clarify instructions and other issues SA5. Provide clear instructions to co-workers, subordinates others</p> <p>Decision Making</p>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SA6. Make appropriate decisions pertaining to the concerned area of work with respect to intended work objective, span of authority, responsibility, laid down</p>

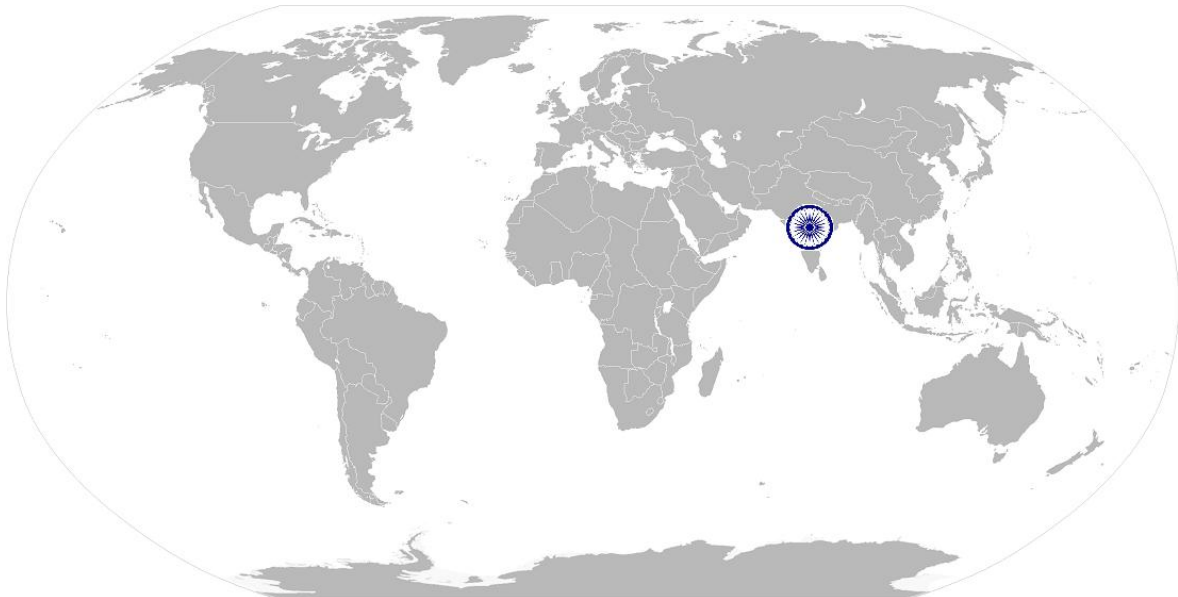


	procedure and guidelines
B. Professional Skills	Plan and Organize
	The user/individual on the job needs to know and understand:
	SB1. Plan and organize their own work schedule, work area, tools, equipment and materials to maintain decorum and for improved productivity
	Working with others
	The user/individual on the job needs to know and understand how to:
	SB2. Remain congenial while discussing and debating issues with co-workers SB3. Follow appropriate protocols for communication based on situation, hierarchy, organizational culture and practice SB4. Ask for, provide and receive required assistance where possible to ensure achievement of work related objectives SB5. Thank co-workers for any assistance received SB6. Offer appropriate respect based on mutuality and respect for fellow workmanship and authority
Problem Solving	
The user/individual on the job needs to know and understand how to:	
SB7. Think through the problem, evaluate the possible solution(s) and suggest an optimum /best possible solution(s) SB8. Identify immediate or temporary solutions to resolve delays SB9. Identify sources of support that can be availed of for problem solving for various kind of problems SB10. Seek appropriate assistance from other sources to resolve problems SB11. Report problems that you cannot resolve to appropriate authority	
Analytical Thinking	
The user/individual on the job needs to know and understand how to:	
SB12. Identify cause and effect relations in their area of work SB13. Use cause and effect relations to anticipate potential problems and their solution	



NOS Version Control

NOS Code	ISC/N0009		
Credits(NSQF)	TBD	Version number	1.0
Industry	Iron and Steel	Drafted on	23/07/2014
Industry Sub-sector	All Departments	Last reviewed on	30/12/2014
Occupation	Iron Making	Next review date	30/12/2015





CRITERIA FOR ASSESSMENT OF TRAINEES

Job Role: Cast House Senior Operator
Qualification Pack: ISC/Q0407
Sector Skill Council: Indian Iron & Steel Sector Skill Council

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. Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training center (as per assessment criteria below)
4. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training center based on this criteria.
5. To pass the Qualification Pack , every trainee should score a minimum of 60% in every NOS.
6. In case of successfully passing only certain number of NOS's, the trainee is eligible to take subsequent assessment on the balance NOS's to pass the Qualification Pack.

NOSs	PCs	Total Marks 1000	Out Of	Marks Allocated	
				Theory	Practical
ISC/N0424: Understand the assigned job for cast house preparation and operation	PC1. Interpret the log book report for the previous shift	300	20	10	10
	PC2. Ensure the cleanliness of the cast house including hot metal and slag runners including: <ul style="list-style-type: none"> • Tap hole maintenance • Trough preparation (desirable and non-desirable) • Metal runner preparation • Slag runner preparation • Diamond crossing preparation • Spout jam removal 		25	5	20



	PC3. Plan as appropriate to carry out the casting schedule as per Standard Operating Procedure (SOP) e.g. making hook, clay spoon dally etc.		30	10	20
	PC4. Ensure proper operation of cast house equipment (mud gun, tap hole drill machine, overhead crane etc.) including mud gun cleaning and filling and EOT crane operation (remote or pendant)		25	5	20
	PC5. Ensure disposing the scrap and debris as per standard practice including house keeping		20	5	15
	PC6. Ensure the tap hole is ready for opening the cast		25	5	20
	PC7. Ensure that the hot metal ladle, cast house granulation plant is ready / slag ladles are ready for opening the cast		30	10	20
	PC8. Open the cast with the help of tap hole drill machine		25	5	20
	PC9. Ensure casting schedule and practices		25	5	20
	PC10. Ensure closing the tap hole properly with the help of mud gun after finishing of cast including trough discharge, discharge hole cleaning and closing, discharge runner preparation etc.		25	5	20
	PC11. Ensure lancing of tap hole and tuyer during shutdown and break down		25	5	20
	PC12. Carry out tuyer muddling and cleaning during shutdown		25	5	20
		Total	300	75	225
ISC/N0425: Understand the operational practice of blast furnace stoves	PC1. Ensure to maintain the temperature and blast pressure steady for smooth operation of blast furnace	250	35	10	25
	PC2. Ensure supply of blast furnace gas steadily for stove heating		35	10	25
	PC3. Ensure steady air pressure and volume is available from the blower		35	10	25



	PC4. Ensure proper functioning of all stove valves e.g. hot blast, clod blast, chimney valves, control/ measuring instruments and automatic regulators		40	10	30
	PC5. Ensure stove changing as per norms (one and half hour on blast, three hours on gas)		35	5	30
	PC6. Ensure blast furnace gas is properly clean with respect to dust and moisture		35	10	25
	PC7. Ensure proper ratio of blast gas and air for combustion		35	5	30
		Total	250	60	190
ISC/N0426: Understand the operational practice of stock house	PC1. Ensure steady operation of skip car, scale car and stock level at the bunker	200	40	10	30
	PC2. Ensure charging through conveyor system steadily		40	10	30
	PC3. Ensure steady stock level as per furnace operating condition		40	10	30
	PC4. Ensure proper sequence of charge mix e.g. Coke-Coke-Ore-Ore-Stone (C-C-O-O-S) depending on the temperature and peripheral gas pressure		40	10	30
	PC5. Ensure CO ₂ contain in blast furnace gas along the radius and centre of the furnace is same or 1-2% less		40	10	30
		Total	200	50	150
ISC/N0008: Use basic health and safety practices at the workplace	PC1. Use protective clothing/equipment for specific tasks and work conditions	150	10	5	5
	PC2. State the name and location of people responsible for health and safety in the workplace		5	0	5
	PC3. State the names and location of documents that refer to health and safety in the workplace		0	0	0
	PC4. Identify job-site hazardous work and state possible causes of risk or accident in the workplace		10	5	5
	PC5. Carry out safe working practices while dealing with hazards to ensure the safety of self and others state methods of accident prevention in the work environment of the job role		10	5	5



PC6. State location of general health and safety equipment in the workplace	5	0	5
PC7. Inspect for faults, set up and safely use steps and ladders in general use	5	0	5
PC8. Work safely in and around trenches, elevated places and confined areas	5	0	5
PC9. Lift heavy objects safely using correct procedures	5	0	5
PC10. Apply good housekeeping practices at all times	0	0	0
PC11. Identify common hazard signs displayed in various areas	5	5	0
PC12. Retrieve and/or point out documents that refer to health and safety in the workplace	5	0	5
PC13. Use the various appropriate fire extinguishers on different types of fires correctly	10	5	5
PC14. Demonstrate rescue techniques applied during fire hazard	10	5	5
PC15. Demonstrate good housekeeping in order to prevent fire hazards	0	0	0
PC16. Demonstrate the correct use of a fire extinguisher	5	0	5
PC17. Demonstrate how to free a person from electrocution	5	0	5
PC18. Administer appropriate first aid to victims as required e.g. in case of bleeding, burns, choking, electric shock, poisoning etc.	10	5	5
PC19. Demonstrate basic techniques of bandaging	5	0	5
PC20. Respond promptly and appropriately to an accident situation or medical emergency in real or simulated environments	10	5	5
PC21. Perform and organize loss minimization or rescue activity during an accident in real or simulated environments	5	0	5



	PC22. Administer first aid to victims in case of a heart attack or cardiac arrest due to electric shock, before the arrival of emergency services in real or simulated cases		5	0	5
	PC23. Demonstrate the artificial respiration and the CPR Process		5	0	5
	PC24. Participate in emergency procedures		5	0	5
	PC25. Complete a written accident/incident report or dictate a report to another person, and send report to person responsible		10	5	5
	PC26. Demonstrate correct method to move injured people and others during an emergency		0	0	0
		Total	150	45	105
ISC/N0009: Work effectively with others	PC1. Accurately receive information and instructions from the supervisor and fellow workers, getting clarification where required	100	10	5	5
	PC2. Accurately pass on information to authorized persons who require it and within agreed timescale and confirm its receipt		10	5	5
	PC3. Provide information to others clearly, at a pace and in a manner that helps them to understand		10	0	10
	PC4. Display helpful behaviour by assisting others in performing tasks in a positive manner, where required and possible		10	5	5
	PC5. Consult with and assist others to maximize effectiveness and efficiency in carrying out tasks		10	5	5
	PC6. Display appropriate communication etiquette while working		10	0	10
	PC7. Display active listening skills while interacting with others at work		10	0	10
	PC8. Use appropriate tone, pitch and language to convey politeness, assertiveness, care and professionalism		10	5	5



	PC9. Demonstrate responsible and disciplined behaviours at the workplace		15	5	10
	PC10. Escalate grievances and problems to supervisor		5	0	5
		Total	100	30	70

