



**NSW
Resources
Regulator**

MODULES | CERTIFICATES OF COMPETENCE

CABLE REPAIR SIGNATORY MODULES

**WHS (Mines and Petroleum Sites) legislation
2020**

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Module 1 – Repair of electric reeling and trailing cables

This provides a summary of each of the essential elements of this competency module. The assessment for this module must be done at an approved cable repair workshop. The assessment must be done by a person or persons who satisfy the following criteria:

- qualifications as a certificate IV assessor
- qualifications as a Cable Repair Signatory (formerly Class B competent person - cable repairs) or a Class A competent person
- minimum of two years’ experience managing a cable repair facility.

***NOTE:** Where the figures 1.1, 3.3 and 11 are used this relates to the voltage rating of the cable in kilovolts.

Table 1: Module 1

ASSESSMENT	DESCRIPTION	SECTION TASKS	TRAINING COMPLETED			DATE	ASSESSORS INITIALS
			1.1KV*	3.3/6.6KV*	11KV*		
1.1 Basic OH&S training	Foundation knowledge of workplace health and safety	<ul style="list-style-type: none"> ■ Lifting, manual handling ■ Isolation practices ■ Sharps, burns, first aid including CPR, electric shock reporting ■ Toxicology (heavy metals, PCB’s, fumes from heavy metals and insulation materials) 	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		

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ASSESSMENT	DESCRIPTION	SECTION TASKS	TRAINING COMPLETED			DATE	ASSESSORS INITIALS
			1.1KV*	3.3/6.6KV*	11KV*		
1.2 Risk assessment	To be able to identify and control risk	<ul style="list-style-type: none"> ■ Perform a risk assessment on a selected section within this module ■ Type 275 		<input type="checkbox"/> <input type="checkbox"/>			
1.3 Cable identification	To be able to identify the construction of different cables to ensure that the correct materials are used in the repair process	<ul style="list-style-type: none"> ■ Type 209 ■ Type 240 ■ Type 241 ■ Type 260 ■ Type 245 ■ Type 409 ■ Type 440 ■ Type 441 ■ Type 450 ■ Review certificate/report of new cable compliance to standards 		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>			

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ASSESSMENT	DESCRIPTION	SECTION TASKS	TRAINING COMPLETED			DATE	ASSESSORS INITIALS
			1.1KV*	3.3/6.6KV*	11KV*		
1.4 Repair materials	To be able to identify the different repair materials used in the repair process and the storage requirements of repair tapes	<ul style="list-style-type: none"> ■ Semi-conductive repair tape ■ CSP repair tape ■ PCP repair tape ■ Dielectric repair tape ■ Storage of repair tape 		<input type="checkbox"/> 			
1.5 Cable preparation	Removal of damaged materials and preparation of cores for repair	<ul style="list-style-type: none"> ■ Sheath ■ Power cores ■ Earth cores ■ Pilot cores 		<input type="checkbox"/> 			
1.6 Splicing of conductors	To be able to join all types of conductors found in mining cables	<ul style="list-style-type: none"> ■ Power cores ■ Earth cores ■ Pilot cores ■ Screens 	<input type="checkbox"/> 	<input type="checkbox"/> 	<input type="checkbox"/> 		

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ASSESSMENT	DESCRIPTION	SECTION TASKS	TRAINING COMPLETED			DATE	ASSESSORS INITIALS
			1.1KV*	3.3/6.6KV*	11KV*		
1.7 Splicing methods	To be able to demonstrate the ability to join cables and/or conductors using different methods	<ul style="list-style-type: none"> ■ Single ferrule ■ Multi ferrule ■ Hot shot 		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>			
1.8 Soldering	To be able to identify different types of solder and flux	<ul style="list-style-type: none"> ■ Correct soldering techniques ■ Minimise solder migration ■ Flux and solder requirements ■ Correct use of PPE 		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>			
1.9 Replacement of insulation or covering	To understand the requirements and application of different types of repair materials	<ul style="list-style-type: none"> ■ Power cores ■ Pilot cores ■ Earth cores ■ Outer sheath 	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		

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			1.1KV*	3.3/6.6KV*	11KV*		
1.10 Joining pliable armour	To return mechanical protection back to a suitable condition	<p>Note: Discussion only required for this element, no practical demonstration</p> <ul style="list-style-type: none"> ■ Join armour ■ Alternate methods 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
1.11 Replacement of sheath	To return a sheath back to an as new condition to retain its electrical and mechanical properties	<ul style="list-style-type: none"> ■ Sheath construction –semi-con screened ■ Sheath construction – metallic screened ■ Sheath tapers ■ Application of sheath repair tapes 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
1.12 Vulcanising	To identify when a repair has cured and how to test for hardness. How to identify completed repairs	<ul style="list-style-type: none"> ■ Vulcanising times ■ Temperature requirements ■ Hardness testing ■ ID ta requirements ■ Measurement/test instrument calibration 		<input type="checkbox"/>			

Module 1 Competency assessment results

ASSESSOR 1

Name:

Qualification reference:

Result:

Competent

Not yet competent

Comments:

Signature:

Date:

ASSESSOR 2 (if applicable)

Name:

Qualification reference:

Result:

Competent

Not yet competent

Comments:

Signature:

Date:

CANDIDATE

I have received a copy of and agree with the assessment criteria and assessment result for module 1. Cable repair workshop experience commenced (DD/MM/YY)

Name:

Signature:

Date:

Module 2 - Testing and fault location: Reeling and trailing cables

This provides a summary of each of the essential elements of this competency module. The assessment for this module must be done at an approved cable repair workshop. The assessment must be done by a person or persons who satisfy the following criteria:

- qualifications as a certificate IV assessor,
- qualifications as a Cable Repair Signatory (formerly Class B competent person - cable repairs) or a Class A competent person, and
- minimum of two years' experience managing a cable repair facility.

***NOTE:** Where the figures 1.1, 3.3 and 11 are used this relates to the voltage rating of the cable in kilovolts.

Table 2: Module 2

ASSESSMENT	DESCRIPTION	SECTION TASKS	TRAINING COMPLETED			DATE	ASSESSORS INITIALS
			1.1KV*	3.3/6.6KV*	11KV*		
2.1 Basic OH&S training	Foundation knowledge of workplace health and safety	Precautions for setup, operating and discharging of high voltage test circuits Toxicology (heavy metals, PCB's, fumes from heavy metals and insulation materials	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

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ASSESSMENT	DESCRIPTION	SECTION TASKS	TRAINING COMPLETED			DATE	ASSESSORS INITIALS
			1.1KV*	3.3/6.6KV*	11KV*		
2.2 Risk assessment	To be able to identify and control risk.	Perform a risk assessment on a selected section within this module		<input type="checkbox"/>			
2.3 Cable history	Access the historical records, identify potential issues and provide information to update records.	<ul style="list-style-type: none"> ■ Access records ■ Interpret records ■ Update records ■ Open circuit 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2.4 Electrical terms	To be able to understand the electrical terms used when reading instruments and recording test results.	<ul style="list-style-type: none"> ■ Short circuit ■ Meg, Gig ohms ■ Resistance ■ Voltage ■ Current 		<input type="checkbox"/>	<input type="checkbox"/>		

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ASSESSMENT	DESCRIPTION	SECTION TASKS	TRAINING COMPLETED			DATE	ASSESSORS INITIALS
			1.1KV*	3.3/6.6KV*	11KV*		
2.7 Insulation Resistance	To be able to demonstrate the method of test and to understand and record the results of the test.	<ul style="list-style-type: none"> ■ Purpose of insulation test ■ Circuit connections ■ Power core insulation ■ Pilot core insulation ■ Test voltages ■ Fault finding 	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>		
2.8 High voltage proof test	To be able to demonstrate the method of test and to understand and record the results of the test.	<ul style="list-style-type: none"> ■ Purpose of proof test ■ Circuit connections ■ Test voltages and times ■ Discharging ■ Fault finding 		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>			

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ASSESSMENT	DESCRIPTION	SECTION TASKS	TRAINING COMPLETED			DATE	ASSESSORS INITIALS
			1.1KV*	3.3/6.6KV*	11KV*		
2.9 Partial break test	To be able to demonstrate the method of test and to understand the purpose of the test.	<ul style="list-style-type: none"> ■ Purpose of partial break test ■ Circuit connections ■ Fault finding ■ Test requirements 		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>			
2.10 Symmetrical load test	To be able to demonstrate the method of test and to understand the purpose of the test.	<ul style="list-style-type: none"> ■ Purpose of test ■ Circuit connections ■ Test requirements 		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>			
2.11 Sheath test	To be able to demonstrate the method of test and to understand the purpose of the test.	<ul style="list-style-type: none"> ■ Purpose of test ■ Circuit connections ■ Test voltages ■ Test requirements 	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>		

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			1.1KV*	3.3/6.6KV*	11KV*		
2.1 Compliance reporting	Cable testing compliance and non-compliance reporting	<ul style="list-style-type: none">■ Reject non-compliance		<input type="checkbox"/>			

Module 2 Competency assessment results

ASSESSOR 1

Name:

Qualification reference:

Result:

Competent

Not yet competent

Comments:

Signature:

Date:

ASSESSOR 2 (if applicable)

Name:

Qualification reference:

Result:

Competent

Not yet competent

Comments:

Signature:

Date:

CANDIDATE

I have received a copy of and agree with the assessment criteria and assessment result for module 2. Cable repair workshop experience commenced (DD/MM/YY)

Name:

Signature:

Date:

Module 3 - Inspection, fitting and replacement of parts of explosion protected restrained plugs and receptacles and bolted couplers

This provides a summary of each of the essential elements of this competency module. The assessment for this module must be done at an approved cable repair workshop. The assessment must be done by a person or persons who satisfy the following criteria:

- qualifications as a certificate IV assessor,
- qualifications as a Cable Repair Signatory (formerly Class B competent person - cable repairs) or a Class A competent person, and
- minimum of two years' experience managing a cable repair facility.

***NOTE:** Where the figures 1.1, 3.3 and 11 are used this relates to the voltage rating of the cable in kilovolts.

Table 3- Module 3

ASSESSMENT	DESCRIPTION	SECTION TASKS	TRAINING COMPLETED			DATE	ASSESSORS INITIALS
			1.1KV*	3.3/6.6KV*	11KV*		
3.1 Risk assessment	To be able to identify and control risk.	Perform a risk assessment on a selected section within this module		<input type="checkbox"/>			

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ASSESSMENT	DESCRIPTION	SECTION TASKS	TRAINING COMPLETED			DATE	ASSESSORS INITIALS
			1.1KV*	3.3/6.6KV*	11KV*		
3.2 Plug / coupler identification	To be able to identify different types of plugs and couplers. Use of the correct Industry terms.	<ul style="list-style-type: none"> ■ Restrained plug ■ Restrained receptacle ■ Bolted coupler ■ Bolted adaptor 	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>			
3.3 Plug / coupler inspection	External mechanical checks and interior, socket and gland checks	<ul style="list-style-type: none"> ■ External checks ■ Internal checks 		<input type="checkbox"/> <input type="checkbox"/>			
3.4 Plug / coupler phasing	To be able to identify the correct phasing for voltage, current and pin configurations	<ul style="list-style-type: none"> ■ 125amp 660V - 1.1kV 4 Pin ■ 150amp 660V – 1.1kV 4 Pin ■ 300amp 660V – 1.1kV 4 Pin ■ 425amp 660V – 1.1kV 4 Pin ■ 300 amp 3.3kV 6 pin ■ 425 amp 3.3kV 6 pin 	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>			

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ASSESSMENT	DESCRIPTION	SECTION TASKS	TRAINING COMPLETED			DATE	ASSESSORS INITIALS
			1.1KV*	3.3/6.6KV*	11KV*		
3.5 Plug / coupler fitting	To be able to demonstrate the method of fitting plugs and couplers	<ul style="list-style-type: none"> ■ Preparation of cores ■ Correct Termination lengths ■ Soldering/Crimp Techniques ■ Sheath Protrusion ■ Sheath Clamping ■ Creepage & Clearance ■ Inspections 		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>			
3.6 Cable tails, leads and terminations	To be able to prepare, fit and inspect tails and terminations.	<ul style="list-style-type: none"> ■ Tails to metallic screened cables and conductive cables ■ Terminate metallic screened and conductive cables 		<input type="checkbox"/> <input type="checkbox"/>			

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ASSESSMENT	DESCRIPTION	SECTION TASKS	TRAINING COMPLETED			DATE	ASSESSORS INITIALS
			1.1KV*	3.3/6.6KV*	11KV*		
3.7 Electrical explosion protection (Ex) requirements	To be able to demonstrate basic knowledge of explosion protection requirements.	<ul style="list-style-type: none">■ Understanding Ex d, Ex e, Ex m■ Verification against certification/approval documents■ Requirements / conditions associated from manufacturers, certification and approval documents■ Inspection of flame paths, corrosion/indentation curves■ How flame paths are measured ‘L’ and ‘I’■ Verification of measurement instrument calibration		<input type="checkbox"/>			
3.8 Compliance reporting	Compliance and non-compliance reporting	<ul style="list-style-type: none">■ Reject non-compliance		<input type="checkbox"/>			

Module 3 Competency assessment results

ASSESSOR 1

Name:

Qualification reference:

Result:

Competent

Not yet competent

Comments:

Signature:

Date:

ASSESSOR 2 (if applicable)

Name:

Qualification reference:

Result:

Competent

Not yet competent

Comments:

Signature:

Date:

CANDIDATE

I have received a copy of and agree with the assessment criteria and assessment result for module 3. Cable repair workshop experience commenced (DD/MM/YY)

Name:

Signature:

Date: