





QUALIFICATIONS PACK - OCCUPATIONAL STANDARDS FOR TELECOM INDUSTRY

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
- 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-Optical Fibre Splicer

SECTOR: TELECOM

SUB-SECTOR: Network Managed Services

OCCUPATION: Network Operations & Maintenance – Optical

REFERENCE ID: TEL/Q6400

ALIGNED TO: NCO-2015/7422.0802

Brief Job Description: Optical fibre splicer is responsible for ensuring efficient splicing of the optical fibre cables and supports in optical fibre installation and in carrying out fibre testing using OTDR and power meter.

Personal Attributes: This job requires the individual to work in field set-up and be able to handle pressure situations. He should have basic written and oral communication skills and should be able to apply practical judgement to successfully perform the assigned responsibilities.





National Occupational Standards





Qualifications Pack For Optical Fibre Splicer

Qualifications Pack Code	TEL/Q6400		
Job Role	Optical Fibre Splicer		
Credits NSQF	TBD	Version number	1.0
Sector	Telecom	Drafted on	17/06/13
Sub-sector	Network Managed Services	Last reviewed on	26/05/17
Occupation	Network Operations & Maintenance – Optical	Next review date	26/12/20
NSQC Clearance on	18/06/2015		

Job Role	Optical Fiber Splicer
Role Description	Optical fibre splicer is responsible for ensuring efficient splicing of the optical fibre cables and supports in optical fibre installation and in carrying out fibre testing using OTDR and power meter.
NSQF level	3
Minimum Educational Qualifications* Maximum Educational Qualifications*	Class VIII ITI/ Diploma/ Bachelor in Technology (any field)
Training (Suggested but not mandatory)	 Training on Soft Skills (mandatory for Class VIII to XII) Technical training on standard splicing process for both underground and overhead cables, Interpreting the color coding to avoid cross fiber (mandatory for all) Training on fibre testing using OTDR meter and power testing (mandatory for all)
Minimum Job Entry Age	14 Years
Experience	NA
Applicable National Occupational Standards (NOS)	(Click to open the below hyperlinks) Compulsory: 1. TEL/N6400 (Undertake splicing of optical fiber) 2. TEL/N6401 (Installation & Commissioning of Optical fiber cables (OFC)) Optional: N.A.
Performance Criteria	As described in the relevant OS units









Qualifications Pack For Optical Fibre Splicer

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.		
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 OS.		
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.		











Qualifications Pack For Optical Fibre Splicer

Keywords /Terms	Description
IP	Internet Protocol
MUX	Multiplexer
OHS	Organizational Health & Safety
OTDR	Optical Time Domain Reflectometer
RCC Pipes	Reinforced Cement Concrete
SHE	Safety, Health & Environment
TDM	Time Division Multiplexing



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Undertake splicing of optical fiber

National Occupational Standard



Overview

This unit is about carrying out efficient optical splicing and test its effectiveness









Undertake splicing of optical fiber

TEL/N64	100	MINISTRY OF SKILL DEVELOPMENT & ENTREPRENEURSHIP Transforming the skill land & ENTREPRENEURSHIP
	Unit Code	TEL/N6400
ard	Unit Title (Task)	Undertake splicing of optical fiber
tanda	Description	The role involves carrying out efficient optical splicing and testing its effectiveness through OTDR and power meter tests
National Occupational Standard	Scope	 This unit/task covers the following: Preparing cable for splicing Carrying out splicing operations Testing effectiveness of the splice through OTDR and power meter tests Closing the activity and documenting the test results
nal	Performance Criteria (I	PC) w.r.t. the Scope
atio	Element	Criteria
Z	Prepare cable for splicing operations	To be competent, the user/individual on the job must be able to: PC1. verify that cable is installed as per the installation plan and visually inspect cable for signs of sheath damage PC2. ensure minimum bend ratios are maintained according to manufacturer's specifications to prevent cable damage and signal degradation PC3. ensure cable is placed on stable jointing pit PC4. secure cable according to safe industry practice to avoid cable and sheath damage PC5. identify the appropriate fibers to be joined based on color coding, and sequence PC6. identify appropriate place for the joint chamber location
	Ensure availability of tools and spares	PC1. ensure availability of test equipments like OTDR and Power meter for carrying out optical tests PC2. ensure availability of optical equipments like spool, joint closure, connectors, splicer and cleaver PC3. ensure that faulty equipments are sent to logistics team for repair and replacement PC4. ensure availability of OF joint kits, Pigtails, patchcords, FDF, OdB connector, protection sleeves, heat shrinks PC5. ensure continuous power supply at site for the splicing operation by use of portable generators or standby heavy duty batteries PC6. ensure availability of RCC joint chambers with covers as per specifications PC7. ensure availability of sand for filling the chambers PC8. ensure availability of one spare cable drum for emergency replacement of laid cables









Undert	ake si	olicing	of op	tical	fiber
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+00	Undertake splicing of optical fiber
Perform splicing operations	 To be competent, the user/individual on the job must be able to: PC1. ensure clean environment for splicing operations PC2. ensure cables are stripped off their protective coating, at areas where splicing has to be performed as per the standard process PC3. ensure the fiber ends are cleaved with a precision cleaver and are inspected with magnifier to ensure appropriateness PC4. in case of fusion splicing - Insert fibers strand to the fusion machine in accordance to product/equipment specifications PC5. in case of mechanical splice, align the fibers together by a precision made sleeve and place the prepared fiber in mechanical splicing kit PC6. verify the spliced fiber for appropriate splicing in the magnifier window PC7. ensure appropriate splice protectors like heat shrink splice protectors are utilized to protect the splice
Test effectiveness and Perform Joint closure	PC1. test the fiber joint with OTDR to confirm conformance to design requirements PC2. ensure optical losses - reflectance, return and insertion are within the defined specifications/ limits PC3. ensure sealing of Joint closure through heat shrinking/ multi diameter seals/ mechanical seals as appropriate PC4. ensure FRP - Fiber reinforced plastic is used to strengthen the joint as required PC5. test the fiber at both ends for instances of cross fiber using power source and power meter tests and ensure their elimination PC6. ensure joint is placed in the chamber properly PC7. ensure spare cable (loop) is colied appropriately and placed inside the joint PC8. ensure that sand is filled in the chamber to the brim and the chamber covers are placed properly PC9. ensure that Joint indicator is planted 1 meter behind the chamber location (away from road) PC10. ensure that the indicator is painted proper colour (for example yellow for joint)
Health and Safety	To be competent, the user/individual on the job must be able to: PC1. ensure appropriate disposal of the cut fibers, sleeves and cable pieces PC2. ensure compliance with site risk control, OHS, environmental and quality requirements as per company's norms PC3. ensure that work is carried out in accordance to the level of competence and legal requirements PC4. ensure that sites are assessed for health and safety risk as per company's guidelines prior to commencement of work PC5. ensure compliance to health and safety guidelines by optical splicer and installation labor workers PC6. ensure that Personal protection equipments like helmets, knee pads, safety boots, safety glasses and trench guards are appropriately used as required PC7. ensure environmental conditions and hazards like Earth Potential Rise (EPR)









Undertake splicing of optical fiber

40	00	Undertake splicing of optical fiber
		are considered while carrying out the work
		PC8. ensure escalation of safety incidents to relevant authorities as per guidelines
	Report & Record	To be competent, the user/individual on the job must be able to: PC1. ensure appropriate cable marking and Installation of chamber & route marker for direction and route identification PC2. ensure preparation of jointing record for future reference PC3. ensure that documents that are required to be updated are identified PC4. ensure completion of OTDR register showing complete record of jointing tests PC5. ensure that documents are available to all appropriate authorities to inspect
	Knowledge and Unders	tanding (K)
		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
	A. Organizational	KA3. types of documentation in organization and importance of the same
	Context	KA4. records to be maintained and implications of non-maintenance of the same
	(Knowledge of the	KA5. knowledge of spare management and repair & return process for faulty
	company /	equipments
	organization and	KA6. SHE and OHS guidelines and regulations as per company's norms
	its processes)	KA7. personal protection equipments like helmets, knee pads, safety boots, safety
	its processes;	glasses and trench guards that are required to be used
		KA8. first aid requirements in case of electrical shocks, cuts, fall and other common
		injuries
		KA9. electrical and chemical, environmenal related hazards and precautionary
		measures
		KA10. usage of fire safety equipments
ŀ		The user/individual on the job needs to know and understand:
		KB1. principles of optical transport media and OFC communication
		KB2. knowledge of Optical fiber characteristics like refraction, polarization,
		attenuation, dispersion
		KB3. bands in optical fibre and their usability, loss characteristics
	B. Technical	KB4. signal strength and quality KPIs – design values and margins
	Knowledge	KB5. functionality of optical equipments like cleaver, mechanical and fusion splicing
		kit, protection sleeves, fiber stripper, fiber reinforced plaster during splicing and jointing
		KB6. functionality of optical test equipments like OTDR and power meter
		KB7. optimal values of OTDR, Power meter and light meter test results
		KB8. utility of As made route diagrams
		KB9. standard trenching, cable laying, pit preparation, splicing, jointing, blowing and
		back-filling process for installation of OFC cables
		KB10. different types of OFC connectors based on the type of equipments
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Undertake splicing of optical fiber

00	KB11. standard process and need for performing duct integrity tests like air tightness			
	tests and kink free tests			
	tests and kink free tests			
Skills (S)				
	Basic Reading & Writing Skills			
	The user/ individual on the job needs to know and understand how to:			
	SA1. fill up appropriate technical forms, activity logs in required format of the			
	company			
	SA2. maintain proper records as per given format			
	SA3. read and understand manuals, work orders, health and safety instructions,			
	memos, reports etc.			
	SA4. construct simple sentences and express ideas clearly through written			
	communication			
	Communication Skills			
A. Core Skills/	The user/ individual on the job needs to know and understand how to:			
Generic Skills	SA5. liaise and coordinate with third party vendors			
Generic Skills	SA6. communicate with supervisor and peers			
	SA7. communicate in the local language			
	Other Skills			
	The user/individual on the job needs to know and understand how to:			
	SA8. interpret test reports, as made route diagrams and other numerical data			
	SA9. create and maintain effective working relationships and team environment			
	SA10. maintain security of site records and other confidential data			
	SA11. work in teams and take initiatives			
	SA12. execute tasks in a high-pressure environment			
	SA13. be flexible and accept changes in job requirements, schedules, or work			
	environments			
	Equipment operating Skills			
	The user/individual on the job needs to know and understand how to:			
	SB1. operate fusion splicing machine: manual, automatic or handheld			
	SB2. utilize appropriate optical splicing equipments like cleaver, mechanical and			
	fusion splicing machine, protection sleeves, fiber stripper, fiber reinforced			
	plaster, joint closure, heat shrink splice protectors			
B. Professional Skills	SB3. operate splice sleeve heaters (within the machine and external to the splicing			
	machine)			
	SB4. operate optical test equipments like OTDR and power meter			
	SB5. utilize fiber spool where appropriate while carrying out OTDR tests			
	OFC splicing and splice testing skills			
	The user/individual on the job needs to know and understand how to:			
	SB6. splice in both indoor and outdoor environment			
	SB7. utilize appropriate fiber like single mode and multi mode optical fibre based on			









	Undertake splicing of optical fiber
	specific requirements
SB8.	lay duct using specially designed dispensers
SB9.	carry out both fusion and mechanical splicing in a manner ensuring minimum
	reflectance loss, optical return loss, insertion loss
SB10.	utilize appropriate optical test equipments like OTDR, power meter based on
	test requirements
SB11.	perform OTDR test as per standard process and summarize OTDR reports for
	records and review
SB12.	perform Power meter tests as per standard process and identify instances of
	cross-fibres
SB13.	appropriately mark/ tag cables to identify direction and route
SB14.	install and operate Installation Termination joint boxes (TJBs)
SB15.	install and operate the Fiber Distribution Frames (FDFs) with different types of
	0dB connectors
SB16.	organized laying of Pigtails and patch cords and terminating them in TJB/ FDF
_3	etc.
Techn	ical interpretation Skills
Thou	car/individual on the ich moods to know and understand how to:
	ser/individual on the job needs to know and understand how to:
SB17.	identify appropriate cables for splicing based on sequence or color coding

- SB18. interpret As made documents and perform update based on actual cable routes, joints
- SB19. interpret OTDR and power meter test results to identify and localize faults and/ or measure optical losses





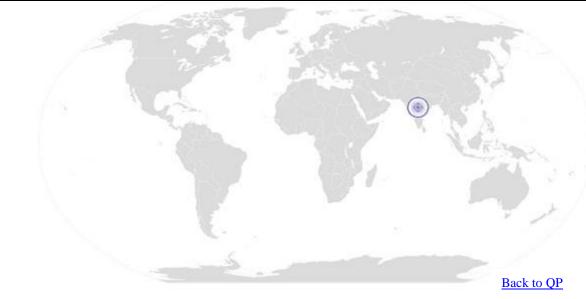




Undertake splicing of optical fiber

NOS Version Control

NOS Code	TEL /N6400		
Credits NSQF	TBD	Version number	1.0
Industry	Telecom	Drafted on	17/06/13
Industry Sub-sector	Network Managed Services	Last reviewed on	26/05/17
		Next review date	26/12/20











Installation & Commissioning of Optical fiber cables(OFC)

National Occupational Standard



Overview

This unit is about supporting the Optical technician in installation and commissioning of optical fiber cables as per route plan



NOS National Occupational Standards





TEL/N6401

Installation & Commissioning of Optical fiber cables(OFC)

Unit Code	TEL/N6401
Unit Title (Task)	Installation & Commissioning of Optical fiber cables (OFC)
Description	This unit is about supporting the Optical technician in installation and commissioning of optical fiber cables as per route plan. It involves coordinating activities like trenching and laying of cables and carrying out splicing of cables.
Scope	This unit/task covers the following:
	 Co-ordinating trenching, laying, jointing and blolwing of cables Carrying out splicing of cables Closing the activity and documenting the test results
Performance Criteria(P	C) w.r.t. the Scope
Element	Performance Criteria
Carry out route Inspection	To be competent, the user/individual on the job must be able to PC1. obtain OFC route plan from the planning team or the supervisors as per which OFC has to be laid PC2. verify the proposed route to ensure that bend ratios meet manufacturer's specifications and industry standards PC3. ensure that site is made safe and secure for cable installation in coordination with labour workers
Arrange for tools and spares	To be competent, the user/individual on the job must be able to: PC1. ensure availability of test equipments like OTDR and Power meter for carrying out optical tests PC2. ensure availability of all required trenching, cable laying, pipe laying, OFC laying and splicing equipments and spares for timely completion of installation activity PC3. ensure that faulty equipments are sent to logistics team for repair and replacement
Coordinate trenching, cable laying, jointing and cable blowing activities	To be competent, the user/individual on the job must be able to: PC1. ensure cable drum is placed near site location and test cable on drum for optical continuity PC2. ensure trenching is carried out by labour workers as per the detailed route plan requirements and site terrain PC3. ensure use of specially designed dispensers to place the ducts in the trench as straight as possible PC4. ensure pipe/ ducts are placed at lower appropriate depths as per the laying standards after approval from competent personnel PC5. ensure that ducts are free from twists, collapsed portions and that all such









Installation & Commissioning of Optical fiber cables(OFC)

101 Insta	allation & Commissioning of Optical fiber cables(OFC)
	portions are rectified by using appropriate couplers
	PC6. ensure proper uncoiling of PLB ducts
	PC7. ensure duct joints are airtight to ensure smooth cable blowing using cable
	blowing machines
	PC8. ensure cable blowing/jetting is carried out using rodder as per standard
	process
	PC9. ensure availability of additional cable length (loop) at jointing locations, for
	future use in case of failures
	PC10. ensure that ends of ducts are closed with End Plugs to avoid ingress of mud,
	water or dust
	PC11. ensure that entire length of the duct is cleaned to remove sand, dust that may
	damage the optical fiber cable
	PC12. ensure that cables are appropriately prepared for Jointing based on colour
	and/ or sequence matching
	PC13. ensure the cables are joined/ spliced as per the standard fusion/ mechanical
	splicing mechanisms
	PC14. ensure use of proper protection material such as GI pipes, RCC pipes, RCC half-
	cut pipes etc.
	PC15. ensure use of Pushfit couplers as duct joints
	PC16. ensure installation activity is completed within the defined SLAs
	PC17. ensure timely completion of work by monitoring activities performed by the
	labour workers
	PC18. ensure compliance to enterprise policy while escalating instances of delays
	To be competent, the user/individual on the job must be able to:
	PC1. ensure use of appropriate color for the route indicators and joint indicators as
	per standards
	PC2. ensure splices are within the quality assurance/ AT standards
Test effectiveness &	PC3. ensure backfilling and crowning in coordination with the labour workers as per
close activity	standard requirements
,	PC4. ensure stone marker at the jointing pit has to be provided for identification of
	route as well as jointing pit
	PC5. ensure appropriate cable markings as per guidelines
	PC6. clear sites from debris and other items
	To be competent, the user/individual on the job must be able to:
	PC1. ensure appropriate disposal of the cut fibers, sleeves and cable pieces
	PC2. ensure compliance with site risk control, OHS, environmental and quality
	requirements as per company's norms
Health and Safety	PC3. ensure that work is carried out in accordance to the level of competence and
	legal requirements
	PC4. ensure that sites are assessed for health and safety risk as per company's
	guidelines prior to commencement of work
	PC5. ensure that Personal protection equipments like helmets, knee pads, safety









Installation & Commissioning of Ontical fiber cables(OFC)

4 <u>01 Insta</u>	allation & Commissioning of Optical fiber cables(OFC)
	boots, safety glasses and trench guards are appropriately used as required
	PC6. ensure adherence to emergency plans in case of safety incidents
	PC7. ensure escalation of safety incidents to relevant authorities as per
	guidelineslegal requirements
	To be competent, the user/individual on the job must be able to:
	PC1. ensure cable id/ make and drum numbers are recorded for future fault
Daniel O Daniel	localization
Report & Record	PC2. obtain sign-off from the projects team and communicate status to NOC for
	cable integration
	PC3. ensure that documents are available to all appropriate authorities to inspect
Knowledge and Unders	etanding (V)
Knowledge and Onders	2.77
	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
B. Organizational	KA3. types of documentation in organization and importance of the same
Context	KA4. records to be maintained and implications of non-maintenance of the same
(Knowledge of the	KA5. knowledge of spare management and repair & return process for faulty
company /	equipments
organization and	KA6. SHE and OHS guidelines and regulations as per company's norms
its processes)	KA7. personal protection equipments like helmets, knee pads, safety boots, safety
	glasses and trench guards that are required to be used
	KA8. first aid requirements in case of electrical shocks, cuts, fall and other common
	injuries
	KA9. electrical and chemical, environmenal related hazards and precautionary
	measures
	KA10. usage of fire safety equipments
	The user/individual on the job needs to know and understand:
	KD4 main sinter of auticulture count and the end OFC communication
	KB1. principles of optical transport media and OFC communication
	KB2. knowledge of Optical fiber characteristics like refraction, polarization,
	attenuation, dispersion
B. Technical	KB3. bands in optical fibre and their usability, loss characteristics
Knowledge	KB4. signal strength and quality KPIs – design values and margins
	KB5. functionality of optical equipments like cleaver, mechanical and fusion splicing
	kit, protection sleeves, fiber stripper, fiber reinforced plaster during splicing
	and jointing
	KB6. functionality of optical test equipments like OTDR and power meter
	KB7. optimal value of KPIs for interpreting OTDR, Power meter and light meter test
	results
	KB8. utility of As-build route diagrams
	KB9. standard trenching, cable laying, pit preparation, splicing, jointing, blowing and









Installation & Commissioning of Optical fiber cables(OFC)

01 Insta					
	back-filling process for installation of OFC cables				
	KB10. different types of OFC connectors based on the type of equipments				
Skills (S)					
	Basic Reading & Writing Skills				
	The user/ individual on the job needs to know and understand how to:				
	SA1. fill up appropriate technical forms, activity logs in required format of the				
	company				
	SA2. maintain proper records as per given format				
	SA3. read and understand manuals, work orders, health and safety instructions,				
	Sasic Reading & Writing Skills				
	The user/ individual on the job needs to know and understand how to:				
	SA2. maintain proper records as per given format SA3. read and understand manuals, work orders, health and safety instructions, memos, reports etc. Communication Skills The user/ individual on the job needs to know and understand how to: SA4. liaise and coordinate with third party vendors SA5. communicate with supervisor and peers SA6. communicate in the local language Project Management Skills The user/individual on the job needs to know and understand how to: SA7. prioritize and execute tasks in a high-pressure environment and handle high pressure situations SA8. handle multiple tasks and completing them successfully within due timelines				
	SA5. communicate with supervisor and peers				
	back-filling process for installation of OFC cables KB10. different types of OFC connectors based on the type of equipments Basic Reading & Writing Skills				
The user/ individual on the job needs to know and understand how to: SA4. liaise and coordinate with third party vendors SA5. communicate with supervisor and peers SA6. communicate in the local language Project Management Skills The user/individual on the job needs to know and understand how to: SA7. prioritize and execute tasks in a high-pressure environment and handle high					
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	SA10. be flexible and accept changes in job requirements, schedules, or work				
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	The user/individual on the job needs to know and understand how to:				
	SA11. interpret test reports, as made route diagrams and other numerical data				
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	SA13. take initiatives and progressively assume increased responsibilities				
	SA14. share knowledge with other team members and colleagues				
	Equipment operating Skills				
	The user/individual on the job needs to know and understand how to:				
D. Duefeesiewel Chille					
D. Professional Skills	SB2. operate optical test equipments like OTDR and power meter				
	OFC splicing and splice testing skills				
	The user/individual on the job needs to know and understand how to:				
	SB3. utilize appropriate fiber like single mode and multi mode optical fibre based on				
	specific requirements				
	SB4. carry out splicing in a manner ensuring minimum reflectance loss, optical				
	35 1. Carry out Spheris in a marrier ensuring minimum reflectance 1033, optical				





return loss, insertion loss





TEL/N6401

Installation & Commissioning of Optical fiber cables(OFC)

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SB5.	utilize appropriate optical test equipments like OTDR, power meter based on
	test requirements

- SB6. perform OTDR test as per standard process and summarize OTDR reports for records and review
- SB7. perform Power meter tests as per standard process and identify instances of cross-fibres
- SB8. appropriately mark/ tag cables to identify direction and route
- SB9. utilize suitable OFC connectors are used based on the termination equipment

Technical interpretation Skills

The user/individual on the job needs to know and understand how to:

- SB10. identify appropriate cables for splicing based on sequence or color coding to avoid occurrence of instances of cross fibers
- SB11. interpret As made documents and perform update based on actual cable routes, joints
- SB12. interpret OTDR and power meter test results to identify and localize faults and/ or measure optical losses
- SB13. interpret optical link testing results to ensure link margins

Problem solving Skills

The user/individual on the job needs to know and understand how to:

- SB14. utilize appropriate tools to rectify faults
- SB15. utilize appropriate communication channels to escalate unresolved problems to relevant personnel





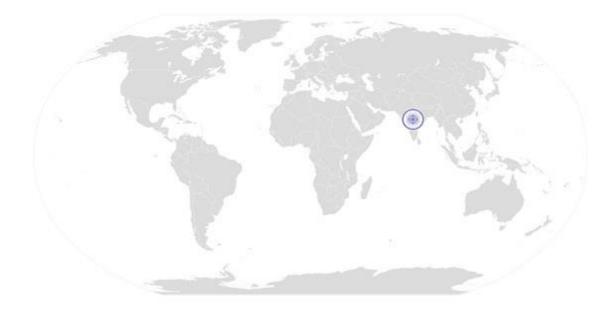




Installation & Commissioning of Optical fiber cables(OFC)

NOS Version Control

NOS Code	TEL /N6401		
Credits NSQF	TBD	Version number	1.0
Industry	Telecom	Drafted on	17/06/13
Industry Sub-sector	Network Managed Services	Last reviewed on	26/05/17
		Next review date	26/12/20



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Qualification Pack for Optical Fibre Splicer





Assessment Outcome		Assessment Criteria	Total Mark (100+100)	Total of Sub- Element	Out Of	Theory	Skills
		PC1. verify that cable is installed as per the installation plan and visually inspect cable for signs of sheath damage			2	2	
		PC2. ensure minimum bend ratios are maintained according to manufacturer's specifications to prevent cable damage and signal degradation			5	2	
	Prepare cable for splicing operations	PC3. ensure cable is placed on stable jointing pit		25	3	2	
	Prepare cause for splicing operations	PC4. secure cable according to safe industry practice to avoid cable and sheath damage		25	3	0	
		PC5. Identify the appropriate fibers to be joined based on color coding, and sequence PC6. Identify appropriate place for the joint chamber location			6	2	-
		PC7. clean the fibre appropriately as per company/manufaturer's			2	2	1
		PC1. ensure availability of test equipments like OTDR and Power meter for carrying out optical tests			1	1	
	Ensure availability of tools and spares P P P P P P	PC2. ensure availability of optical equipments like spool, joint closure, connectors, splicer and cleaver	1		1	1	-
		PC3. ensure that faulty equipments are sent to logistics team for repair and replacement PC4. ensure availability of OF joint kits, Pigtails, patchcords, FDF, OdB connector, protection sleeves, heat shrinks	-		1	1	+
		rea. ensure availability of or joint kits, rigitalis, patchedus, ror, our confector, protection sieves, neat simility			\vdash		-
		PCS. ensure continuous power supply at site for the splicing operation by use of portable generators or standby heavy duty batteries		10	1	1	
		PC6. ensure availability of RCC joint chambers with covers as per specifications			1	1	1
		PC7. ensure availability of sand for filling the chambers			1	1	
		PC8. ensure availability of one spare cable drum for emergency replacement of laid cables	-		1	1 0	_
		PC9. ensure calibration status of equipments to be used (eg.splicing machine, OTDR, power meter, cleaver) PC1. ensure clean environment for splicing operations	-		2	7	+
		1 G. Charle Clear Children in Spicing operations	1		2	2	
		PC2. ensure cables are stripped off their protective coating, at areas where splicing has to be performed as per the standard process					
	Barfarra salisiana annobiana	PC3. ensure the fiber ends are cleaved with a precision cleaver and are inspected with magnifier to ensure appropriateness	4	25	6	2	-
	Perform splicing operations	PC4. in case of fusion splicing - Insert fibers strand to the fusion machine in accordance to product/equipment specifications PC5. in case of mechanical splice, align the fibers together by a precision made sleeve and place the prepared fiber in mechanical splicing kit	4	25	6	2	+
		PCS. In case of mechanical splice, align the libers together by a precision made sieeve and place the prepared liber in mechanical splicing kit			6	2	
1. TEL/N6400 (Undertake Splicing of Optical Fiber)		PC6. verify the spliced fiber for appropriate splicing in the magnifier window	100		1	1	
		PC7. ensure appropriate splice protectors like heat shrink splice protectors are utilized to protect the splice	1		2	2	ļΞ
		PC1. test the fiber joint with OTDR to confirm conformance to design requirements	4		2	2	+
		PC2. ensure optical losses - reflectance, return and insertion are within the defined specifications/ limits PC3. ensure sealing of Joint closure through heat shrinking/ multi diameter seals/ mechanical seals as appropriate	1		4	3	+
		PC3. ensure sealing or Joint closure through near strinking/ multi-diameter seals/ mechanical seals as appropriate PC4. ensure FRP - Fiber reinforced plastic is used to strengthen the joint as required	1		3	2	t
	Test effectiveness and Perform Joint closure	PC5. test the fiber at both ends for instances of cross fiber using power source and power meter tests and ensure their elimination		25	4	2	
		PC6. ensure joint is placed in the chamber properly	1	23	1	0	╀
		PC7. ensure spare cable (loop) is colled appropriately and placed inside the joint	-		3	1 2	_
		PC8. ensure that sand is filled in the chamber to the brim and the chamber covers are placed properly PC9. ensure that Joint indicator is planted 1 meter behind the chamber location (away from road)	-		1	1	+
		PC10. ensure that the indicator is painted proper colour (for example yellow for joint)	1		1	1	
		PC1. ensure appropriate disposal of the cut fibers, sleeves and cable pieces			1	0	
		PC2. ensure compliance with site risk control, OHS, environmental and quality requirements as per company's norms			1	1	_
		PC3. ensure that work is carried out in accordance to the level of competence and legal requirements PC4. ensure that sites are assessed for health and safety risk as per company's guidelines prior to commencement of work	4		1	1	+
	Health and Safety	PCA. ensure that sites are assessed for health and safety risk as per company's guidelines prior to commencement of work PCS. ensure compliance to health and safety guidelines by optical splicer and installation labor workers	-	10	1	1	+
		PC6. ensure that Personal protection equipments like helmets, knee pads, safety boots, safety glasses and trench guards are appropriately used	1		-	-	
		as required			1	0	
		PC7. ensure environmental conditions and hazards like Earth Potential Rise (EPR) are considered while carrying out the work			2	0	_
		PC8. ensure escalation of safety incidents to relevant authorities as per guidelines PC1. ensure appropriate cable marking and Installation of chamber & route marker for direction and route identification			1	1	+
	Report and Records	PC2. ensure preparation of jointing record for future reference	-		1	1	+
		PC3. ensure that documents that are required to be updated are identified		5	1	1	
					1	1	-
		PC4. ensure completion of OTDR register showing complete record of jointing tests	-				
		PCA. ensure completion of OTDR register showing complete record of jointing tests PCS. ensure that documents are available to all appropriate authorities to inspect			1	1	_
		PCS. ensure that documents are available to all appropriate authorities to inspect			100	59	
	Carry out route Inspection	PCS. ensure that documents are available to all appropriate authorities to inspect PCL obtain OFC route plan from the planning team or the supervisors as per which OFC has to be laid	<u> </u>	10	1 100 3	59 3	
	Carry out route Inspection	PCS, ensure that documents are available to all appropriate authorities to inspect PCL obtain OFC route plan from the planning team or the supervisors as per which OFC has to be laid PCQ, verify the proposed route to ensure that bend ratios meet manufacturer's specifications and industry standards PCS, ensure that site is made safe and secure for ozile installation in coordination with bibour workers		10	100	59	L
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	Carry out route Inspection Arrange for tools and spares	PCS. ensure that documents are available to all appropriate authorities to inspect PCL obtain OFC route plan from the planning team or the supervisors as per which OFC has to be laid PCL verify the proposed route to ensure that bend ratios meet manufacturer's specifications and industry standards PCL, ensure that site is made safe and secure for cable installation in coordination with alloour workers PCL ensure availability of let equipments like OTDR and Power meter for carnying out optical tests PCL ensure availability of all required renching, cable laining, pipe laying, OFC laining and splicing equipments and spares for timely completion		10	1 100 3 4 3 2	59 3 2 3 2	
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5401 (Installation & Commissioning of Optical fiber cables (OFC)- Optional NOS)	Arrange for tools and spares Arrange for tools and spares Coordinate trenching, cable laying, jointing	PCS. ensure that documents are available to all appropriate authorities to inspect. PCI. obtain OPC route plan from the planning team or the supervisors as per which OPC has to be laid PCI. Verify the proposed route to ensure that bend ratios meet manufacturer's specifications and industry standards. PCI. ensure that size is made safe and secure for cable installation in coordination with about workers. PCI. ensure availability of lest equipments like OPTR and Power meter for carrying out optical tests. PCI. ensure availability of lest equipments are sent to logistics team for repair and replacement. PCI. ensure that faulty equipments are sent to logistics team for repair and replacement. PCI. ensure that faulty equipments are sent to logistics team for repair and replacement. PCI. ensure that faulty equipments are sent to logistics team for repair and replacement. PCI. ensure that faulty equipments are sent to logistics team for repair and replacement. PCI. ensure that faulty equipments are sent to logistics team for repair and replacement. PCI. ensure use of specially lesioned dispensers to place the ducks in the trench as straight as possible. PCI. ensure use of specially lesioned dispensers to place the ducks in the trench as straight as possible. PCI. ensure proper uncoiling of PLB ducks. PCI. ensure duct joints are airtiful to ensure smooth cable blowing using cable blowing machines. PCI. ensure duct joints are airtiful to ensure smooth cable blowing using cable blowing machines. PCI. ensure would be not of ducks are control out using rodder as per standard process. PCI. ensure availability of additional cable engith loop) as jointing locations, for future use in case of failures. ECI. ensure that docks are appropriated our wing rodder as per standard vision (mechanisms).	100	5	1 1000 3 4 3 2 2 2 1 2 3 2 5 4 3 5 4 3 5 4 4 3 5 5 6 7 7 8 7 8 7 8 7 8 7 8 7 8 7 8 7 8 7 8	59 3 2 3 2 2 2 2 2 2 2 2 2 2 2 2 2	
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