

## QUALIFICATIONS PACK - OCCUPATIONAL STANDARDS FOR TELECOM

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### 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



### Introduction

## Qualifications Pack- Infrastructure Engineer

**SECTOR:** TELECOM

**SUB-SECTOR:** Network Managed Services

**OCCUPATION:** Operations and Maintenance-Passive infrastructure

**REFERENCE ID:** TEL/Q6100

**ALIGNED TO:** NCO-2015/7422.0204

**Infrastructure Engineer in the telecom industry is also known as Passive Infrastructure Engineer.**

**Brief Job Description:** Infrastructure engineer is responsible for ensuring site uptime through preventive and corrective maintenance of passive infrastructure at sites. He also coordinates infrastructure upgradation activities and ensures timely payments of rent, diesel and electricity charges after validating the vendor bills.

**Personal Attributes:** This job requires the individual to work closely with multiple teams and third party vendors. The individual should be willing to work on-field and be able to handle high pressure situations. He should be adaptable to changing work environments and have good practical knowledge to successfully perform the assigned responsibilities.

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Job Details	Qualifications Pack Code	TEL/Q6100		
	Job Role	Infrastructure Engineer		
	Credits (NSQF)	5	Version number	1.0
	Sector	Telecom	Drafted on	26/04/2013
	Sub-sector	Network Managed Services	Last reviewed on	26/05/2017
	Occupation	Operations & Maintenance- Passive Infrastructure	Next review date	26/12/2020
	NSQF Clearance on	20/07/2015		

Job Role	ICT Technician
Role Description	Infrastructure engineer is responsible for ensuring site uptime through preventive and corrective maintenance of passive infrastructure at sites. He also coordinates infrastructure upgradation activities and ensures timely payments of rent, diesel and electricity charges after validating the vendor bills.
NSQF level	5
Minimum Educational Qualifications*	ITI/ Diploma
Maximum Educational Qualifications*	Bachelor in Technology (Mechanical, Electrical, Civil and related field)
Training (Suggested but not mandatory)	Technical trainings on Passive Infrastructure equipments deployed at Radio sites
Experience	Worked as Infrastructure technician for minimum 1-2 Years.
Minimum entry Job Age	21 Years
Applicable National Occupational Standards (NOS)	<p><b>Compulsory:</b></p> <ol style="list-style-type: none"> <li>1. TEL/N6100 (<a href="#">Perform preventive maintenance of Passive Infrastructure equipments at radio locations</a>)</li> <li>2. TEL/N6101 (<a href="#">Perform corrective maintenance/ fault management of Passive Infrastructure at radio locations</a>)</li> <li>3. TEL/N6102 (<a href="#">Undertake upgradation of Passive Infrastructure at radio locations</a>)</li> <li>4. TEL/N6103 (<a href="#">Undertake other operational activities at radio sites</a>)</li> </ol> <p><b>Optional:</b></p> <ol style="list-style-type: none"> <li>5. NA</li> </ol>
Performance Criteria	As described in the relevant OS units

Definitions

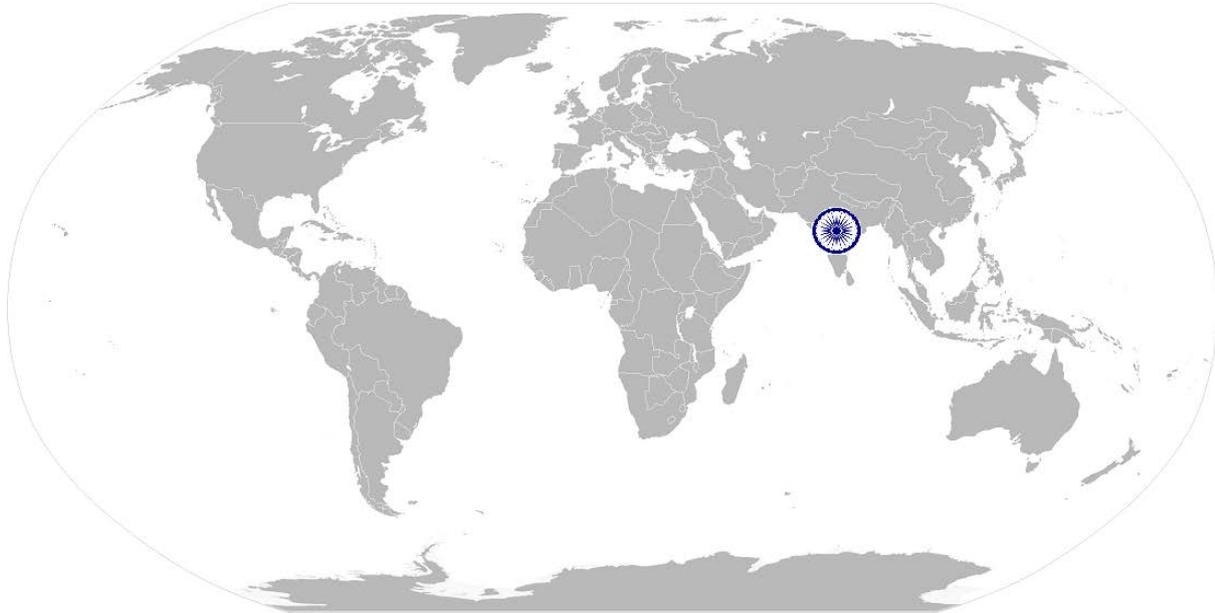
Keywords /Terms	Description
Sector	Sector is a conglomeration of different business operations having similar businesses and interests. It may also be defined as a distinct subset of the economy whose components share similar characteristics and interests.
Sub-sector	Sub-sector is derived from a further breakdown based on the characteristics and interests of its components.
Occupation	Occupation is a set of job roles, which perform similar/related set of functions in an industry.
Scope	Scope is a set of statements specifying the range of variables that an individual may have to deal with, in carrying out the function which has a critical impact on the quality of performance required
Job Role	Job role defines a unique set of functions that together form a unique employment opportunity in an organization.
OS	OS specify the standards of performance an individual must achieve when carrying out a function in the workplace, together with the knowledge and understanding they need to meet that standard consistently. Occupational Standards are applicable both in the Indian and global contexts.
Performance Criteria	Performance Criteria are statements that together specify the standard of performance required when carrying out a task.
NOS	NOS are Occupational Standards which apply uniquely in the Indian context.
Qualifications Pack Code	Qualifications Pack Code is a unique reference code that identifies a qualifications pack.
Qualifications Pack	Qualifications Pack comprises the set of OS, together with the educational, training and other criteria required to perform a job role. A Qualifications Pack is assigned a unique qualification pack code.
Unit Code	Unit Code is a unique identifier for an Occupational Standard, which is denoted by an 'N'.
Unit Title	Unit Title gives a clear overall statement about what the incumbent should be able to do.
Description	Description gives a short summary of the unit content. This would be helpful to anyone searching on a database to verify that this is the appropriate OS they are looking for.
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.
Organizational Context	Organizational 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.
Technical Knowledge	Technical Knowledge is the specific knowledge needed to accomplish specific designated responsibilities.
Core Skills or 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 OS, these include communication related skills that are applicable to most job roles.

Acronym	Keywords /Terms	Description
	AMF Panel	Auto Main Faliure
	DG Set	Diesel Generator Set
	EB Connection	Electricity Board
	FM Engineer	Field Maitenance Engineer
	MCB	Miniature Circuit Breakesr
	OHS	Organizational, heath and Safety
	PIU	Power Interface Unit
	SHE	Safety, Health and Safety
	SMPS	Switch Mode Power Supply

TEL/N6100 Perform preventive maintenance of Passive Infrastructure equipments at radio locations

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# National Occupational Standard



## Overview

This unit is about carrying out preventive maintenance activities for passive equipments like DG Sets, Battery bank, SMPS to ensure their optimal working

**TEL/N6100 Perform preventive maintenance of Passive Infrastructure equipments at radio locations**

National Occupational Standard	<b>Unit Code</b>	TEL/N6100
	<b>Unit Title (Task)</b>	Perform preventive maintenance of Passive Infrastructure equipments at radio locations
	<b>Description</b>	This unit is about carrying out preventive maintenance activities for passive equipments like DG Sets, Battery bank, SMPS
	<b>Scope</b>	<p>This unit/task covers the following:</p> <ul style="list-style-type: none"> <li>• Ensure adherence to the preventive maintenance schedule</li> <li>• Carry out preventive maintenance of Passive Infrastructure equipments</li> <li>• Reporting and documenting the status at the end of scheduled activity</li> </ul>
	<b>Performance Criteria(PC) w.r.t. the Scope</b>	
	<b>Element</b>	<b>Performance Criteria</b>
	<b>Obtain schedule &amp; notify NOC</b>	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. ensure maintenance of site folder containing site listing, DG and power capacity, equipment types and vendors</p> <p>PC2. obtain the preventive maintenance schedule and the corresponding checklist from the supervisors</p> <p>PC3. suggest changes to the planned maintenance schedule considering site criticality, capacity, and frequency of faults if required.</p> <p>PC4. ensure Network Operating Centre (NOC) is notified prior to undertaking the maintenance activities</p>
	<b>Arrange for tools and spares</b>	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. ensure availability of necessary tools, test equipment and resources to undertake the maintenance</p> <p>PC2. ensure availability of spare hardware equipments and raise request for spares, in case the same are not available as per company's process</p> <p>PC3. ensure that faulty equipments are sent to logistics team for repair and replacement</p>
	<b>Undertake Periodic Maintenance activities</b>	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. ensure review of daily and weekly maintenance activities performed by the infrastructure technicians</p> <p>PC2. ensure completion of standard maintenance activities like checking battery – voltage levels; DG set – oil filter, lubrication; Air conditioner – refill gas, clean evaporator and condenser, other power equipments (including MCBs, power plan)</p> <p>PC3. ensure review of equipment grouting, earthing connections, watering of earthing pit, site matting for insulation, adequacy of wiring</p> <p>PC4. ensure site up-keep – check for leakages, oil/ diesel spillages, condition of cable trays and upkeep of tower (through riggers).</p> <p>PC5. obtain and record readings from PIU panels on input and output voltage and current levels</p> <p>PC6. ensure that for 3<sup>rd</sup> party elements that require maintenance, tickets are raised to the respective vendors by the NOC team if required</p> <p>PC7. ensure timely escalation of emergency incidents like passive equipment failures, fire and power failures</p>

**TEL/N6100 Perform preventive maintenance of Passive Infrastructure equipments at radio locations**

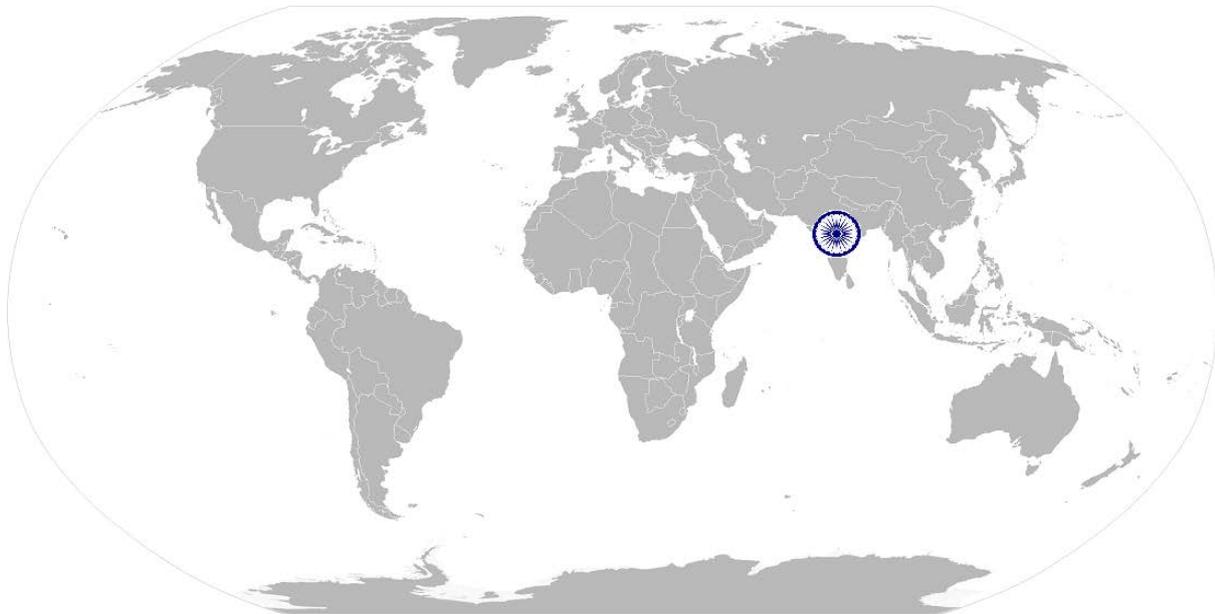
<b>Test effectiveness &amp; close activity</b>	To be competent, the user/individual on the job must be able to: PC1. confirm effectiveness of the maintenance process, by monitoring site's alarm status in co-ordination with the NOC team PC2. ensure completion of administrative jobs like site clearance, return of test equipments
<b>Health and Safety</b>	To be competent, the user/individual on the job must be able to: PC3. ensure compliance with site risk control, OHS, environmental and quality requirements as per company's norms PC4. ensure that work is carried out in accordance to the level of competence and legal requirements PC5. ensure that hazards associated with the workplace that have not been previously controlled, are reported in accordance with appropriate procedures PC6. ensure that Personal protection equipments like harness, waist belt are appropriately used as required PC7. ensure availability of first aid box at site PC8. ensure escalation of safety incidents to relevant authorities as per guidelines
<b>Report &amp; Record</b>	To be competent, the user/individual on the job must be able to: PC1. ensure all relevant parties (including FM engineer, NOC team, supervisors) are notified of the results of the maintenance result and obtain the sign-off from relevant personnel PC2. ensure that documents that are required to be updated are identified PC3. ensure completion of routine maintenance logs, activity logs and spare tracker within stipulated timelines PC4. ensure that documents are available to all appropriate authorities to inspect
<b>Knowledge and Understanding (K)</b>	
<b>A. Organizational Context</b> (Knowledge of the company / organization and its processes)	The User/Individual on the job needs to know and Understand: KA1. risk and impact of not following defined procedures/work instructions KA2. escalation matrix for reporting identified incidents, troubles and/ or emergencies e.g. system failures ,fire and power failures KA3. types of documentation in organization and importance of the same KA4. records to be maintained and implications of non-maintenance of the same KA5. process for obtaining sign-off post completion of the maintenance activities KA6. knowledge of spare management and repair & return process for faulty equipments KA7. SHE and OHS guidelines and regulations as per company's norms KA8. protection equipments (harness, belts, helmet, insulation gloves) that are required to be used KA9. first aid requirements in case of electrical shocks, cuts, fall from height and other common injuries KA10. electrical and chemical related hazards and precautionary measures KA11. usage of safety kit for climbing towers KA12. usage of fire safety equipments

**TEL/N6100 Perform preventive maintenance of Passive Infrastructure equipments at radio locations**

<b>B. Technical Knowledge</b>	<p>The user/individual on the job needs to know and understand:</p> <p>SB1. functionality of Passive infrastructure equipments like DG set, PIU panel, Transformer, SMPS, Air Conditioner, Battery bank</p> <p>SB2. need and requirement of earthing the equipments</p> <p>SB3. mechanism to maintain the earthing pit to absolute zero</p> <p>SB4. functionality of tools like pliers, power drill, screwdrivers, spanner</p> <p>SB5. knowledge of using and deploying cable connectors, cable ties, cable tray</p> <p>SB6. electrical wiring requirements at site and their labeling/ color coding</p> <p>SB7. site power requirements based on equipment rating</p> <p>SB8. power capacities of DG set, battery bank and SMPS based on their models</p> <p>SB9. phase and level of power received from the electrical board</p> <p>SB10. standard preventive maintenance activities that need to be carried out</p> <p>SB11. standard fault-finding (troubleshooting) techniques</p>
<b>Skills (S)</b>	
<b>A. Core Skills/ Generic Skills</b>	<b>Communication Skills</b>
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA1. liaise and coordinate with third party vendors</p> <p>SA2. communicate with supervisor</p> <p>SA3. communicate in the local language</p>
	<b>Project Management Skills</b>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SA4. prioritize and execute tasks in a high-pressure environment</p> <p>SA5. multi-task by handling multiple tasks and completing them successfully within due Timeline</p> <p>SA6. use and maintain resources efficiently and effectively</p> <p>SA7. be flexible and accept changes in job requirements, schedules, or work environments</p>
	<b>Analytical Skills</b>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SA8. interpret reports, readings and numerical data</p> <p>SA9. source technical information by researching manufacturer's technical documentation</p>
<b>Other Skills</b>	
<p>The user/individual on the job needs to know and understand how to:</p> <p>SA10. create and maintain effective working relationships and team environment</p> <p>SA11. take initiatives and progressively assume increased responsibilities</p> <p>SA12. share knowledge with other team members and colleagues</p> <p>SA13. effectively resolve disputes and manage disagreements</p>	

**TEL/N6100 Perform preventive maintenance of Passive Infrastructure equipments at radio locations**

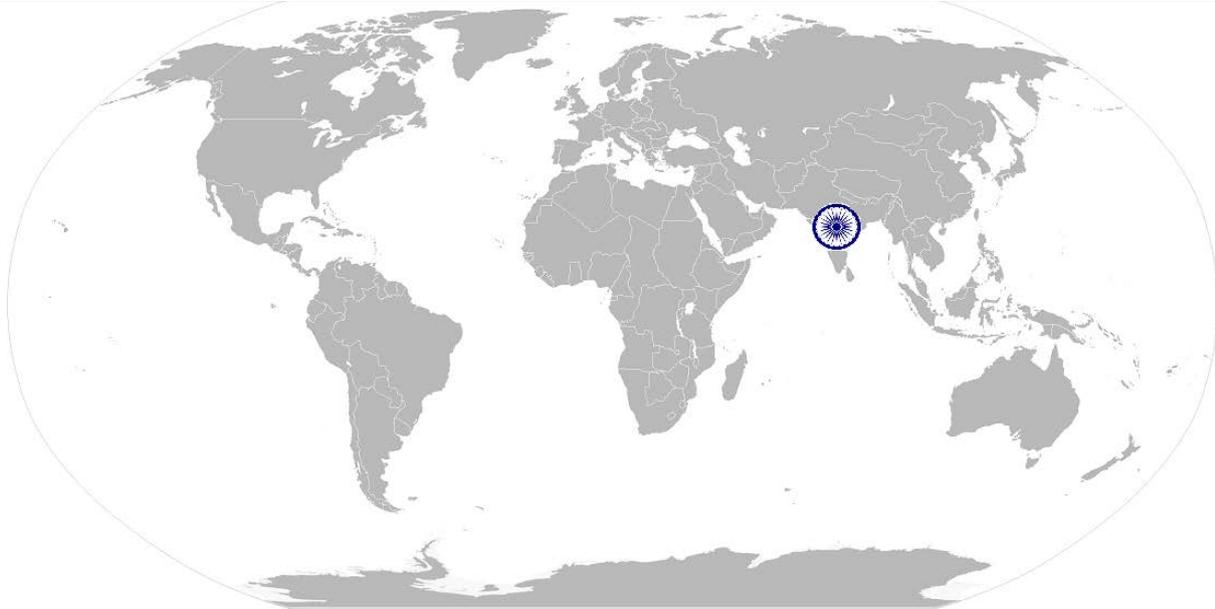
B. Professional Skills	Equipment Operating Skills
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB1. operate passive infrastructure equipments like DG set, PIU panel, Earthing systems, Transformer, SMPS, Air Conditioner, Battery</p> <p>SB2. utilize measurement tools like multi-meter and thermometer to measure voltage levels of battery and site temperatures appropriately</p> <p>SB3. handle and operate tools like pliers, power drill, screwdrivers, sockets, spanner</p> <p>SB4. use appropriate personal protective gear while carrying out activities at sites</p> <p>SB5. utilize connectors, cable ties, cable trays for effective and safe wiring</p>



**TEL/N6100 Perform preventive maintenance of Passive Infrastructure equipments at radio locations**

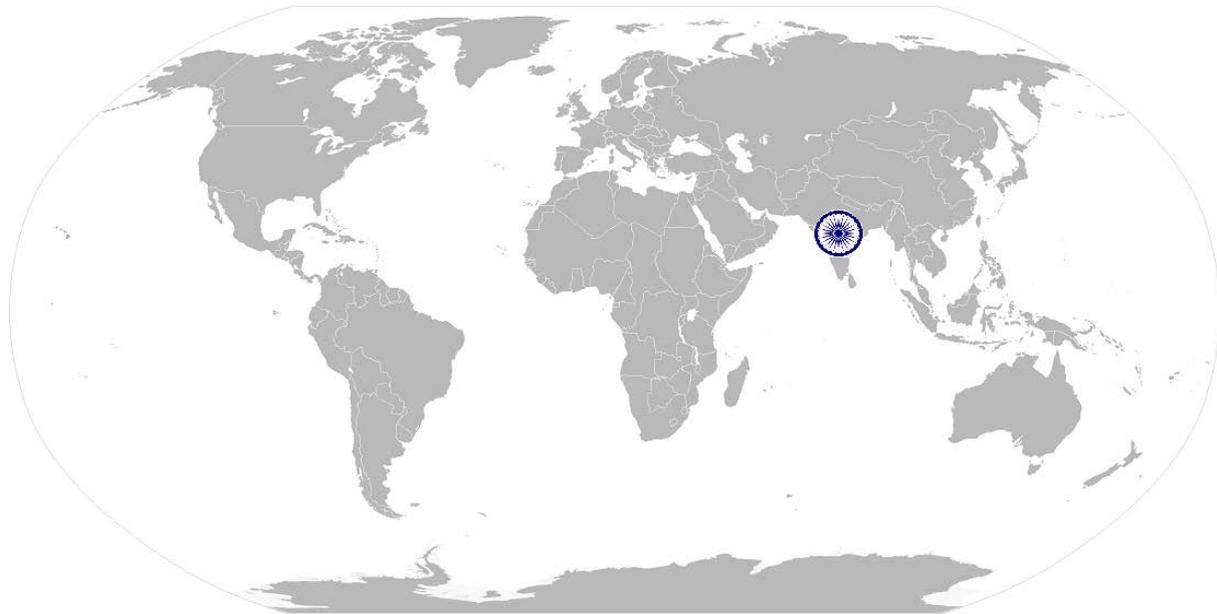
**NOS Version Control**

NOS Code	TEL /N6100		
Credits (NSQF)	5	Version number	1.0
Industry	Telecom	Drafted on	26/04/2013
Industry Sub-sector	Network Managed Services	Last reviewed on	26/05/2017
Occupation	Operations & Maintenance- Passive Infrastructure	Next review date	26/12/20



TEL/N6101 Perform corrective maintenance/ fault management of Passive Infrastructure at radio locations

# National Occupational Standard



## Overview

This unit is about carrying out fault management activities for Passive Infrastructure at BSS locations to ensure their optimal working.

**TEL/N6101 Perform corrective maintenance/ fault management of Passive Infrastructure at radio locations**

National Occupational Standard	<b>Unit Code</b>	TEL/N6101
	<b>Unit Title (Task)</b>	Perform corrective maintenance/ fault management of Passive Infrastructure at radio locations
	<b>Description</b>	This unit is about carrying out fault management activities for Passive infrastructure at BSS locations
	<b>Scope</b>	This unit/task covers the following: <ul style="list-style-type: none"> <li>• Ensure timely response to the network alarms/ trouble tickets</li> <li>• Rectify fault condition in co-ordination with other 3rd party vendors and escalate in case additional support is required</li> <li>• Reporting and documenting the status of the activity</li> </ul>
	<b>Performance Criteria(PC) w.r.t. the Scope</b>	
	<b>Element</b>	<b>Performance Criteria</b>
	<b>Respond to Network Alarm</b>	To be competent, the user/individual on the job must be able to: PC1. determine alarm severity, SLAs and affected network elements PC2. provide information to and seek advice from other relevant parties in identifying the problem and cause of the alarm condition PC3. prioritize actioning on alarms based on fault's service impact analysis
	<b>Arrange for Tools and Spares</b>	To be competent, the user/individual on the job must be able to: PC1. ensure availability of necessary tools, test equipment and resources to undertake the maintenance PC2. ensure availability of spare hardware equipments and raise request for spares, in case the same are not available as per company's process PC3. ensure that faulty equipments are sent to logistics team for repair and replacement
	<b>Identify and Rectify Faults</b>	To be competent, the user/individual on the job must be able to: PC1. carry out initial diagnostic tests to identify the root cause of the alarm within defined SLAs PC2. determine the options to rectify the fault and confirm with supervisors if required PC3. ensure that faults pertaining to AMF panel, alarm panel, MCBs, battery bank, SMPS, DG set are rectified appropriately PC4. escalate unresolved faults/ instances of delays in resolution as per Company's policy PC5. ensure timely completion of work by monitoring activities performed by the riggers and other technicians PC6. comply with site risk control, OHS, environmental and quality requirements as per company's norms
	<b>Test Effectively and Close Activity</b>	To be competent, the user/individual on the job must be able to: PC1. confirm effectiveness of the maintenance process by monitoring site's alarm status in co-ordination with the NOC team PC2. ensure completion of administrative jobs like site clearance, return of test equipments

**TEL/N6101 Perform corrective maintenance/ fault management of Passive Infrastructure at radio locations**

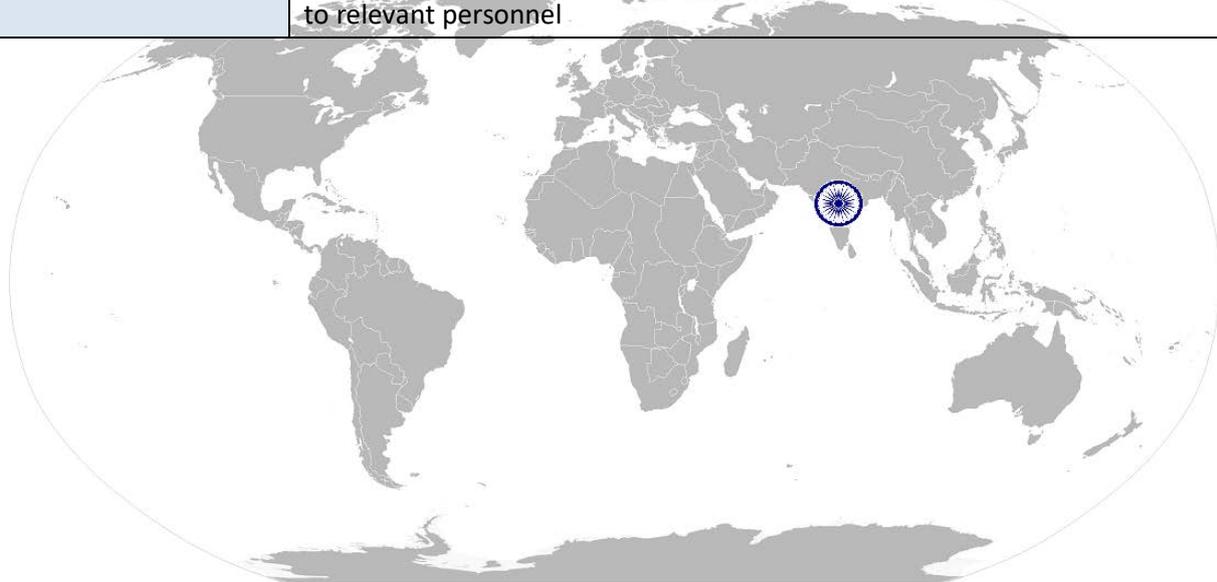
<b>Health and Safety</b>	To be competent, the user/individual on the job must be able to: PC5. ensure compliance with site risk control, OHS, environmental and quality requirements as per company's norms PC6. ensure that work is carried out in accordance to the level of competence and legal requirements PC7. ensure that hazards associated with the workplace that have not been previously controlled, are reported in accordance with appropriate procedures PC8. ensure that Personal protection equipments like harness, waist belt are appropriately used as required PC9. ensure availability of first aid box at site PC10. ensure escalation of safety incidents to relevant authorities as per guidelines
<b>Reports and Record</b>	To be competent, the user/individual on the job must be able to: PC1. ensure all relevant parties (including FM engineer, NOC team, supervisors) are notified of the results of the maintenance result and obtain the sign-off from relevant personnel PC2. ensure that correct documents that are required to be updated are identified PC3. ensure completion of routine maintenance logs, activity logs and spare tracker within stipulated timelines PC4. ensure that documents are available to all appropriate authorities to inspect
<b>Knowledge and Understanding (K)</b>	
<b>A. Organizational Context</b> (Knowledge of the company / organization and its processes)	The user/individual on the job needs to know and understand: KA1. risk and impact of not following defined procedures/work instructions KA2. escalation matrix for reporting identified incidents, troubles and/ or emergencies e.g. system failures ,fire and power failures KA3. types of documentation in organization and importance of the same KA4. records to be maintained and implications of non-maintenance of the same KA5. process for obtaining sign-off post completion of the maintenance activities KA6. knowledge of spare management and repair & return process for faulty equipments KA7. SHE and OHS guidelines and regulations as per company's norms KA8. protection equipments (harness, belts, helmet, insulation gloves) that are required to be used KA9. first aid requirements in case of electrical shocks, cuts, fall from height and other common injuries KA10. electrical and chemical related hazards and precautionary measures KA11. usage of safety kit for climbing towers KA12. usage of fire safety equipments
<b>B. Technical Knowledge</b>	The user/individual on the job needs to know and understand: SB1. functionality of Passive infrastructure equipments like DG set, PIU panel, Transformer, SMPS, Air Conditioner, Battery bank SB2. need and requirement of earthing the equipments SB3. mechanism to maintain the earthing pit to absolute zero SB4. functionality of tools like pliers, power drill, screwdrivers, spanner SB5. knowledge of using and deploying cable connectors, cable ties, cable tray SB6. electrical wiring requirements at site and their labeling/ color coding SB7. site power requirements based on equipment rating SB8. power capacities of DG set, battery bank and SMPS based on their models SB9. phase and level of power received from the electrical board

**TEL/N6101 Perform corrective maintenance/ fault management of Passive Infrastructure at radio locations**

	<p>SB10. standard fault-finding (troubleshooting) techniques</p> <p>SB11. alarm types, indicators and resolution SLAs/ timelines</p> <p>SB12. implications for non response to tickets within defined SLAs</p>
<b>Skills (S)</b>	
<b>A. Core Skills/ Generic Skills</b>	<b>Communication Skills</b>
	The user/ individual on the job needs to know and understand how to: SA1. liaise and coordinate with third party vendors SA2. communicate with supervisor SA3. communicate in the local language
	The user/individual on the job needs to know and understand how to: SA4. prioritize and execute tasks in a high-pressure environment SA5. multi-task by handling multiple tasks and completing them successfully within due timelines SA6. use and maintain resources efficiently and effectively SA7. be flexible and accept changes in job requirements, schedules, or work environments
	The user/individual on the job needs to know and understand how to: SA8. interpret reports, readings and numerical data SA9. source technical information by researching manufacturer's technical documentation
The user/individual on the job needs to know and understand how to: SA10. create and maintain effective working relationships and team environment SA11. take initiatives and progressively assume increased responsibilities SA12. share knowledge with other team members and colleagues SA14. effectively resolve disputes and manage disagreements	

**TEL/N6101 Perform corrective maintenance/ fault management of Passive Infrastructure at radio locations**

<b>B. Professional Skills</b>	<b>Equipment Operating Skills</b>
	The user/individual on the job needs to know and understand how to: SB1. operate passive infrastructure equipments like DG set, PIU panel, Earthing systems, Transformer, SMPS, Air Conditioner, Battery SB2. utilize measurement tools like multi-meter and thermometer to measure voltage levels of battery and site temperatures appropriately SB3. handle and operate tools like pliers, power drill, screwdrivers, sockets, soldering iron, spanner SB4. use appropriate personal protective gear while carrying out activities at sites SB5. utilize connectors, cable ties, cable trays for effective and safe wiring
	<b>Problem Solving Skills</b>
	The user/individual on the job needs to know and understand how to: SB6. analyze service impact to prioritize actioning on alarms SB7. troubleshoot common passive equipment related problems SB8. utilize appropriate tools and mechanisms to rectify the faults SB9. utilize appropriate communication channels to escalate unresolved problems to relevant personnel



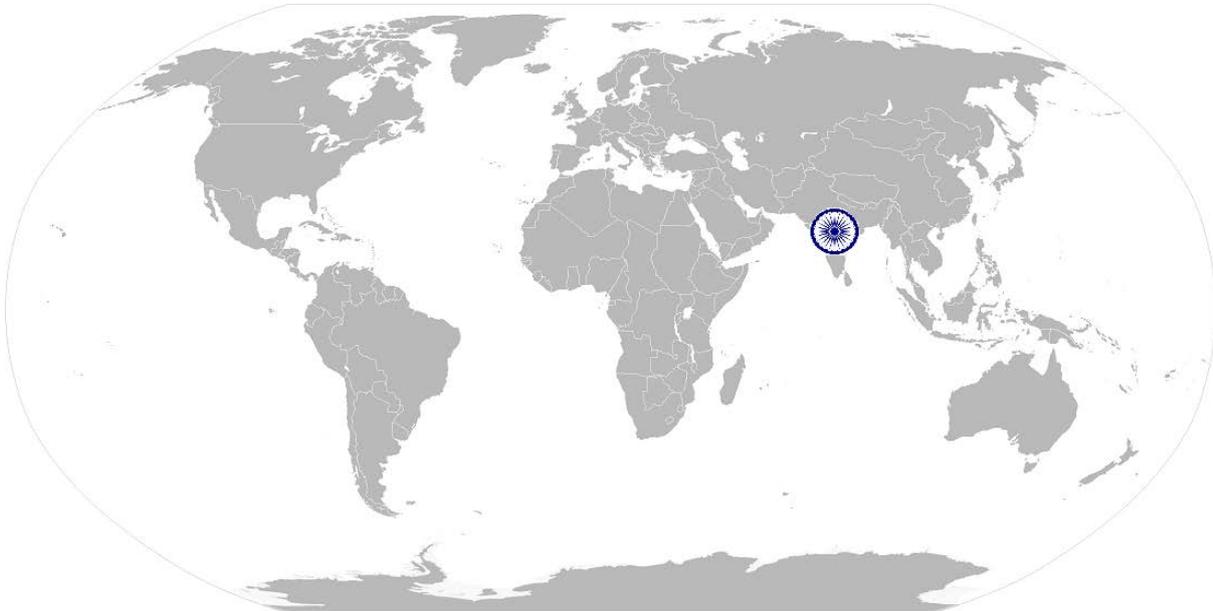
**TEL/N6101 Perform corrective maintenance/ fault management of Passive Infrastructure at radio locations**

**NOS Version Control**

<b>NOS Code</b>	<b>TEL /N6101</b>		
<b>Credits (NSQF)</b>	<b>5</b>	<b>Version number</b>	<b>1.0</b>
<b>Industry</b>	<b>Telecom</b>	<b>Drafted on</b>	<b>26/04/2013</b>
<b>Industry Sub-sector</b>	<b>Network Managed Services</b>	<b>Last reviewed on</b>	<b>26/05/2017</b>
<b>Occupation</b>	<b>Operations &amp; Maintenance- Passive Infrastructure</b>	<b>Next review date</b>	<b>26/12/2020</b>



# National Occupational Standard



## Overview

This unit is about carrying out upgrade activities for passive infrastructure at Radio locations (enhanced capacity DG set, battery banks, Air conditioner, power plant).

**TEL/N6102**

**Undertake upgradation of Passive infrastructure at radio locations**

National Occupational Standard	<b>Unit Code</b>	TEL/N6102
	<b>Unit Title (Task)</b>	Undertake upgradation of Passive infrastructure at radio locations
	<b>Description</b>	This unit is about carrying out upgrade activities for passive infrastructure at Radio locations (enhanced capacity DG set, battery banks, Air conditioner, power plant )
	<b>Scope</b>	This unit/task covers the following: <ul style="list-style-type: none"> <li>• Ensure timely response to the change request/ work orders</li> <li>• Test effectiveness of change</li> <li>• Reporting and documenting the status</li> </ul>
	<b>Performance Criteria(PC) w.r.t. the Scope</b>	
	<b>Element</b>	<b>Performance Criteria</b>
	<b>Determine Change Requirement</b>	To be competent, the user/individual on the job must be able to: <ul style="list-style-type: none"> <li>PC1. receive change requests from the relevant teams (project team/ supervisors)</li> <li>PC2. identify activity type to be performed – hardware upgrade, change of PIU, panels</li> <li>PC3. identify criticality, and timelines for carrying out the changes</li> <li>PC4. develop work plan and identify dependencies, if any</li> <li>PC5. assess the potential impact of the proposed activity and plan for possible outage condition or deferral of the activity</li> <li>PC6. ensure that Network Operating Centre (NOC) is notified prior to undertaking the change activities.</li> </ul>
	<b>Coordinate implementation of Upgrade Activities</b>	To be competent, the user/individual on the job must be able to: <ul style="list-style-type: none"> <li>PC1. ensure coordination with the vendors/ technicians/ riggers to ensure that changes are carried as per the change request</li> <li>PC2. ensure change is realized without disruption to the network</li> <li>PC3. ensure continuous monitoring and implement contingency plan in case of service disruption</li> <li>PC4. in case of power capacity upgradation, ensure de-commissioned equipments are returned to the warehouse</li> <li>PC5. ensure compliance with the defined SLA for carrying out changes</li> </ul>
	<b>Test effectiveness and close activity</b>	To be competent, the user/individual on the job must be able to: <ul style="list-style-type: none"> <li>PC1. confirm effectiveness of the maintenance process, by monitoring site's alarm status in co-ordination with the NOC team</li> <li>PC2. ensure completion of administrative jobs like site clearance, return of test equipments</li> </ul>
	<b>Health &amp; Safety</b>	To be competent, the user/individual on the job must be able to: <ul style="list-style-type: none"> <li>PC1. ensure compliance with site risk control, OHS, environmental and quality requirements as per company's norms</li> <li>PC2. ensure that work is carried out in accordance to the level of competence and legal requirements</li> <li>PC3. ensure that hazards associated with the workplace that have not been previously controlled, are reported in accordance with appropriate procedures</li> <li>PC4. ensure that Personal protection equipments like harness, waist belt are appropriately used as required</li> </ul>

**TEL/N6102**

**Undertake upgradation of Passive infrastructure at radio locations**

	<p>PC5. ensure availability of first aid box at site</p> <p>PC6. ensure escalation of safety incidents to relevant authorities as per guidelines</p>
<b>Report and record</b>	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. ensure all relevant parties (including BSS/ BTS support engineer, NOC team, other supervisors) are notified of the results of the change management activities and sign-off is obtained from relevant personnel</p> <p>PC2. ensure that documents that are required to be updated are identified</p> <p>PC3. ensure completion of routine maintenance logs, activity logs and spare tracker within stipulated timelines</p> <p>PC4. ensure that documents are available to all appropriate authorities to inspect</p>
<b>Knowledge and Understanding (K)</b>	
<b>A. Organizational Context</b> (Knowledge of the company / organization and its processes)	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. risk and impact of not following defined procedures/work instructions</p> <p>KA2. escalation matrix for reporting identified incidents, troubles and/ or emergencies e.g. system failures ,fire and power failures</p> <p>KA3. types of documentation in organization and importance of the same</p> <p>KA4. records to be maintained and implications of non-maintenance of the same</p> <p>KA5. process for obtaining sign-off post completion of the maintenance activities</p> <p>KA6. knowledge of spare management and repair &amp; return process for faulty equipments</p> <p>KA7. SHE and OHS guidelines and regulations as per company’s norms</p> <p>KA8. protection equipments (harness, belts, helmet, insulation gloves) that are required to be used</p> <p>KA9. first aid requirements in case of electrical shocks, cuts, fall from height and other common injuries</p> <p>KA10. electrical and chemical related hazards and precautionary measures</p> <p>KA11. usage of safety kit for climbing towers</p> <p>KA12. usage of fire safety equipments</p>
<b>B. Technical Knowledge</b>	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. functionality of Passive infrastructure equipments like DG set, PIU panel, Transformer, SMPS, Air Conditioner, Battery bank</p> <p>KB2. need and requirement of earthing the equipments</p> <p>KB3. mechanism to maintain the earthing pit to absolute zero</p> <p>KB4. functionality of tools like pliers, power drill, screwdrivers, spanner</p> <p>KB5. knowledge of using and deploying cable connectors, cable ties, cable tray</p> <p>KB6. electrical wiring requirements at site and their labeling/ color coding</p> <p>KB7. site power requirements based on equipment rating</p> <p>KB8. power capacities of DG set, battery bank and SMPS based on their models</p> <p>KB9. phase and level of power received from the electrical board</p>
<b>Skills (S)</b>	
<b>A. Core/Generic skills</b>	<b>Communication Skills</b>
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA1. liaise and coordinate with third party vendors</p> <p>SA2. communicate with supervisor</p> <p>SA3. communicate in the local language</p>
	<b>Project Management Skills</b>

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**Undertake upgradation of Passive infrastructure at radio locations**

	<p>The user/individual on the job needs to know and understand how to:</p> <p>SA4. prioritize and execute tasks in a high-pressure environment SA5. multi-task by handling multiple tasks and completing them successfully within due timelines SA6. use and maintain resources efficiently and effectively SA7. be flexible and accept changes in job requirements, schedules, or work environments</p> <p><b>Analytical Skills</b></p> <p>The user/individual on the job needs to know and understand how to:</p> <p>SA8. intercept reports, reading and numerical data. SA9. source technical information by researching manufacturer's technical document</p> <p><b>Other Skills</b></p> <p>The user/individual on the job needs to know and understand how to:</p> <p>SB10. Create and maintain effective working relationship and team environment SA11. take initiatives and progressively assume increased responsibilities SA12. share knowledge with other team members and colleagues SA13. effectively resolve disputes and manage disagreements</p>
<p><b>B. Professional Skills</b></p>	<p><b>Equipment Operating Skills</b></p> <p>The user/individual on the job needs to know and understand how to:</p> <p>SB1. operate passive infrastructure equipments like DG set, PIU panel, Earthing systems, Transformer, SMPS, Air Conditioner, Battery SB2. utilize measurement tools like multi-meter and thermometer to measure voltage levels of battery and site temperatures appropriately SB3. handle and operate tools like pliers, power drill, screwdrivers, sockets, soldering iron, spanner SB4. use appropriate personal protective gear while carrying out activities at sites SB5. utilize connectors, cable ties, cable trays for effective and safe wiring</p>

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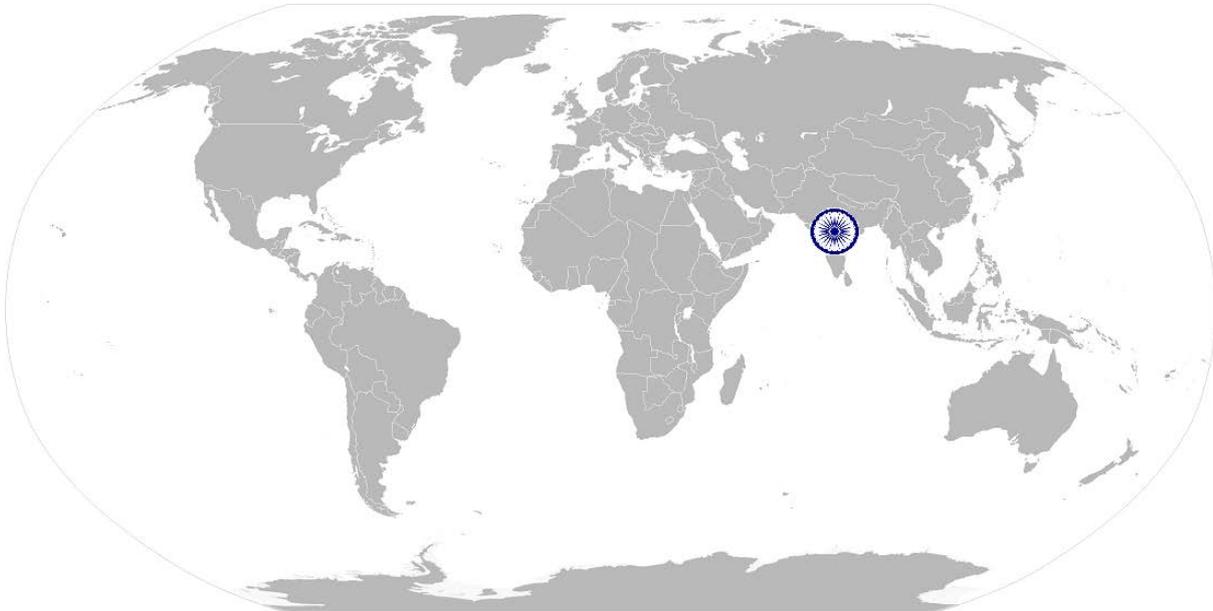
Undertake upgradation of Passive infrastructure at radio locations

## NOS Version Control

NOS Code	TEL /N6102		
Credits (NSQF)	5	Version number	1.0
Industry	Telecom	Drafted on	26/04/2013
Industry Sub-sector	Network Managed Services	Last reviewed on	26/05/2017
Occupation	Operations & Maintenance- Passive Infrastructure	Next review date	26/12/2020



# National Occupational Standard



## Overview

This unit is about carrying out operational activities at site like ensuring timely diesel filling, obtaining clearances for site, validating accuracy of invoices and ensuring timely payments.

TEL/N6103

Undertake other operational activities at radio sites

National Occupational Standard

<b>Unit Code</b>	<b>TEL/N6103</b>
<b>Unit Title (Task)</b>	<b>Undertake other operational activities at radio sites</b>
<b>Description</b>	This unit is about carrying out operational activities at site like ensuring timely diesel filling, obtaining clearances for site, validating accuracy of invoices and ensuring timely payments.
<b>Scope</b>	<p>This unit/task covers the following:</p> <ul style="list-style-type: none"> <li>• Ensure timely filling of diesel at sites</li> <li>• Ensure availability of site clearance certificates</li> <li>• Managing access to the sites</li> <li>• Validate accuracy of bills and timely payments</li> </ul>
<b>Performance Criteria(PC) w.r.t. the Scope</b>	
<b>Element</b>	<b>Performance Criteria</b>
<b>Undertake site operations activity</b>	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. ensure diesel fillers are deployed at sites to fill diesel in D. G. Sets as per required frequency of diesel filling</p> <p>PC2. ensure diesel filling activity is monitored closely</p> <p>PC3. monitor site wise diesel usage to avoid diesel pilferage and/ or excess usage by equipments</p> <p>PC4. ensure details of diesel filling activity like date and amount of diesel filled are recorded as per company's norms in the required format</p>
<b>Site clearance from authorized personnel</b>	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. obtain list of site clearances that are required to be obtained and the expiry dates of any certificate already obtained</p> <p>PC2. ensure certificates are renewed/ obtained from relevant authorities within the due date</p>
<b>Site key management</b>	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. ensure site key management and provide access to the FM engineers and other vendors (post availability of relevant permissions)</p>
<b>Validate accuracy of bills and ensure timely payments</b>	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. obtain site wise EB, Diesel and Rent details received from the vendors (invoices/ as per contract) from the supervisors/ finance team</p> <p>PC2. ratify the details in the invoice based on site availability, EB and Diesel usage</p> <p>PC3. suggest to appropriate personnel in case of any discrepancies, else confirm accuracy of invoices</p> <p>PC4. ensure in coordination with the finance team that bills are paid on timely basis to avoid late payment charges</p>
<b>Health and Safety</b>	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. ensure compliance with site risk control, OHS, environmental and quality requirements as per company's norms</p> <p>PC2. ensure that work is carried out in accordance to the level of competence and legal requirements</p> <p>PC3. ensure that hazards associated with the workplace that have not been</p>

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**Undertake other operational activities at radio sites**

	<p>previously controlled, are reported in accordance with appropriate procedures</p> <p>PC4. ensure that Personal protection equipments like harness, waist belt are appropriately used as required</p> <p>PC5. ensure availability of first aid box at site</p> <p>PC6. ensure escalation of safety incidents to relevant authorities as per guidelines</p>
<b>Knowledge and Understanding (K)</b>	
<p><b>C. Organizational Context</b> (Knowledge of the company / organization and its processes)</p>	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. risk and impact of not following defined procedures/work instructions</p> <p>KA2. escalation matrix for reporting identified incidents, troubles and/ or emergencies e.g. system failures ,fire and power failures</p> <p>KA3. types of documentation in organization and importance of the same</p> <p>KA4. records to be maintained and implications of non-maintenance of the same</p> <p>KA5. process for obtaining sign-off post completion of the maintenance activities</p> <p>KA6. process for approving access to the sites</p> <p>KA7. SHE and OHS guidelines and regulations as per company’s norms</p> <p>KA8. protection equipments (harness, belts, helmet, insulation gloves) that are required to be used</p> <p>KA9. first aid requirements in case of electrical shocks, cuts, fall from height and other common injuries</p> <p>KA10. electrical and chemical related hazards and precautionary measures</p> <p>KA11. usage of fire safety equipments</p>
<p><b>B. Technical Knowledge</b> (To accomplish specific designated responsibilities)</p>	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. passive infrastructure equipments like DG set, PIU panel, Earthing systems, Transformer, SMPS, Air Conditioner, Battery</p> <p>KB2. site power requirements based on equipment rating</p> <p>KB3. power capacities of DG set, battery bank and SMPS based on their models</p> <p>KB4. phase and level of power received from the electrical board</p> <p>KB5. risk and impact of non availability of EB connection</p> <p>KB6. list of certifications applicable for sites and process of obtaining certificates from the concerned authorities</p> <p>KB7. calculation of diesel and EB bill amounts based on site usage – to ratify vendor invoices</p> <p>KB8. risk and impact of delayed payment of bills</p> <p>KB9. performance of site wise diesel usage analysis to detect cases of diesel pilferage</p>
<b>Skills (S) [Optional]</b>	
<p><b>A. Core/Generic skills</b></p>	<p style="text-align: center;"><b>Communication Skills</b></p> <p>The user/ individual on the job needs to know and understand how to:</p> <p>SA1. liaise and coordinate with third party vendors</p> <p>SA2. communicate with supervisor</p> <p>SA3. communicate in the local language</p>
	<p style="text-align: center;"><b>Project Management Skills</b></p> <p>The user/individual on the job needs to know and understand how to:</p> <p>SA4. prioritize and execute tasks in a high-pressure environment</p> <p>SA5. multi-task by handling multiple tasks and completing them successfully within due timelines</p> <p>SA6. use and maintain resources efficiently and effectively</p> <p>SA7. be flexible and accept changes in job requirements, schedules, or work</p>

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**Undertake other operational activities at radio sites**

	environments
	<b>Analytical Skills</b>
	The user/individual on the job needs to know and understand how to: SA8. interpret reports, readings and numerical data SA9. source technical information by researching manufacturer's technical documentation
	<b>Other Skills</b>
	The user/individual on the job needs to know and understand how to: SA10. create and maintain effective working relationships and team environment SA11. take initiatives and progressively assume increased responsibilities SA12. share knowledge with other team members and colleagues SA13. effectively resolve disputes and manage disagreements
<b>D. Professional Skills</b>	<b>Mathematical Skills</b>
	The user/individual on the job needs to know and understand how to: SB1. calculate diesel and EB bill amounts based on site usage – to ratify vendor invoices SB2. perform calculations and ratify vendor invoices based of EB and diesel usage at sites SB3. detect cases of diesel pilferage, by analyzing monthly site wise diesel usage



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Undertake other operational activities at radio sites

## NOS Version Control

NOS Code	TEL /N6103		
Credits (NSQF)	5	Version number	1.0
Industry	Telecom	Drafted on	26/04/2013
Industry Sub-sector	Network Managed Services	Last reviewed on	26/05/2017
Occupation	Operations & Maintenance- Passive Infrastructure	Next review date	26/12/2020



**TEL/Q6100**

**Qualification Pack for Infrastructure Engineer**

**Criteria for Assessment of Trainee**

**Job Role** : Infra Engineer  
**Qualification Pack** : TEL/Q6100  
**Sector Skill Council** : Telecom

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 70% 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

Assessable Outcomes	Assessment Criteria	Total Mark (400)	Out Of	Theory	Skills Practical
1. TEL/N6100 ( Perform preventive maintenance of PassiveInfrastructure equipments at radio locations) Obtain Schedule and notify NOC	PC1. ensure maintenance of site folder containing site listing, DG and power capacity,equipment types and vendors	100	5	5	0
	PC2. obtain the preventive maintenance schedule and the corresponding checklist from the supervisors		5	5	0
	PC3. suggest changes to the planned maintenance schedule considering criticality,capacity and frequency of faults if required		5	5	0
	PC4. ensure Network Operating Centre (NOC) is notified prior to undertaking the maintenance activities		5	5	0
Arrange for Tools and Spares	PC1. ensure availability of necessary tools, test equipment and resources to undertake the maintenance		5	5	0
	PC2. ensure availability of spare hardware equipments and raise request for spares,in case the same is not available as per company process		5	5	0
	PC3. ensure that faulty equipments are sent to logistics team for repair and replacement		5	0	5
Undertake periodic Maintenance Activity	PC1. ensure review of daily and weekly maintenance activities performed by the infrastructure technician		5	0	5
	PC2. ensure completion of standard maintenance activities like checking battery – voltage levels;DG set-oil filter,lubrication;Air Conditioners-refill gas,clean evaporator and condenser,other power equipments (including MCBs,power plan)		5	0	5
	PC3. ensure review of equipment grouting, earthing connections, watering of earthing pit,site matting for insulation, adequacy of wiring		3	0	3
	PC4. ensure site up-keep – check for leakages, oil/ diesel spillages, condition of cable trays and upkeep of tower (through riggers).		3	0	3
	PC5. obtain and record readings from PIU panels on input and output voltage and current levels		3	0	3
	PC6. ensure that for 3rd party elements that require maintenance, tickets are raised to the respective vendors by the NOC team if required	3	0	3	

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	PC7. ensure timely escalation of emergency incidents like passive equipment failures, fire and power failures		3	0	3
Test effectiveness & close activity	PC1. confirm effectiveness of the maintenance process, by monitoring site's alarm status in co-ordination with the NOC team		5	5	0
	PC2. ensure completion of administrative jobs like site clearance, return of test equipments		5	5	0
Health and Safety	PC3. ensure compliance with site risk control, OHS, environmental and quality requirements as per company norms		5	5	0
	PC4. ensure that work is carried out in accordance to the level of competence and legal requirements		3	3	0
	PC5. ensure that hazards associated with the workplace that have not been previously controlled are reported in accordance with appropriate procedures		3	3	0
	PC6. ensure that Personal protection equipments like harness, waist belt are appropriately used as required		3	0	3
	PC7. ensure availability of first aid box at site		3	0	3
	PC8. ensure escalation of safety incidents to relevant authorities as per guidelines		3	3	0
Respond to Network alarm	PC1. ensure all relevant parties (including FM engineer, NOC team, supervisors) are notified of the result of maintenance result and obtain the sign off from the relevant personnel		3	3	0
	PC2. ensure that documents that are required to be updated are identified		2	2	0
	PC3. ensure completion of routine maintenance logs, activity logs and spare tracker within stipulated timelines		3	3	0
	PC4. ensure that documents are available to all appropriate authorities to inspect		2	2	0
				64	36
2. TEL/N6101 (Perform corrective maintenance/ fault management of Passive Infrastructure at radiolocations ) Respond to network alarm	PC1. determine alarm severity, SLAs and affected network elements		5	5	0
	PC2. provide information to and seek advice from other relevant parties in identifying the problem and cause of the alarm condition		5	5	0
	PC3. prioritize actioning on alarms based on fault's service impact analysis		10	5	5
Arrange for tools and spares	PC1. ensure availability of necessary tools, test equipment and resources to undertake the maintenance		5	5	0
	PC2. ensure availability of spare hardware equipments and raise request for spares, in case the		5	5	0
		100			

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	same are not available as per company's process				
	PC3. ensure that faulty equipments are sent to logistics team for repair and replacement		5	5	0
Identify and rectify faults	PC1. carry out initial diagnostic tests to identify the root cause of the alarm within defined SLAs		10	0	10
	PC2. determine the options to rectify the fault and confirm with supervisors if required		5	0	5
	PC3. ensure that faults pertaining to AMF panel, alarm panel, MCBs, battery bank,		5	0	5
	PC4. escalate unresolved faults/ instances of delays in resolution as per Company's policy		5	0	5
	PC5. ensure timely completion of work by monitoring activities performed by the riggers and other technicians.		5	0	5
	PC6. comply with site risk control, OHS, environmental and quality requirements as per company norms		5	0	5
Test effectiveness & close activity	PC1. confirm effectiveness of the maintenance process by monitoring site's alarm status in co-ordination with the NOC team		2	2	0
	PC2. ensure completion of administrative jobs like site clearance, return of test equipments		3	3	0
Health and Safety	PC5. ensure compliance with site risk control, OHS, environmental and quality requirements as per company's norms		3	3	0
	PC6. ensure that work is carried out in accordance to the level of competence and legal requirements		3	3	0
	PC7. ensure that hazards associated with the workplace that have not been previously controlled, are reported in accordance with appropriate procedures		2	2	0
	PC8. ensure that Personal protection equipments like harness, waist belt are appropriately used as required		2	2	0
	PC9. ensure availability of first aid box at site		3	0	3
	PC10. ensure escalation of safety incidents to relevant authorities as per guidelines		2	2	0
Report and Record	PC1. ensure all relevant parties (including FM engineer, NOC team, supervisors) are notified of the result of maintenance result and obtain the sign off from the relevant personnel		3	3	0
	PC2. ensure that correct documents that are required to be updated are identified		2	2	0
	PC3. ensure completion of routine maintenance logs, activity logs and spare tracker within stipulated timelines		3	3	0
	PC4. ensure that documents are available to all appropriate authorities to inspect		2	2	0
				57	43
3. TEL/N6102 (Undertake	PC1. receive change requests from the relevant teams (project team/ supervisors)		5	5	0

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upgradation of Passive Infrastructure at radio Locations) Determine Change Requirement	PC2. identify activity type to be performed – hardware upgrade, change of PIU, panels	100	5	5	0
	PC3. identify criticality, and timelines for carrying out the changes		5	5	0
	PC4. develop work plan and identify dependencies, if any		5	5	0
	PC5. assess the potential impact of the proposed activity and plan for possible outage condition or deferral of the activity		5	5	0
	PC6. ensure that Network Operating Centre (NOC) is notified prior to undertaking the change activities		5	5	0
Co-ordinate implementation of upgrade activities	PC1. ensure coordination with the vendors/ technicians/ riggers to ensure that changes are carried as per the change request	100	5	0	5
	PC2. ensure change is realized without disruption to the network		3	3	0
	PC3. ensure continuous monitoring and implement contingency plan in case of service disruption		5	5	0
	PC4. in case of power capacity upgradation, ensure de-commissioned equipments are returned to the warehouse		2	2	0
	PC5. ensure compliance with the defined SLA for carrying out changes		5	5	0
Test effectiveness & close activity	PC1. confirm effectiveness of the maintenance process, by monitoring site's alarm	100	10	5	5
	PC2. ensure completion of administrative jobs like site clearance, return of test equipments		10	5	5
Health and Safety	PC1. ensure compliance with site risk control, OHS, environmental and quality requirements as per	100	5	5	0
	PC2. ensure that work is carried out in accordance to the level of competence and legal requirements		3	3	0
	PC3. ensure that hazards associated with the workplace that have not been previously controlled,		3	3	0
	PC4. ensure that Personal protection equipments like harness, waist belt are appropriately used as		3	3	0
	PC5. ensure availability of first aid box at site		3	0	3
	PC6. ensure escalation of safety incidents to relevant authorities as per guidelines		3	3	0
Report & Record	PC1. ensure all relevant parties (including BSS/ BTS support engineer, NOC and other supervisors) are notified of the results of the change management	100	2	2	0
	PC2. ensure that documents that are required to be updated are identified		2	0	2
	PC3. ensure completion of routine maintenance logs, activity logs and spare tracker		3	3	0
	PC4. ensure that documents are available to all		3	3	0

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**Qualification Pack for Infrastructure Engineer**

	appropriate authorities to inspect				
	<b>Total</b>			80	20
4. TEL/N6103 (Undertake other operational activities at radio sites) undertake Site Operation Activities	PC1. ensure diesel fillers are deployed at sites to fill diesel in D. G. Sets as per frequency of filling		10	5	5
	PC2. ensure diesel filling activity is monitored closely		5	3	2
	PC3. monitor site wise diesel usage to avoid diesel pilferage and/ or excess usage by equipments		5	3	2
	PC4. ensure details of diesel filling activity like date and amount of diesel filled are recorded as per company's norms in the required format		10	5	5
Site clearances from authorized personnel	PC1. obtain list of site clearances that are required to be obtained and the expiry dates of any certificate already obtained		10	2	8
	PC2. ensure certificates are renewed/ obtained from relevant authorities within the due date		5	5	0
Site key management	PC1. ensure site key management and provide access to the FM engineers and other vendors (post availability of relevant permissions)		5	0	5
Validate accuracy of bills and ensure timely payments	PC1. obtain site wise EB, Diesel and Rent details received from the vendors (invoices/ as per contract) from the supervisors/ finance team		10	5	5
	PC2. ratify the details in the invoice based on site availability, EB and Diesel usage		8	8	0
	PC3. suggest to appropriate personnel in case of any discrepancies, else confirm accuracy of invoices		6	6	0
	PC4. ensure in coordination with the finance team that bills are paid on timely basis to avoid late payment charges	100	6	6	0
Health and Safety	PC1. ensure compliance with site risk control, OHS, environmental and quality requirements as per company's norms		5	5	0
	PC2. ensure that work is carried out in accordance to the level of competence and legal requirements		3	3	0
	PC3. ensure that hazards associated with the workplace that have not been previously controlled, are reported in accordance with appropriate procedures		3	3	0
	PC4. ensure that Personal protection equipments like harness, waist belt are appropriately used as required		3	3	0
	PC5. ensure availability of first aid box at site		3	0	3
	PC6. ensure escalation of safety incidents to relevant authorities as per guidelines		3	3	0
	<b>Total</b>	400		65	35

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