

QUALIFICATIONS PACK - OCCUPATIONAL STANDARDS FOR GREEN JOBS

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 - Solar PV Project Helper

SECTOR: GREEN JOBS

SUB-SECTOR: RENEWABLE ENERGY

OCCUPATION: INSTALLATION, OPERATION AND MAINTENANCE

REFERENCE ID: SGJ/Q0111

ALIGNED TO: NCO-2015/ 9313. 0501

Brief Job Description: Solar PV Project Helper assists in site survey, erection and commissioning activities and maintenance activities for solar PV power plants and off grid solar systems

Personal Attributes: This job requires the individual to concentrate on the job at hand and complete it without any accidents. Awareness and adherence to safety protocols are critical attributes for individuals performing this role. He/she must be good with following instructions of the supervisor.

Qualifications Pack For “Solar PV Project Helper”

Job Details

Qualifications Pack Code	SGJ/Q0111		
Job Role	Solar PV Project Helper [This job role is applicable in national scenarios only]		
Credits (NSQF)	TBD	Version number	1.0
Sector	Green Jobs	Drafted on	01/09/2016
Sub-sector	Renewable Energy	Last reviewed on	14/06/2017
Occupation	Installation, Operation and Maintenance	Next review date	30/09/2019
NSQC Clearance on	NA		

Job Role	Solar PV Project Helper
Role Description	Solar PV Project Helper assists in the activities related to erection, commissioning and maintenance of solar PV power plants and installation and maintenance of off grid solar systems
NSQF level	2
Minimum Educational Qualifications	5 th pass preferably
Maximum Educational Qualifications	Not Applicable
Prerequisite License or Training	N/A
Minimum Job Entry Age	18 years
Experience	Not required
Applicable National Occupational Standards (NOS)	<p>Compulsory:</p> <ol style="list-style-type: none"> SGG/N0130: Assist in installation and maintenance of solar PV power plant SGJ/N0131: Assist in installation and maintenance of off grid solar systems SGJ/N0148: Maintain personal health & safety at workplace
Performance Criteria	As described in the relevant OS units

Keywords /Terms	Description
Sector	Sector is a conglomeration of different business operations having similar business and interests. It may also be defined as a distinct subset of the economy whose components share similar characteristics and interests.
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.
Job role	Job role defines a unique set of functions that together form a unique employment opportunity in an organisation.
Occupational Standards (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.
National Occupational Standards (NOS)	NOS are occupational standards which apply uniquely in the Indian context.
Qualifications Pack (QP)	QP comprises the set of OSs, together with the educational, training and other criteria required to perform a job role. A QP is assigned a unique qualifications pack code.
Electives	Electives are NOS/set of NOS that are identified by the sector as contributive to specialization in a job role. There may be multiple electives within a QP for each specialized job role. Trainees must select at least one elective for the successful completion of a QP with Electives.
Options	Options are NOS/set of NOS that are identified by the sector as additional skills. There may be multiple options within a QP. It is not mandatory to select any of the options to complete a QP with Options.
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.
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 have a critical impact on quality of performance required.
Knowledge and Understanding	Knowledge and understanding are statements which together specify the technical, generic, professional and organisational specific knowledge that an individual need to perform to the required standard.
Organisational Context	Organisational context includes the way the organisation is structured and how it operates, including the extent of operative knowledge managers have of their relevant areas of responsibility.
Technical Knowledge	Technical knowledge is the specific knowledge needed to accomplish specific designated responsibilities.

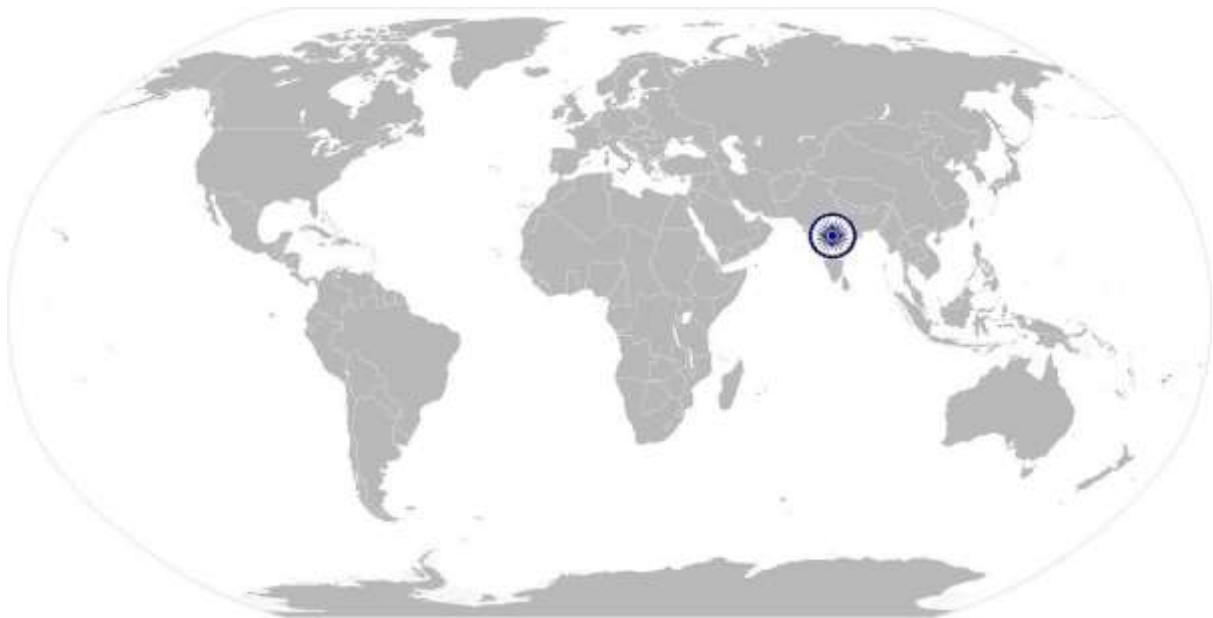
Qualifications Pack For “Solar PV Project Helper”

Core Skills/ Generic Skills	Core skills or generic skills are a group of skills that are the key to learning and working in today’s world. These skills are typically needed in any work environment in today’s world. In the context of the OS, these include communication related skills that are applicable to most job roles.
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Acronyms

Keywords /Terms	Description
SCGJ	Skill Council for green jobs
NOS	National Occupational Standards
NSQF	National Skills Qualification Framework
NVEQF	National Vocational Educational Qualification Framework
NVQF	National Vocational Qualification Framework
OS	Occupational Standards
PC	Performance Criteria
QP	Qualification Pack
SSC	Sector Skills Council
DC	Direct Current
AC	Alternating Current
PV	Photovoltaic
O&M	Operation and Maintenance
ERP	Enterprise Resource Planning
OHS	Occupational Health and Safety

National Occupational Standard



Overview

This unit is about assisting in installation and maintenance of solar PV power plant

SGJ/N0130

Assist in installation and maintenance of solar PV power plant

National Occupational Standard

Unit Code	SGJ/N0130
Unit Title (Task)	Assist in installation and maintenance of solar PV power plant
Scope	This unit/task covers the following: <ul style="list-style-type: none"> • identification of tools and components • assist in the activities at a solar PV power plant site • completing the work
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
Identification of tools and components	To be competent, the user/ individual must be able to: <ul style="list-style-type: none"> PC1. identify components of solar PV power plants PC2. identify the tools used at a solar PV power plant site
Assist in the activities at a solar PV power plant site	To be competent, the user/ individual must be able to: <ul style="list-style-type: none"> PC3. assist in survey of the site for installation of solar power plant PC4. make foundations for module mounting structures and other components under supervision PC5. assist in measurement and recording of readings from various equipment PC6. carry out cleaning of modules as per schedule and standard procedure and remove any shadowing objects PC7. perform visual inspection for fault identification as per schedule PC8. assist in replacing defective modules from the PV module arrays PC9. assist in repair and replacement of broken foundations for modules, combiner boxes, inverters and transformers, etc.
Completing the work	To be competent, the user/ individual must be able to: <ul style="list-style-type: none"> PC10. clean the work area after completing the installation and maintenance activity PC11. remove all the tools, consumables used from the work area and dispose of any waste materials in accordance with safe working practices PC12. fill in the job completion
Knowledge and Understanding (K)	
A. Organizational Context (Knowledge of the organization and its processes)	The user/individual on the job needs to know and understand: <ul style="list-style-type: none"> KA1. obtain authorization from specified field safety officer and supervisor KA2. legislative, organization, site requirements and procedures
B. Technical Knowledge	The user/individual on the job needs to know and understand: <ul style="list-style-type: none"> KB1. basics on solar energy and power generation KB2. usage and handling procedure of solar modules KB3. mechanical and electrical equipment and their functioning KB4. cleaning procedures for various equipment KB5. tools used in activities at solar PV power plant site KB6. precautions to be taken while handling different electrical and mechanical products KB7. the maintenance schedule for the solar PV power plant KB8. importance of wearing protective clothing and other safety gear while carrying out maintenance activities (PPEs) KB9. waste disposal procedures

SGJ/N0130 Assist in installation and maintenance of solar PV power plant

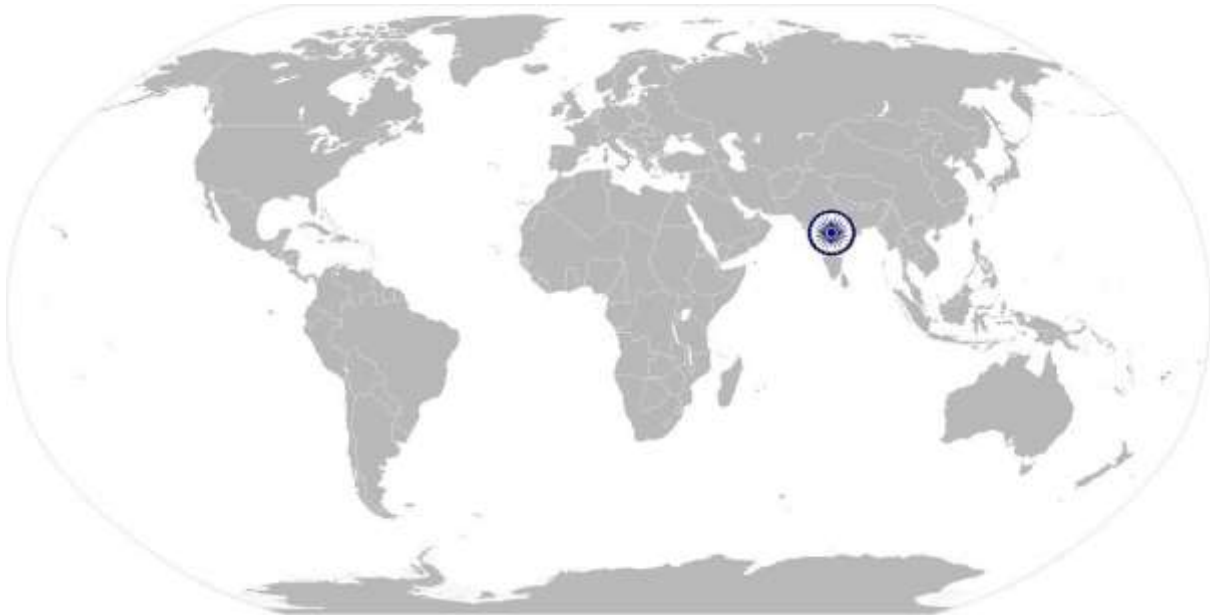
Skills (S)	
A. Core Skills/ Generic Skills	Writing skills
	The user/ individual on the job needs to know and understand: SA1. fill up documentation applicable to one's role
	Reading skills
	The user/ individual on the job needs to know and understand: SA2. vernacular/English language SA3. how to read health and safety instructions and signage SA4. how to read from different sources- books, screens in machines and signage SA5. the various color codes, as per standard electrical, mechanical and civil nomenclature
	Oral communication (listening and speaking skills)
	The user/ individual on the job needs to know and understand: SA6. express statements with required clarity SA7. participate in and understand the main points of simple discussions
	B. Professional Skills
Decision Making	
The user/individual on the job needs to know and understand how to: SB1. follow organization rule-based decision making process	
Plan and Organize	
The user/individual on the job needs to know and understand how to : SB2. work constructively and collaboratively with others	
Customer Centricity	
The user/individual on the job needs to know and understand how to: SB3. follow organisation code of conduct	
Problem Solving	
The user/individual on the job needs to know and understand how to: SB4. approach relevant authority when required	
Analytical Thinking	
N.A.	
Critical Thinking	
The user/individual on the job needs to know and understand how to: SB5. ask questions for better understanding	

SGJ/N0130

Assist in installation and maintenance of solar PV power plant

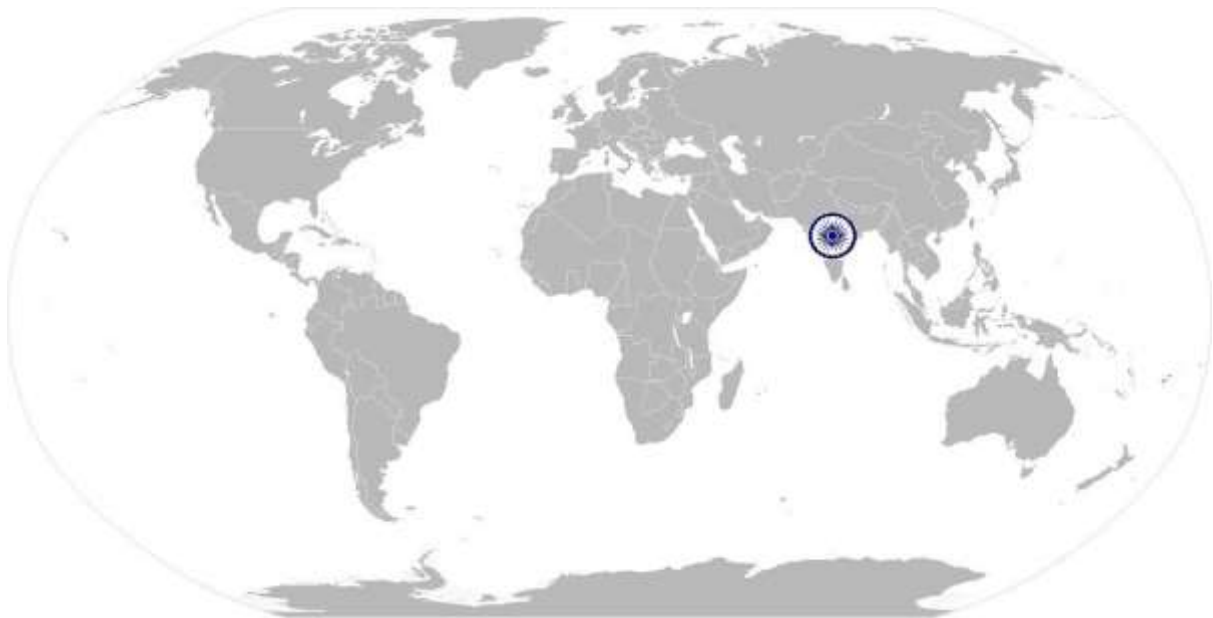
NOS Version Control

NOS Code	SGJ/N0130		
Credits (NSQF)	TBD	Version number	1.0
Industry	Green Jobs	Drafted on	01/09/2016
Industry Sub-sector	Renewable Energy	Last reviewed on	14/06/2017
Occupation	Installation, Operation and Maintenance	Next review date	30/09/2019



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National Occupational Standard



Overview

This unit is about assisting in installation and maintenance of off grid solar systems

SGJ/N0131 Assist in installation and maintenance of off grid solar systems

National Occupational Standard

Unit Code	SGJ/N0131
Unit Title (Task)	Assist installation and maintenance of off grid solar systems
Description	This unit is about in installation and maintenance of off grid solar systems
Scope	<p>This unit/task covers the following:</p> <ul style="list-style-type: none"> assist in installation and maintenance of solar PV pumps assist in installation and maintenance of solar street lighting systems assist in installation and maintenance of small solar systems
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
Assist in installation and maintenance of solar PV pumps	<p>To be competent, the user/ individual must be able to:</p> <p>PC1. assist in survey of the site for installation of solar modules and pump</p> <p>PC2. visually inspect for physical defects of equipments</p> <p>PC3. mount and fix the structures and modules on the foundations under supervision</p> <p>PC4. assist in laying of cables and pipes under supervision</p> <p>PC5. assist in installation and regular maintenance of solar PV pumps</p> <p>PC6. clean the work area after installation</p>
Assist in installation and maintenance of solar street lighting systems	<p>To be competent, the user/ individual must be able to:</p> <p>PC7. make proper foundation under supervision</p> <p>PC8. assist in erection of the pole under supervision</p> <p>PC9. assist in installation and regular maintenance of street lights</p> <p>PC10. clean the work area after installation</p>
Assist in installation and maintenance of small solar PV systems	<p>To be competent, the user/ individual must be able to:</p> <p>PC11. visually inspect all components including batteries, solar modules, cables of small solar systems</p> <p>PC12. assist in installation and regular maintenance of solar modules, lights, fan, etc.</p> <p>PC13. clean the work area after completing the installation</p>
Knowledge and Understanding (K)	
A. Organizational Context (Knowledge of the organization and its processes)	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. obtain authorization from specified field safety officer and supervisor</p> <p>KA2. legislative, organization, site requirements and procedures</p>
B. Technical Knowledge	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. basics on solar energy, electricity and power generation</p> <p>KB2. usage and handling procedure of solar modules, solar pumps, solar street lights, solar home lighting systems and related equipment</p> <p>KB3. different mechanical and electrical equipment, their functioning and precautions</p> <p>KB4. cleaning procedures for various equipment</p> <p>KB5. tools involved in installation and maintenance activities</p> <p>KB6. importance of wearing protective clothing and other safety gear while carrying out maintenance activities (PPEs)</p> <p>KB7. waste disposal procedures</p>

SGJ/N0131 Assist in installation and maintenance of off grid solar systems

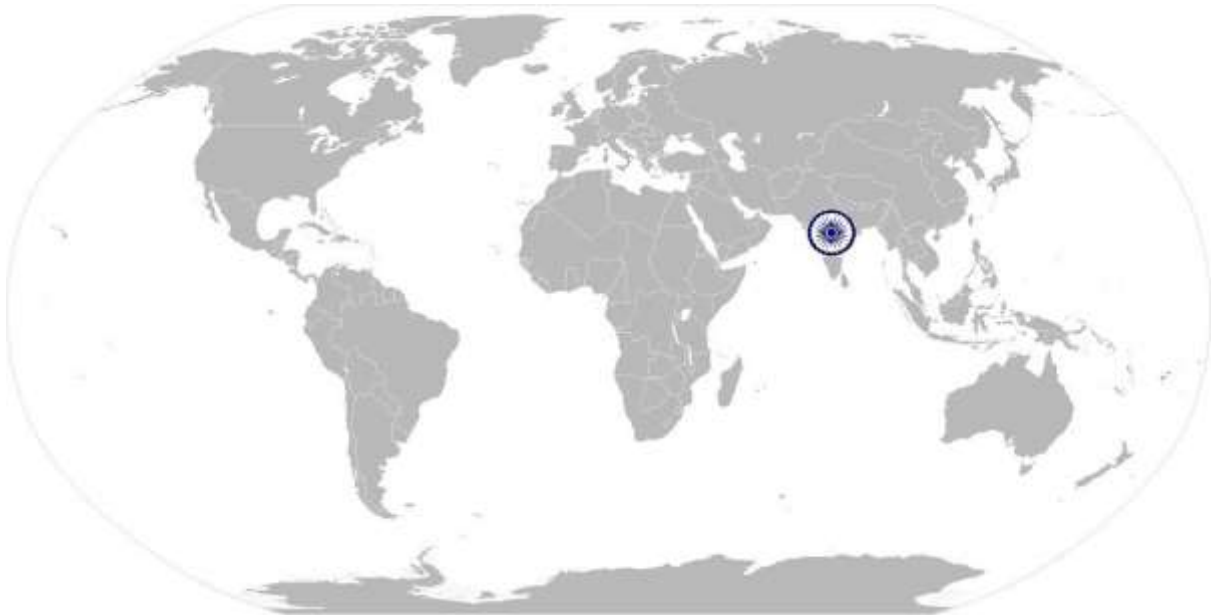
Skills (S)	
A. Core Skills/ Generic Skills	Writing skills
	The user/ individual on the job needs to know and understand: SA1. fill up documentation applicable to one's role
	Reading skills
	The user/ individual on the job needs to know and understand: SA2. vernacular/English language SA3. how to read health and safety instructions and signage SA4. how to read from different sources- books, screens in machines and signage SA5. the various colour codes, as per standard electrical, mechanical and civil nomenclature
	Oral communication
	The user/ individual on the job needs to know and understand: SA6. express statements with required clarity SA7. participate in and understand the main points of simple discussions
	B. Professional Skills
	Decision Making
	The user/individual on the job needs to know and understand how to: SB1. follow organization rule-based decision making process
	Plan and Organize
	The user/individual on the job needs to know and understand how to : SB2. work constructively and collaboratively with others
	Customer Centricity
	The user/individual on the job needs to know and understand how to: SB3. follow organisation code of conduct
	Problem Solving
	The user/individual on the job needs to know and understand how to: SB4. approach relevant authority when required
	Analytical Thinking
	SB5. N.A.
	Critical Thinking
	The user/individual on the job needs to know and understand how to: SB6. ask questions for better understanding

SGJ/N0131

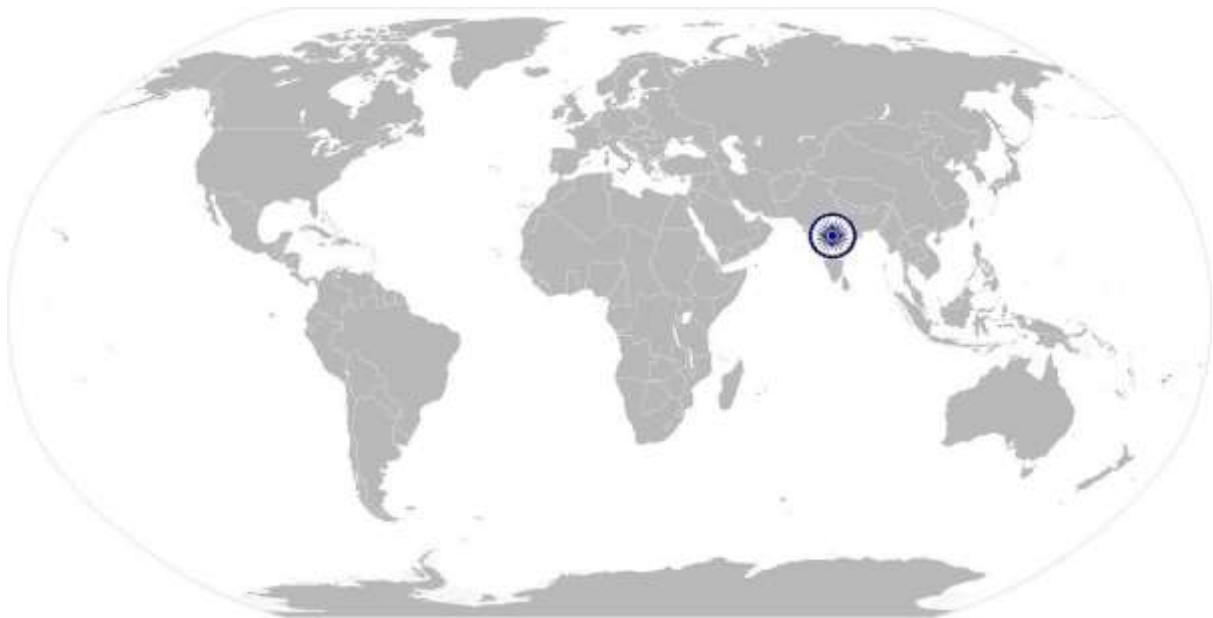
Assist in installation and maintenance of off grid solar systems

NOS Version Control

NOS Code	SGJ/N0131		
Credits (NSQF)	TBD	Version number	1.0
Industry	Green Jobs	Drafted on	01/09/2016
Industry Sub-sector	Renewable Energy	Last reviewed on	16/06/2017
Occupation	Installation, operation and maintenance	Next review date	30/09/2019



National Occupational Standard



Overview

This unit is about maintaining personal health & safety at workplace

SGJ/N0148

Maintain personal health & safety at workplace

Unit Code	SGJ/N0148
Unit Title (Task)	Maintain personal health & safety at workplace
Description	This unit is about maintaining health & safety at workplace
Scope	<p>This unit/task covers the following:</p> <ul style="list-style-type: none"> • follow safe work procedure • use of personal protective equipment • identify safety hazards • follow instructions for working at height
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
Follow safe work procedure	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. identify requirements for safe work area</p> <p>PC2. identify contact person when workplace safety policies are violated and provide information about incident/violation</p> <p>PC3. identify location of first aid materials and administer first aid related to the work being carried out</p>
Use of personal protective equipment	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC4. Identify personal safety equipment required for specific locations on-site</p> <p>PC5. identify expiry dates and wear & tear issues of specified equipment</p> <p>PC6. Identify protective equipment required for using tools, equipment and testing devices needed to carry out the work</p> <p>PC7. follow safe and accepted practices for personal protection</p>
Identify safety hazards	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC8. identify electrical hazards</p> <p>PC9. identify personal safety hazards or work site hazards and report to the supervisor for further action</p>
Follow instructions for working at height	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC10. install fall protection and perimeter protection equipment for working at height as per the directions of the supervisor</p> <p>PC11. Follow standard operating procedure for moving tools and equipment to work area and minimize potential hazards associated with tools at height</p> <p>PC12. Follow standard operating procedure for placing tools and materials to eliminate/minimize the risk of items being knocked down</p> <p>PC13. clear the work area after completion</p>

SGJ/N0148 Maintain personal health & safety at workplace

Knowledge and Understanding (K)	
A. Organizational Context (Knowledge of the organization and its processes)	The user/individual on the job needs to know and understand: KA1. company's customer support policy KA2. company's documentation policy KA3. obtain authorization from specified field safety officer and supervisor KA4. company's reporting structure
B. Technical Knowledge	The user/individual on the job needs to know and understand: KB1. relevant personal protective equipment's required KB2. occupational health and safety (OHS) standards relevant for the workplace KB3. risk identification and mitigation procedure for safe completion of work KB4. Know-how of tools & tackles required to carry out the work
Skills (S)	
A. Core Skills/ Generic Skills	Writing Skills
	The user/ individual on the job needs to know and understand how to: SA1. fill up documentation applicable to one's role
	Reading Skills
	The user/individual on the job needs to know and understand how to: SA2. read vernacular/English language SA3. understand the various colour codes, as per standard electrical, mechanical and civil nomenclature
	Oral Communication (Listening and Speaking skills)
B. Professional Skills	The user/individual on the job needs to know and understand how to: SA4. express statements or information clearly so that others can hear and understand SA5. participate in and understand the main points of simple discussions SA6. respond appropriately to any queries SA7. communicate with peers, supervisor and sub-ordinates
	Decision Making
	The user/individual on the job needs to know and understand how to: SB1. follow organization rule-based decision-making process
B. Professional Skills	Plan and Organize
	The user/individual on the job needs to know and understand: SB2. work constructively and collaboratively with others

SGJ/N0148

Maintain personal health & safety at workplace

	Customer Centricity
	The user/individual on the job needs to know and understand how to: SB3. follow organisation code of conduct
	Problem Solving
	The user/individual on the job needs to know and understand how to: SB4. choose best methods to complete assigned tasks SB5. approach relevant authority when required
	Analytical Thinking
	The user/individual on the job needs to know and understand how to: SB6. apply domain knowledge, observations and data to select course of action to perform tasks
Critical Thinking	
The user/individual on the job needs to know and understand how to: SB7. critically evaluate information obtained from customers, supervisor and co-workers to perform day to day activities SB8. ask questions for better understanding	

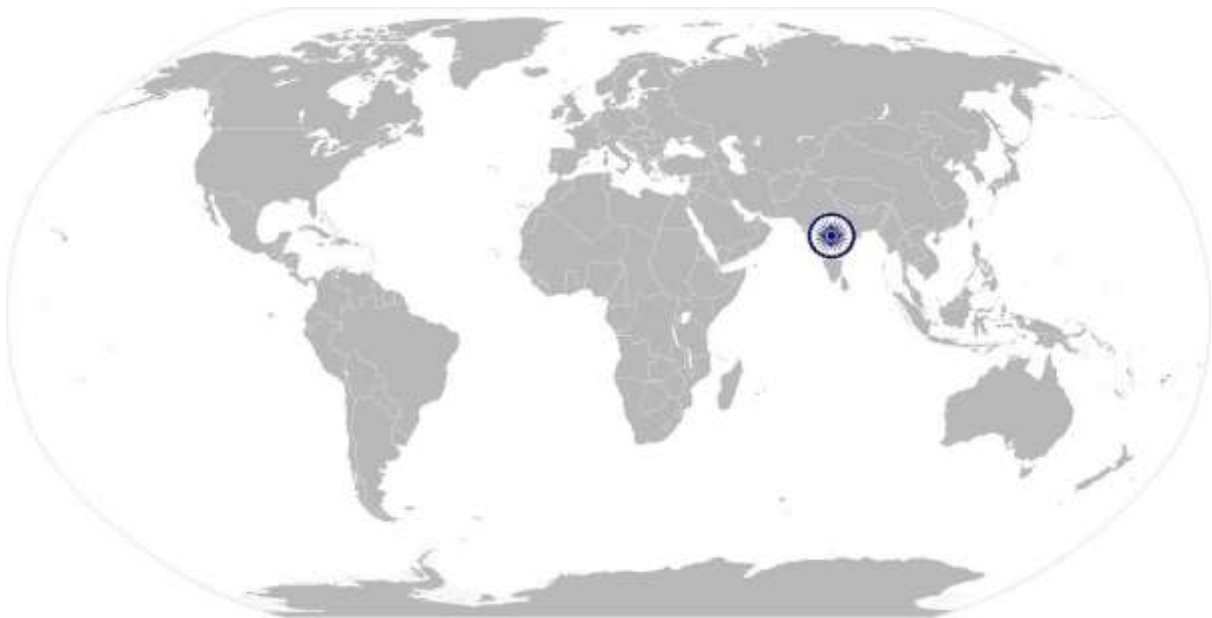


SGJ/N0148

Maintain personal health & safety at workplace

NOS Version Control

NOS Code	SGJ/ N0148		
Credits (NSQF)	TBD	Version number	1.0
Industry	Green Jobs	Drafted on	14/03/2017
Industry Sub-sector	Renewable Energy	Last reviewed on	14/06/2017
Occupation	Health and Safety	Next review date	01/10/2020

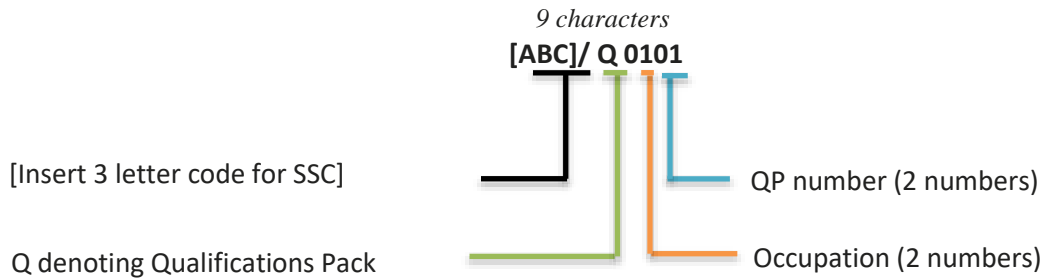


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Annexure

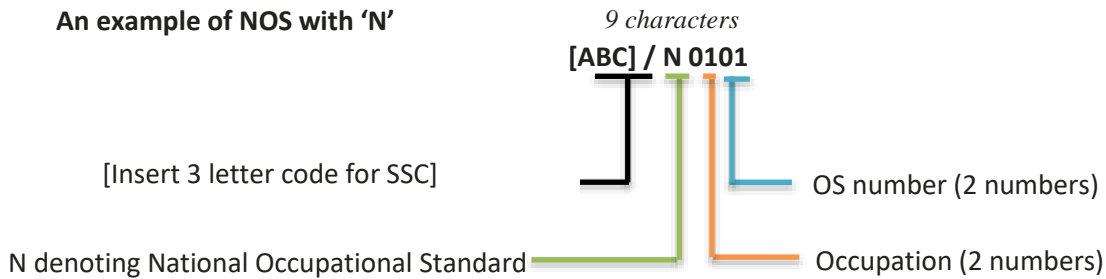
Nomenclature for QP and NOS

Qualifications Pack



Occupational Standard

An example of NOS with 'N'



The following acronyms/codes have been used in the nomenclature above:

Sub-sector		Range of Occupation numbers
Renewable Energy (01-35)	Solar Photovoltaic	01-05
	Solar Thermal	06-10
	Wind	11-15
	Hydro	16-20
	Biomass	21-25
	Geothermal	26-30
	All Renewables (Cross-cutting/ Enabling Activities)	31-35
Green Transportation (36 - 40)	Alternative Fuel Transportation	36-40
	Bio-fuels and Farming	40-45
	Other Green Transportation	46-50
Green Construction (51- 60)	Green Buildings	51-55
	Energy Efficiency	56-60
Waste Management (61- 65)	Waste Management	61-65
Water Management (66-70)	Water and Wastewater Management	66-70
Co-Generation (71 - 75)	Co-generation	71-75
Other Green Jobs (76- 99)	Carbon Sinks	76-80
	Environmental Compliance and Sustainability Planning	81-85
	Other Green Jobs	85-99

Sequence	Description	Example
Three letters	Industry name	SGJ
Slash	/	/
Next letter	Whether QP or NOS	Q or N
Next two numbers	Occupation code	01
Next two numbers	OS number	01

Qualifications Pack for “Solar PV Project Helper”

CRITERIA FOR ASSESSMENT OF TRAINEES

Job Role Solar PV Project Helper

Qualification Pack SGJ/Q0111

Sector Skill Council Green Jobs

Guidelines for Assessment

1. Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each PC.
2. The assessment for the theory part will be based on knowledge bank of questions created by the SSC.
3. Assessment will be conducted for all compulsory NOS, and where applicable, on the selected elective/option NOS/set of NOS.
4. Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training center (as per assessment criteria below).
5. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training center based on this criterion.
6. To pass the Qualification Pack, every trainee should score a minimum of 50% of aggregate marks to successfully clear the assessment.
7. In case of *unsuccessful completion*, the trainee may seek reassessment on the Qualification Pack.

Compulsory NOS			Marks allocation		
Total Marks: 250					
Assessment Outcomes	Assessment Criteria for outcomes	Total Marks	Out of	Theory	Skills Practical
SGJ/N0130 Assist in installation and maintenance of solar PV power plant	PC13. identify components of solar PV power plants	100	10	3	7
	PC14. identify the tools used at a solar PV power plant site		10	3	7
	PC15. assist in survey of the site for installation of solar power plant		8	3	5
	PC16. make foundations for module mounting structures and other components under supervision		10	3	7
	PC17. assist in measurement and recording of readings from various equipment		5	2	3
	PC18. carry out cleaning of modules as per schedule and standard procedure and remove any shadowing objects		10	3	7
	PC19. perform visual inspection for fault identification as per schedule		6	2	4
	PC20. assist in replacing defective modules from the PV module arrays		10	2	8
	PC21. assist in repair and replacement of broken foundations for modules, combiner boxes, inverters and transformers, etc.		10	2	8
	PC22. clean the work area after completing the installation and maintenance activity		10	1	9

SGJ/Q0111

Qualifications Pack for "Solar PV Project Helper"

	PC23. remove all the tools, consumables used from the work area and dispose of any waste materials in accordance with safe working practices		5	2	3
	PC24. fill in the job completion		6	2	4
		TOTAL	100	28	72
SGJ/N0131 Assist in installation and maintenance of off grid solar systems	PC1. assist in survey of the site for installation of solar modules and pump	100	8	3	5
	PC2. visually inspect for physical defects of equipments		8	2	6
	PC3. mount and fix the structures and modules on the foundations under supervision		8	2	6
	PC4. assist in laying of cables and pipes under supervision		6	2	4
	PC5. assist in installation and regular maintenance of solar PV pumps		10	3	7
	PC6. clean the work area after installation		6	2	4
	PC7. make proper foundation under supervision		8	3	5
	PC8. assist in erection of the pole under supervision		6	2	4
	PC9. assist in installation and regular maintenance of street lights		10	3	7
	PC10. clean the work area after installation		6	2	4
	PC11. visually inspect all components including batteries, solar modules, cables of small solar systems		8	3	5
	PC12. assist in installation and regular maintenance of solar modules, lights, fan, etc.		10	3	7
	PC13. clean the work area after completing the installation		6	2	4
			TOTAL	100	32
SGJ/N0148 Maintain personal health & safety at workplace	PC1. identify requirements for safe work area	50	5	2	3
	PC2. identify contact person when workplace safety policies are violated and provide information about incident/violation		2	1	1
	PC3. identify location of first aid materials and administer first aid related to the work being carried out		7	3	4
	PC4. Identify personal safety equipment required for specific locations on-site		4	2	2

SGJ/Q0111

Qualifications Pack for "Solar PV Project Helper"

PC5. identify expiry dates and wear & tear issues of specified equipment	2	1	1
PC6. Identify protective equipment required for using tools, equipment and testing devices needed to carry out the work	5	2	3
PC7. follow safe and accepted practices for personal protection	2	1	1
PC8. identify electrical hazards	3	1	2
PC9. identify personal safety hazards or work site hazards and report to the supervisor for further action	5	2	3
PC10. install fall protection and perimeter protection equipment for working at height as per the directions of the supervisor	4	2	2
PC11. Follow standard operating procedure for moving tools and equipment to work area and minimize potential hazards associated with tools at height	4	2	2
PC12. Follow standard operating procedure for placing tools and materials to eliminate/minimize the risk of items being knocked down	4	2	2
PC13. clear the work area after completion	3	1	2
TOTAL	50	22	28

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