



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 - Technician Furnace Transformer: Ferro Alloys

SECTOR: Iron and Steel

SUB-SECTOR: Ferro Alloys

REFERENCE ID: ISC/Q1103

ALIGNED TO: NCO -2004/NIL

Title of Job: This job is about maintenance of furnace transformers involved in Ferro Alloy operations. This includes main receiving sub-station and furnace transformers (both HT and LT).

Personal Attributes: This job requires the candidate to work independently as well as in teams. Some of the key attributes includes physical fitness, not having colour blindness , having analytical skills, problem solving attitude, high concentration levels, a sharp reflex and willingness to work in a factory environment.



Job Details

Qualifications Pack Code	ISC/Q1103		
Job Role	Technician Furnace Transformers: Ferro Alloys		
Credits(NSQF)	TBD	Version number	1.0
Industry	Iron and steel	Drafted on	28/09/2014
Sub-sector	Ferro Alloys	Last reviewed on	30/12/2014
Occupation	Electrician	Next review date	30/12/2015

Job Role	Technician Furnace Transformers: Ferro Alloys
Role Description	The job involves for maintenance of furnace transformers involved in Ferro Alloy operations. This includes main receiving sub-station and furnace transformer (both HT and LT).
NSQF level	4
Minimum Educational Qualifications	ITI (Electrical / Electronics) pass
Maximum Educational Qualifications	Diploma (Electrical / Electronics) pass
Training (Suggested but not mandatory)	<ul style="list-style-type: none"> • Reading and interpreting drawings (mandatory) • Transformer types and application for the purpose (mandatory) • Knowledge of High & Low Voltage (mandatory) • Functional knowledge of Tap Changer and its importance (mandatory) • Working knowledge of tools & fixtures (mandatory) • Importance of oil cooling pumps & transformer functioning w.r.t oil & winding temp • 5S and safety practices (mandatory) • Hazards associated with working at heights, confined spaces & high temperatures (mandatory)
Experience	<ul style="list-style-type: none"> • 0 to 1 year with Diploma, otherwise 2 to 3 years with ITI Pass • In lieu of minimum qualification the incumbent should



	<p>have minimum 4 to 5 years working experience under qualified Engineer / Technician</p>
Occupational Standards (OS)	<p>Compulsory:</p> <p>ISC/N1115: Understand the job requirement of technician furnace transformer ISC/N1116: Prepares for furnace transformer operation ISC/N1117: Carries out the furnace transformer operation ISC/N1118: Activities specific to furnace transformer maintenance ISC/N0008: Use basic health and safety practices at the workplace 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

Acronyms



ISC/N1115: Understand the job requirement of technician furnace transformer



Overview

This unit is about understanding the job requirements in accordance with the checklist and get any clarifications on the same



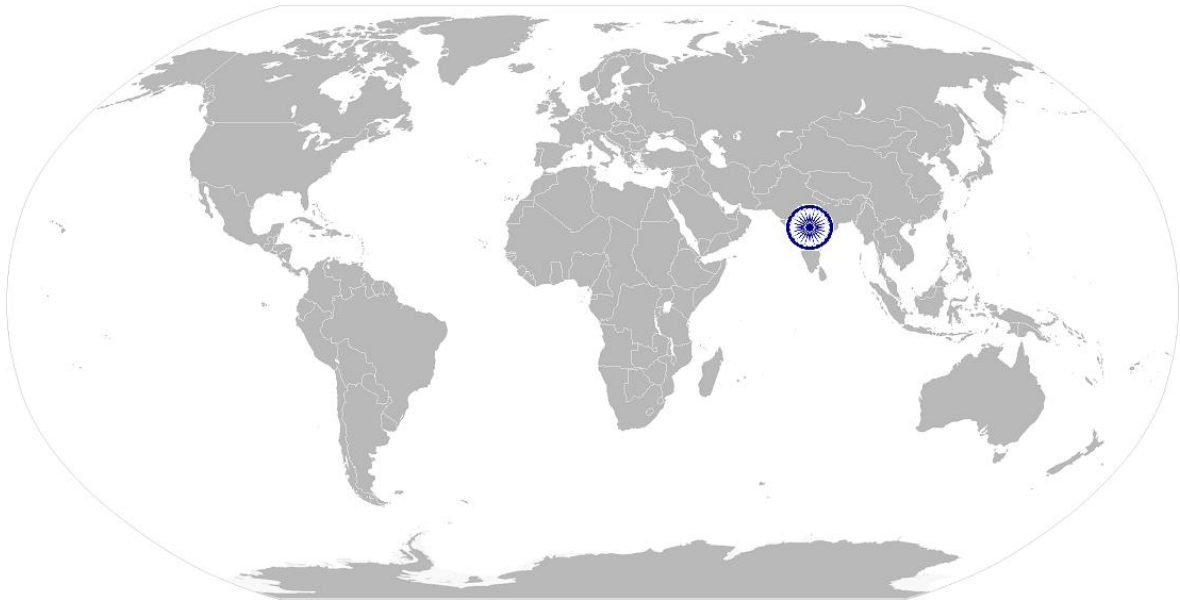
Unit Code	ISC/N1115
Unit Title (Task)	Understand the job requirement of technician furnace transformer
Description	This unit is about understanding the requirements of the job after receiving the checklist from the supervisor, seek any clarifications on the requirements of the job and identify the tools and tackles that would be needed to carry out the job
Scope	<p>This unit/task covers the following:</p> <ul style="list-style-type: none"> • Understand the assigned job in accordance with the instructions / checklist • Understand the Circuits, if required • Seek clarifications with respect to the equipment, circuit diagrams, if any • Identify the tools and tackles that are required to carry out the assigned job
Performance Criteria (PC) w.r.t. the Scope	
Element	Performance Criteria
Understand the assigned job in accordance with the instructions / checklist	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. Interpret the checklist and understand the job requirements PC2. Make a work plan to carry out the job</p>
Understand the circuit diagrams, if required	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC3. Have working knowledge on circuit diagrams PC4. Understand the symbols used in the diagrams PC5. Understand assembly blueprints, engineering drawings and other specifications to identify the sequence of activities required to assemble the machine PC6. Read and interpret engineering drawings to ensure correct limits, tolerance and fits of equipment components</p>
Seek clarifications with respect to the equipment, drawings, if any	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC7. Identify the areas he/she is not comfortable with before starting the job PC8. Recognize whom to contact for clarifications on the engineering design PC9. Escalate the concern to the supervisor or shift-in-charge, if needed</p>
Identify the tools and tackles that are required to carry out the assigned job	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC10. Identify tools, tackles & equipment required to perform the operation PC11. Asks helper to carry tools required to the desired work site PC12. Report to stores in case of non-availability of tools & tackles or stock-out</p>
Element	Knowledge and Understanding
A. Organisational Context (Knowledge of the	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. Quality and damage checks to be done and importance of the same</p>



Company/ Organisation and its processes)	KA2. Risk and impact of not following defined procedures/work instructions KA3. Escalation matrix for reporting identified issues
B. Technical Knowledge	The user/individual on the job needs to know and understand: KB1. Engineering drawings and circuit diagrams KB2. Steps required to assemble/ dis-assemble an equipment with a given design KB3. Understanding of normal running characteristics of machines KB4. Possible causes of common problems during assembly & their remedies KB5. Implications of not adhering to sequence of activities and operations KB6. Units of measurement related to Electrical installations KB7. Response to emergencies e.g. Power failures ,fire and system failures
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 in English, Hindi and Local Language (E/H/LL) SA2. Fill up appropriate technical forms, process charts, 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 engineering and machine drawings SA4. Read and understand manuals, health and safety instructions, memos, reports, job cards etc.
A. Core Skills/ Generic Skills	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 any queries SA7. Communicate with team members and supervisor
B. Professional Skills	Material and Equipment Handling
	The user/individual on the job needs to know and understand how to: SB1. Handle different transformers (both LT & HT) SB2. Knowledge on OIL properties SB3. Handling of various types of material handling equipment



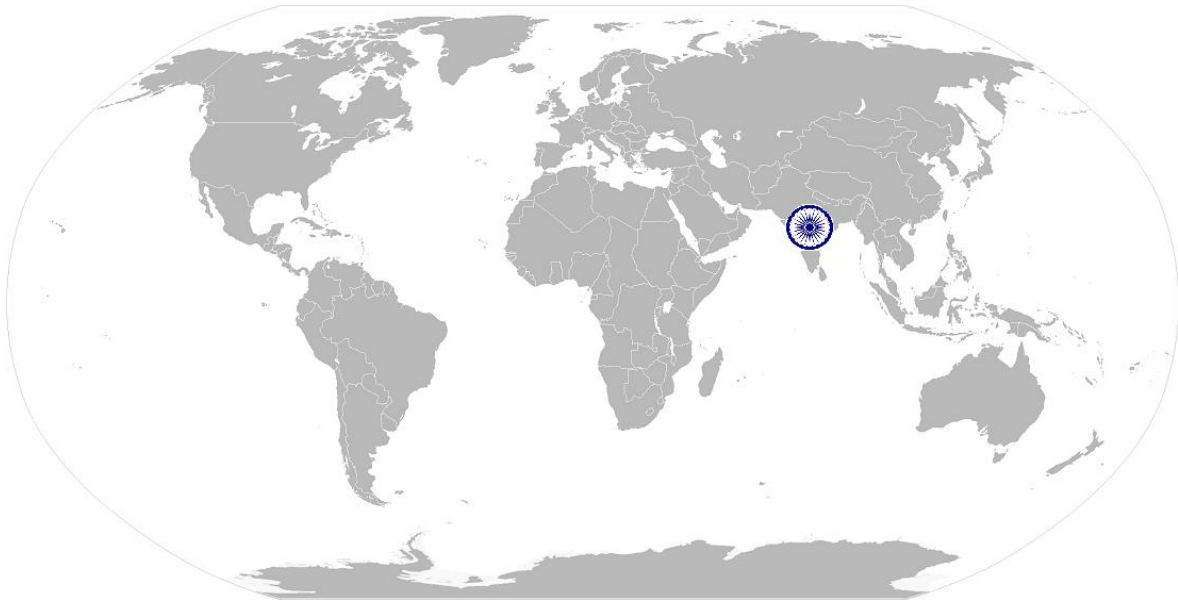
	Analytical Thinking
	The user/individual on the job needs to know and understand how to: SB4. Diagnose common problems related to oil Insulation values, heat exchangers etc. SB5. Suggest improvements (if any) in process based on experience





NOS Version Control

NOS Code	ISC/N1115		
Credits(NSQF)	TBD	Version number	1.0
Industry	Iron and steel	Drafted on	23/09/2014
Industry Sub-sector	Ferro Alloys	Last reviewed on	30/12/2014
Occupation	Electrician	Next review date	30/12/2015





ISC/N1116: Prepares for furnace transformer operation



National Occupational Standards

Overview

This NOS is about inspecting the equipment for defects and preparing the equipment for carrying out the operation



Unit Code	ISC/N1116
Unit Title (Task)	Prepares for furnace transformer operation
Description	This unit is about inspecting the equipment for defects and preparing the equipment for carrying out the operation
Scope	This unit/task covers the following: <ul style="list-style-type: none"> Reach the site and inspect the equipment to identify cause of problem Prepare equipment and material for assembly
Performance Criteria (PC) w.r.t. the Scope	
Element	Performance Criteria
Reach the site and inspect the equipment to identify cause of problem	To be competent, the user/individual on the job must be able to: <ul style="list-style-type: none"> PC1. Reach the site with desired tools, tackles and equipment PC2. By root cause analysis, identifies the part of the equipment/machine providing trouble, as required PC3. By visual inspection, ensures that the parts to be assembled are not defective or rusted, in case of new assembly
Prepare equipment and material for assembly	To be competent, the user/individual on the job must be able to: <ul style="list-style-type: none"> PC4. Ensure that tools match the desired specifications PC5. Ensure tools and equipment required for assembly are free from physical damage and ready for operation PC6. Report damaged / defective components of equipment as per the escalation matrix PC7. Ensure the calibration status of all measuring equipment and instruments PC8. Ensure spares before attending on the equipment
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: <ul style="list-style-type: none"> KA1. Quality and damage checks to be done and importance of the same KA2. Risk and impact of not following defined procedures/work instructions KA3. Escalation matrix for reporting identified issues KA4. Plant layout and location of various departments
B. Technical Knowledge	The user/individual on the job needs to know and understand: <ul style="list-style-type: none"> KB1. Assembling techniques such as aligning, fixing, dust free, sealing and torquing KB2. Steps required to assemble/ dis-assemble an equipment with a given design KB3. Checks that need to be made to ensure that equipment is safe and ready to use KB4. Limits, fits and tolerances

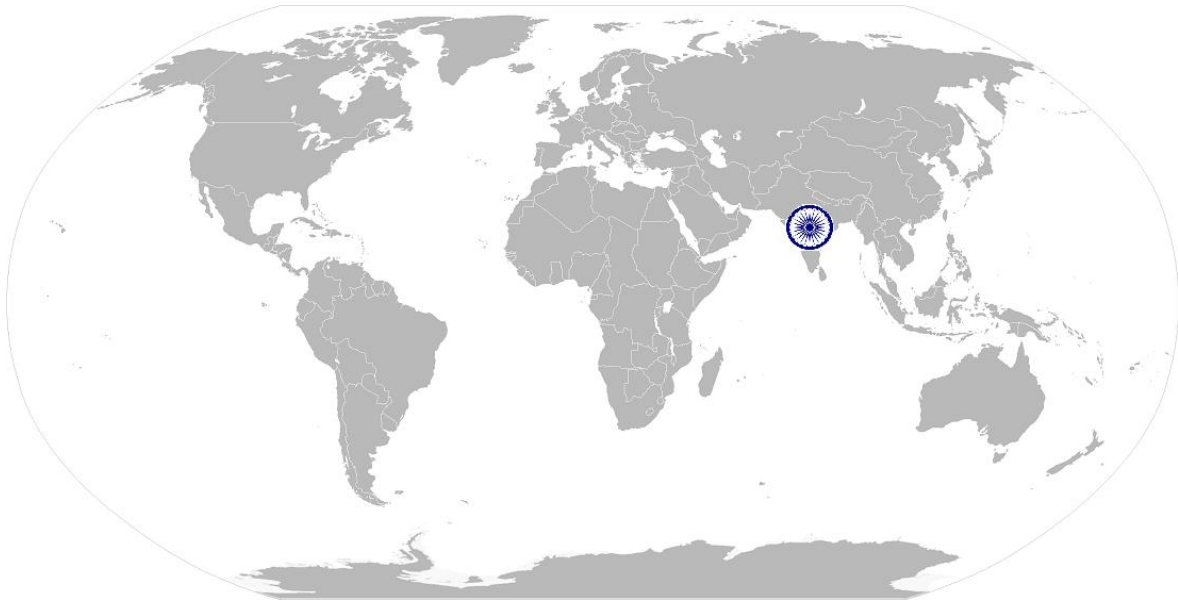


	<p>KB5. Engineering drawings and circuit diagrams KB6. Understanding of normal running characteristics of Transformers KB7. Possible causes of common problems during assembly & their remedies KB8. Implications of not adhering to sequence of activities and operations KB9. Units of measurement KB10. Response to emergencies e.g. fire and system failures KB11. Material disposal procedure, importance of appropriate disposal of material and implications of not following the material disposal procedure</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. Preparing Circuit diagrams wherever changes are made SA2. Fill up appropriate technical forms, process charts, 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 engineering and transformer circuit drawings SA4. Read and understand manuals, health and safety instructions, memos, reports, job cards, History cards etc. in English, Hindi and Local Language (E/H/LL)
	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 any queries SA7. Communicate with team members and supervisor	
B. Professional Skills	Material and Equipment Handling
	The user/individual on the job needs to know and understand how to:
	SB1. Handle different kinds of transformers SB2. Knowledge on LV & HV circuits and Tap Changers SB3. Periodical schedules for maintenance
	Analytical Thinking
The user/individual on the job needs to know and understand how to:	
SB4. Diagnose common problems like oil temperatures high / oil leakages / Insulation values SB5. Suggest improvements (if any) in process based on experience	



NOS Version Control

NOS Code	ISC/N1116		
Credits(NSQF)	TBD	Version number	1.0
Industry	Iron and steel	Drafted on	28/09/2014
Industry Sub-sector	Ferro Alloys	Last reviewed on	30/12/2014
Occupation	Electrician	Next review date	30/12/2015





ISC/N1117: Carries out the furnace transformer operation



Overview

This NOS is about carrying out the operations in terms of rectifying the identified problem or carrying out scheduled maintenance



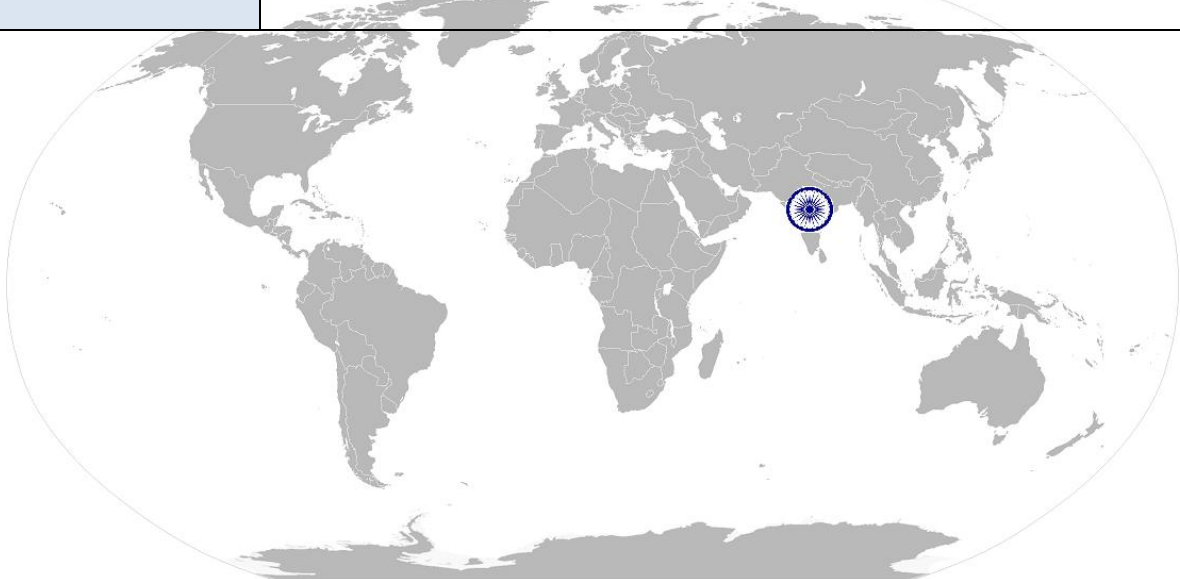
Unit Code	ISC/N1117
Unit Title (Task)	Carries out the furnace transformer operation
Description	This NOS is about carrying out the operations in terms of rectifying the identified problem or carrying out scheduled maintenance
Scope	This unit/task covers the following: <ul style="list-style-type: none"> • Conduct routine maintenance or rectify the problem, as appropriate • Conduct periodic and scheduled tests to ensure fitness • Communicate to supervisor about completion of work
Performance Criteria (PC) w.r.t. the Scope	
Element	Performance Criteria
Conduct routine maintenance or rectify the problem, as appropriate	To be competent, the user/individual on the job must be able to: PC1. Isolate Power source and obtain written clearance from the owner PC2. Identify and Correct the defect in the part or replace the defective part PC3. Assemble the parts according to the drawings, as required PC4. Fasten mechanical components/ subassemblies together using screws, bolts, and collars using hand/ power tools PC5. Set and adjust leakages, tensions and clearances of assembled components to specifications using fixed gauges and hand tools PC6. Re assemble the parts post correcting the defect
Conduct tests to ensure fitness	To be competent, the user/individual on the job must be able to: PC7. Ensure alignment of parts and with the engineering drawings PC8. Check vibrations to ensure fitness PC9. Test the transformer to ensure it is fit to use before handover P10. Record the test results in the prescribed format of the organization
Communicate to supervisor about completion of work	To be competent, the user/individual on the job must be able to: PC11. Ensure all activities are complete according to checklist PC12. Communicate to supervisor on completion of given job in case of any deviations from checklist PC13. Handover the system to the owner and obtain written completion document
Element	Knowledge and Understanding
A. Organisational Context (Knowledge of the Company/ Organisation and	The user/individual on the job needs to know and understand: KA1. Quality and damage checks to be done and importance of the same KA2. Contact person across departments for spare parts, information etc. KA3. Escalation matrix for reporting identified issues



its processes)	KA4. Risk and impact of not following defined procedures/work instructions
B. Technical Knowledge	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. Assembling techniques such as aligning, oil / water leakages threaded jointing, oil sealing, torqueing etc.</p> <p>KB2. Steps required to assemble/ dis-assemble an equipment with a given design</p> <p>KB3. Checks that need to be made to ensure that equipment is safe and ready to use</p> <p>KB4. Limits, fits and tolerances</p> <p>KB6. Possible causes of common problems during assembly & their remedies</p> <p>KB7. Units of measurement</p> <p>KB8. Response to emergencies, fire and system failures</p> <p>KB9. Use of measuring instruments e.g.- Vernier, Micro meter, dial gauge, filler gauge, torque wrench, etc.</p> <p>KB10. Compilation of test results in prescribed format</p>
Skills (S) w.r.t. the scope	
Element	Skills
A. Core Skills/ Generic Skills	<p>Writing Skills</p> <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 in English, Hindi and Local Language (E/H/LL)</p> <p>SA2. Fill up appropriate technical forms, process charts, activity logs in required format of the company</p>
	<p>Reading and Understanding Skills</p> <p>The user/individual on the job needs to know and understand how to:</p> <p>SA3. Read and interpret engineering and machine drawings</p> <p>SA4. Read and understand manuals, memos, reports, job cards etc.</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>SA5. Express statements, opinions or information clearly so that others can hear and understand</p> <p>SA6. Respond appropriately to any queries</p> <p>SA7. Communicate with supervisor</p> <p>SA8. Communicate with team members</p>
	<p>B. Professional Skills</p> <p>Material and Equipment Handling</p> <p>The user/individual on the job needs to know and understand how to:</p> <p>SB1. Handle different Furnace Transformers</p> <p>SB2. Positioning critical equipments attached to Transformer like Heat exchangers / Tap Changers, LT & HT terminal fittings etc.</p>



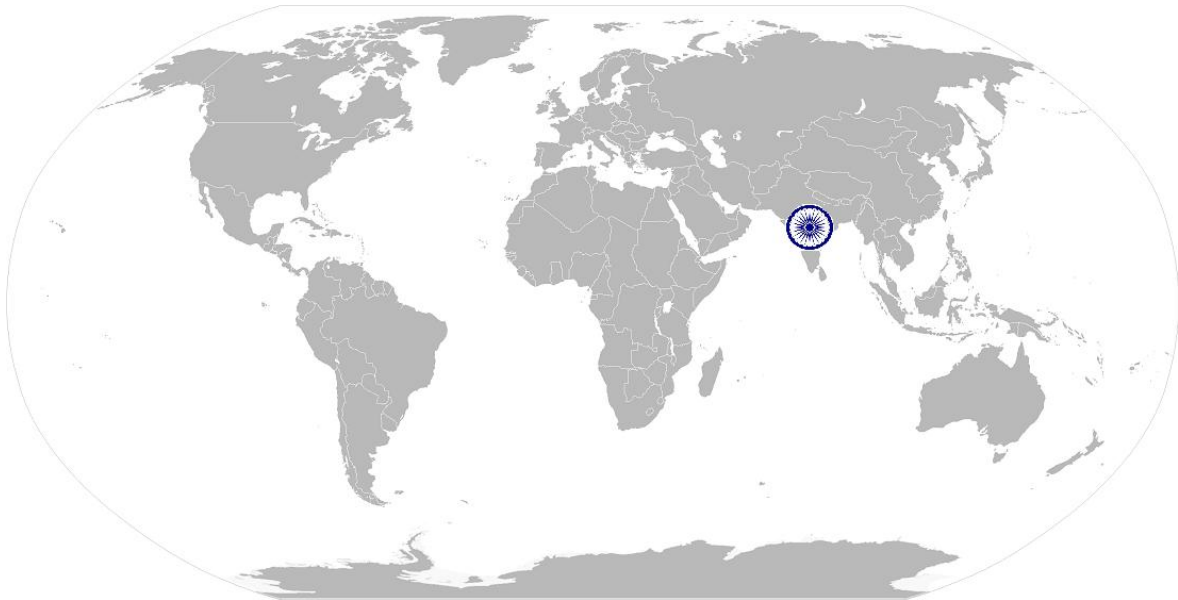
	Reliability
	The user/individual on the job needs to know and understand how to: SB3. Avoid absenteeism and maintain quality of work SB4. Work in a disciplined environment and adhere to working norms of the organisation SB5. Be punctual and adhere to timelines
	Analytical Thinking
	The user/individual on the job needs to know and understand how to: SB6. Diagnose common problems in the tools based on visual inspection, sound, temperature etc. SB7. Suggest improvements(if any) in process based on experience





NOS Version Control

NOS Code	ISC/N1117		
Credits(NSQF)	TBD	Version number	1.0
Industry	Iron and steel	Drafted on	28/09/2014
Industry Sub-sector	Ferro Alloys	Last reviewed on	30/12/2014
Occupation	Electrician	Next review date	30/12/2015





ISC/N1118: Activities specific to furnace transformer maintenance



Overview

This NOS is about carrying out the operations that are specific to Furnace Transformer Maintenance



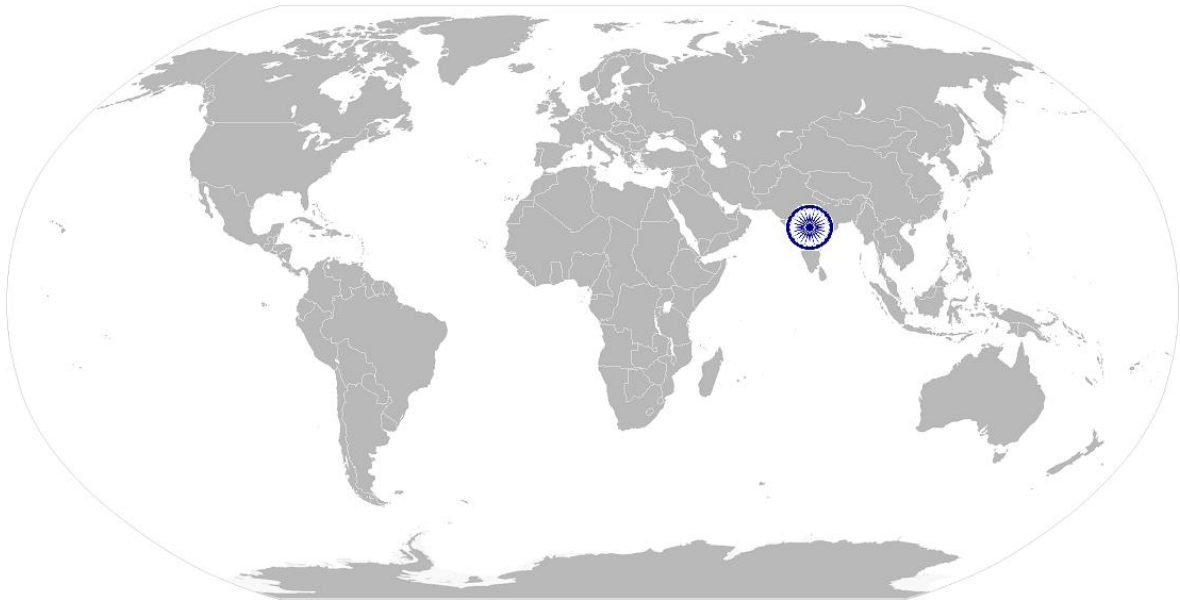
Unit Code	ISC/N1118
Unit Title (Task)	Activities specific to furnace transformer maintenance
Description	This unit is about carrying out the operations that are specific to Furnace Transformer maintenance.
Scope	This unit/task covers the following: <ul style="list-style-type: none"> Isolate the unit, ensuring safe working condition with shutdown Carry out maintenance activity Give clearance for reactivation of line after due maintenance
Performance Criteria (PC) w.r.t. the Scope	
Element	Performance Criteria
Isolate the unit, ensuring safe working condition with shutdown	To be competent, the user/individual on the job must be able to: PC1. Carry out the detailed procedure for isolating and clearing the unit and obtain written job card PC2. Ensure proper shutdown process and obtain job card PC3. Report to the supervisor in case of any problem that has to be escalated
Carry out maintenance activity	To be competent, the user/individual on the job must be able to: PC4. Understand the activity to be carried out sequentially as per the check list PC5. Attend on the equipment and carry out maintenance activity PC6. Rectify any defects if any found and record PC7. Carry out cold trials before the equipment can be used again PC8. Report to the supervisor in case of any problem that has to be escalated
Give clearance for reactivation of line after due maintenance	To be competent, the user/individual on the job must be able to: PC9. Charge the line after completing the maintenance and obtain written certificate PC10. Give clearance for charging the power line PC11. Carry out damage control in case of any emergencies
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. Quality and damage checks to be done and importance of the same KA2. Risk and impact of not following defined procedures/work instructions KA3. Escalation matrix for reporting identified issue
B. Technical Knowledge	The user/individual on the job needs to know and understand: KB1. Working knowledge of Operation and maintenance specifically furnace transformers both single phase and three phase



	<p>KB2. Working knowledge and understanding the circuit diagrams and ability to identify control circuit related problems</p> <p>KB3. Checks that need to be made to ensure that equipment is safe and ready to use</p> <p>KB4. Knowledge on Tap Changers, Heat exchangers, oil & water circulation systems etc.</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:
	<p>SA1. Construct simple sentences and express ideas clearly through written communication in English, Hindi and Local Language (E/H/LL)</p> <p>SA2. Fill up appropriate technical forms, process charts, activity logs in required format of the company</p>
	Reading and Understanding Skills
	The user/individual on the job needs to know and understand how to:
<p>SA3. Read and interpret engineering and circuit diagrams</p> <p>SA4. Read and understand manuals, health and safety instructions, memos, reports, job cards etc.</p>	
B. Professional Skills	Oral Communication (Listening and Speaking skills)
	The user/individual on the job needs to know and understand how to:
	<p>SA5. Express statements, opinions or information clearly so that others can hear and understand</p> <p>SA6. Respond appropriately to any queries</p> <p>SA7. Communicate with supervisor</p> <p>SA8. Communicate with team members</p>
	Plan and Organize
The user/individual on the job needs to know and understand:	
<p>SB1. Plan and organize their own work schedule, work area, tools, equipment and materials to maintain decorum and for improved productivity</p> <p>SB2. Record the observations with precision</p>	
Working with Others	
The user/individual on the job needs to know and understand how to:	
<p>SB3. Remain congenial while discussing and debating issues with other co-workers</p> <p>SB4. Seek for, provide and receive required assistance where ever possible to ensure achievement of work related objectives</p> <p>SB5. Acknowledge co-workers for any assistance received</p>	



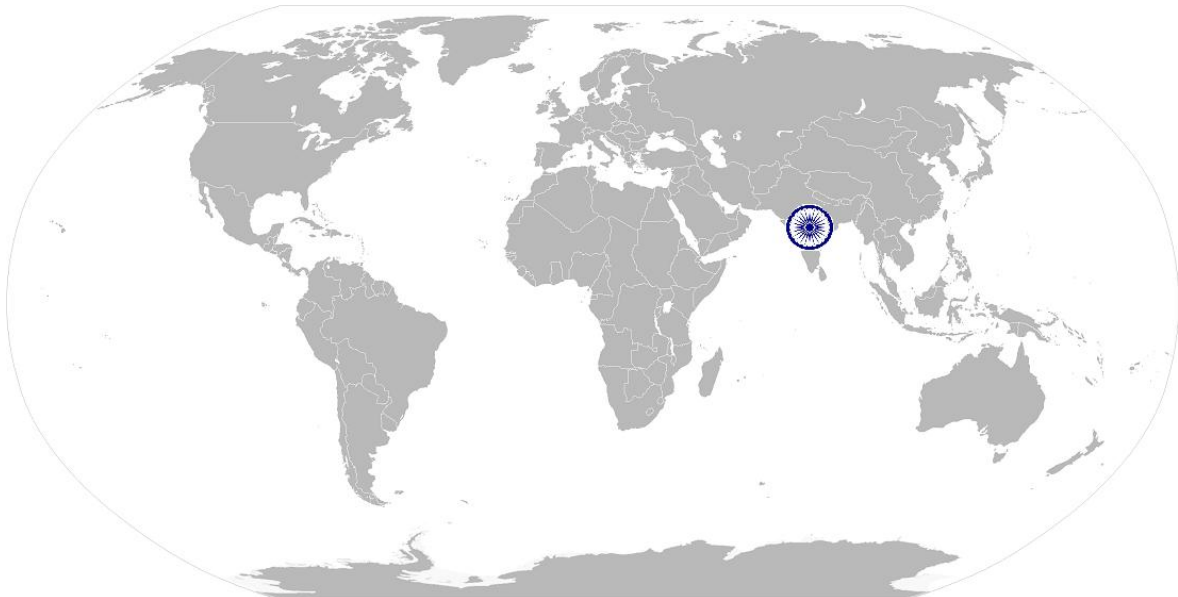
	SB6. Offer appropriate respect based on mutuality and respect for fellow workmen and authority
	Problem solving:
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB7. Think through the problem, evaluate the possible solution(s) and suggest an optimum /best possible solution(s)</p> <p>SB8. Identify immediate or temporary solutions to resolve delays</p> <p>SB9. Identify sources of support that can be availed of for problem solving if required</p> <p>SB10. Seek appropriate assistance from other sources to resolve problems</p> <p>SB11. Report problems that cannot be resolved to appropriate authority</p>





NOS Version Control

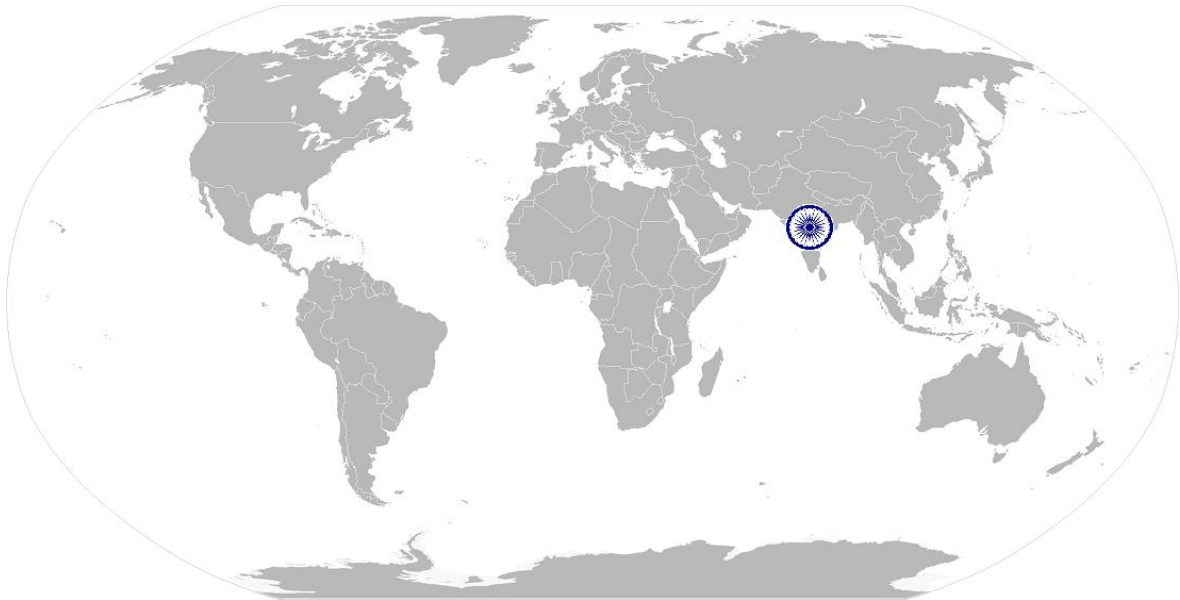
NOS Code	ISC/N1118		
Credits(NSQF)	TBD	Version number	1.0
Industry	Iron and steel	Drafted on	28/09/2014
Industry Sub-sector	Ferro Alloys	Last reviewed on	30/12/2014
Occupation	Electrician	Next review date	30/12/2015





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, 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
	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

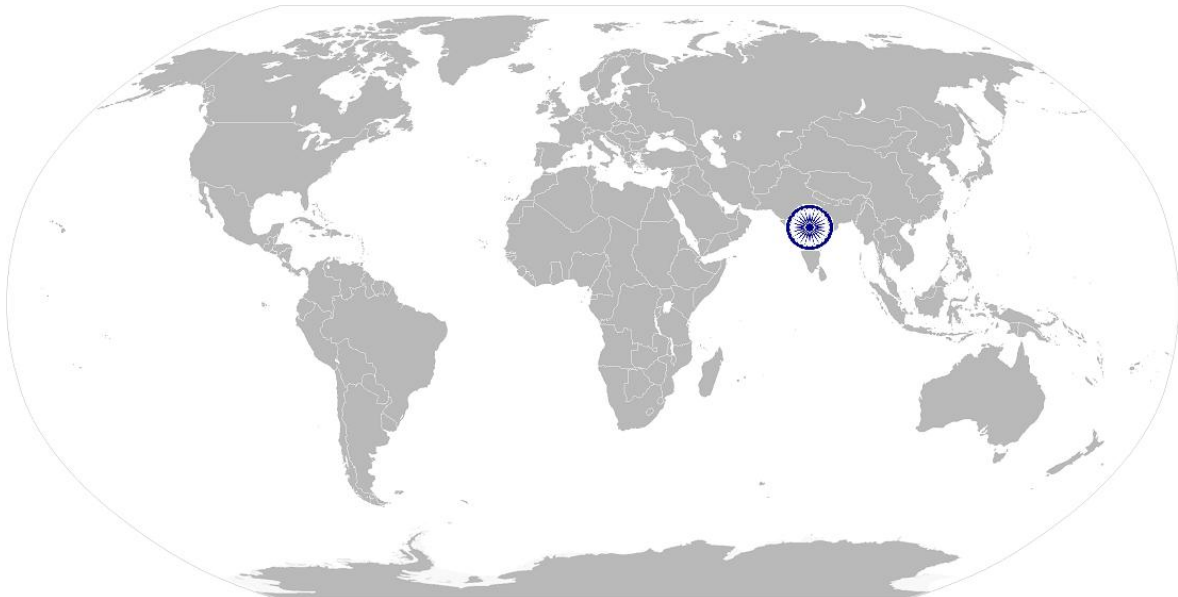


	Working with others
	The user/individual on the job needs to know and understand how to: SB2. Remain congenial while discussing and debating issues with co-workers SB3. Follow appropriate protocols for communication based on situation, hierarchy, organizational culture and practice SB4. Ask for, provide 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	Electrician	Next review date	30/12/2015





ISC/N0009: Work effectively with others

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	
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Occupation	Electrician	Next review date	30/12/2015

