MOP 0085

SYSTEM FOR INSPECTION AND MONITORING OF ELECTRICAL EQUIPMENT

KEY CONTROLS

- High voltage protection equipment tested 12 monthly to ensure fit for purpose and in serviceable condition.
- All electrical equipment tested periodically by authorised electrical worker. Testing conducted in accordance with Table 1.

The purpose of this procedure is to provide for the safety of all coal mine workers at Dawson Mine by reducing the risks associated with inspectinf and monitoring electrical equipment to an acceptable level.

This procedure applies to all coal mine workers at Dawson Mine.

1. PROCEDURAL REQUIREMENTS

1.1 Schedule of Tests:

The EEM shall devise a schedule of routine electrical tests of all relevant equipment installed at the mine. These tests shall include portable hand tools and apparatus and extension leads. The schedule shall specify the maximum interval of time, which shall elapse between consecutive tests.

1.1.1 High Voltage Protection Equipment:

All high voltage protection equipment shall be tested every 12 months. An external provider shall carry out these tests.

High voltage protection equipment shall include but is not limited to:

- over current relays for HV circuits;
- continuity of substation neutral impedance devices;
- earth mats and HV earth resistance on substations and HV air-break switches;
- earth continuity relays for HV circuit;
- earth leakage relays for HV circuits;
- HV circuit breakers; and
- HV transformers.

1.1.2 Earth Leakage Protection Devices:

All earth leakage protection devices shall have a functional test (press button) at a maximum interval specified in Table 1. All Type I and II RCDs shall have an operational test (injection test) at a maximum interval as specified in table 1. Construction and major shutdown sites shall have a functional test at the start of the work and each week thereafter.

1.1.3 Earth Continuity Monitoring Devices:

All earth continuity monitoring devices shall have functional tests every 6 months.

1.1.4 Insulation Resistance Test – Fixed Installations:

All major 415V equipment[1] circuits shall be tested at a maximum interval of 3 years. The test shall include the equipment and phase cables supplying the equipment. The minimum insulation resistance should be 1 meg-ohm.

1.1.5 Earth Continuity Test – Fixed Installations:

All major 415V equipment circuits shall be tested at a maximum interval of 3 years. The test shall prove the integrity of the earth system for the equipment. The maximum earth continuity resistance should be 1 ohm or less.

1.1.6 Insulation Resistance Test – Mobile Equipment:

All major 415V equipment circuits shall be tested at a maximum interval of 2 years. The test shall include the motor and phase cables supplying the equipment. The minimum insulation resistance should be at least 1 meg-ohm.

[1] Equipment includes motors and/or a unit made up of several motors or items e.g. an air-conditioning unit.

1.1.7 Earth Continuity Test – Mobile Equipment:

All major 415V equipment circuits shall be tested at a maximum interval of 2 years. The test shall prove the integrity of the earth system for the equipment. The maximum earth continuity resistance should be 1 ohm.

1.1.8 Welding Machines:

All electric welders (ie. plug in and diesel) shall be tested at intervals of 3 months and fixed (ie. permanent connection) electric welders shall be tested every 12 months. The test shall include both insulation resistance and earth continuity tests as per AS 1674.2. The welding machine shall have a tag fitted. The testing and tagging shall meet AS 3760.

All VRD shall also be tested at the same intervals.

1.1.9 Testing and Tagging Intervals:

The testing and tagging shall conform to AS3760. All general equipment shall be tested and tagged at the maximum intervals listed in Table 1.

Table 1 - Test Intervals for Portable Tools

Area	Portable Hand Tools Test and Tag	General equipment inc ext. leads	RCD functional	RCD Operational
Workshops & Operating Areas	6 Months	6 months	6 months	12 months
Offices	12 Months	12 months	6 months	12 months
Dawson Village and Kotti Doon	2 years	2 years	6 months	2 years
Computer Room & Patch Panels	5 Years	5 years	6 months	2 years

1.1.10 Electrical Safety Equipment:

Schedule and test requirements for Electrical Safety Equipment:

Safety Equipment	Test Intervals
Insulating gloves	6 monthly
Insulating Rods and Measuring Sticks	6 monthly
Portable Safety Devices	6 monthly
LV Rescue Kits	6 monthly
Test Instruments (Meggers and Multimeters)	12 monthly

1.2 Work Process

1.2.1 Schedule

The routine schedule of tests shall be provided by the EEM to the Maintenance Scheduler who enters it into the computerised maintenance system. A work order shall be automatically issued by the Maintenance Scheduler on a weekly basis for each piece of equipment or groups of equipment that is due to be tested.

The EEM or Electrical Supervisor confirms this schedule weekly.

1.2.2 Testing

Job attachments shall be automatically printed with each work order. These are issued to electrical workers to carry out the required tests. All test measurements and results shall be recorded on the appropriate Job Attachment. Each test shall;

- show the test results;
- be signed by the person carrying out the test;
- show the date(s) on which the test is carried out; and
- show the name and electrical license number (where applicable) of the person carrying out the test.

1.2.3 Completion

All Job Attachments shall be returned to the Electrical Supervisor for review. Where required (eg. Statutory testing), they shall then be forwarded to the EEM for approval. Approval shall be given by signing on the Job Attachment in the relevant place(s).

The completed Job Attachments shall be filed.

2. ROLES & RESPONSIBILITIES

All persons operating equipment or undertaking other designed tasks shall be authorised by the SSE (or representative) unless undertaking training in accordance with the site Training Scheme.

Electrical Engineering Manager
The EEM shall be responsible for;

- approval of the Job Attachment content;
- approval for testing intervals; and
- ensuring this procedure is complied with.

Electrical Supervisor
The Electrical Supervisor shall be responsible for;

- ensuring completion of the testing and inspection program; and
- recommending modifications to the schedule, tasks or tests.

Electrical Workers
The Electrical workers shall be responsible for:

- performing the testing laid out in the Job Attachment;
- entering the test results/values onto the job attachment;
- entering their electrical license number (where applicable) and signing off for each test; and
- recommending modifications to the schedule, tasks or tests.

Maintenance Planner/Scheduler
The Maintenance planner/scheduler shall be responsible for:

- Providing weekly maintenance schedules/plans for testing/inspections; and
- Carrying out only authorised modifications to the schedule, tasks or tests.
- Filing all completed test sheets

3. RECORD OF CONSULTATION

NAME	POSITION	SIGNATURE
Rhys Liverton	HSE Consultant	
Greg Conway	Electrical Engineer	
Frank Locke	EEM	
Brenton Scott	Electrician	
Alastair Shannon	Electrician	

4. AUTHORISATION

MANAGER	SIGNATURE	DATE

SAFETY & HR MANAGER	SIGNATURE	DATE

SSE	SIGNATURE	DATE

5. REVIEW CRITERIA

This document shall be reviewed as follows:

- When there is a change of method and/or technology that may affect the accuracy of this document;
- When there has been a significant event to which this document was relevant;
- As a result of audit findings.

6. AMENDMENTS

ISSUE NO.	REVIEW DATE	DESCRIPTION	INITIAL
5	17 October 2017	Review of MOP. Changes to AS numbers.	RL

7. REFERENCES

Coal Mining Safety and Health Act 1999.

Coal Mining Safety and Health Regulation 2017.

Recognised Standard 02 – Control of Risk Management Practices.

AS/NZS ISO 31000:2009 Risk Management.

MetCoal_2-3_STD_Management SHE Risk

DEEDI Industry Hazard Database

AS 3760 – In-service safety inspections and testing of electrical equipment.

AS 3012 – Electrical installations – Construction and Demolition Sites.

AS 3019 – Electrical Installations – Periodic Verification

AS 1674.2 – Safety in welding and allied processes

MOP 0123 Definitions for Electrical SOPS

MOP 0084 Commissioning and Modification of Electrical Equipment

8. DEFINITIONS

CMSHA: Coal Mining Safety and Health Act

CMSHR: Coal Mining Safety and Health Regulation

Shall: Indicates that a statement is mandatory

Should: Indicates a recommendation

ELB Number: The electrical certificate or license number issued by the Electrical Licensing Board of Queensland.

EEM: Electrical Engineering Manager.

Job Attachment: A form that comprises a list of instructions and/or items requiring tests and requires information to be supplied or filled in by the person performing the tasks or tests.

Maintenance Planner or Scheduler: The person who operates the computerised maintenance system and issues a maintenance schedule on a periodic basis.

MST: Maintenance Service Task.

Work Order: A form to request or track work to be carried out and is issued either manually or automatically from the computerised system.

See **MOP 0123 Definitions for Electrical Procedures** for other electrical definitions.