



CS ENERGY PROCEDURE FOR  
**REPORTING AND TREATMENT REQUIRED AS A RESULT  
OF AN ELECTRICAL INCIDENT**  
**CS-OHS-5**

Responsible Officer: Authorised Person

Approved : GM Production

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## 1. Purpose

To establish the reporting and treatment processes to be followed in the event of a person receiving an electric shock.

## 2. Scope

This procedure covers the process to be followed after a person has received an electric shock .

This procedure applies to all CS Energy sites and subsidiaries.

## 3. Actions

### 3.1 In the event someone receives an electric shock

- ◆ Report incident to the site Health and Safety Adviser immediately.
- ◆ The site Health and Safety Adviser to inform the site Authorised Person.
- ◆ The Authorised Person is to assist in the remediation and investigation of the incident as soon as practical.

### 3.2 Scene of the Incident

Following a serious bodily injury the scene of the incident must not be interfered with except to:

- save a life;
- relieve suffering; or
- prevent injury to a person or property damage

This is done to meet the legal requirements of the Workplace Health and Safety Regulation and the Electricity Act.

If rescuing a person who is still connected to the supply voltage, Rescue From Live Switchgear Procedures must be followed to ensure the rescuer does not become a second casualty.

### 3.3 Medical Treatment

Where a person sustains an electric shock:

- the casualty should be referred to or report to the first aid centre immediately; and
- must be transported by ambulance to a medical provider (it is understood that there may be some resistance under certain circumstances. However, it is expected that acceptance will be achieved with time). The medical provider will determine if further investigative tests are required; and
- their supervisor or a management representative must accompany them to the medical provider.

### 3.4 Notification / Reporting

#### 3.4.1 Internal

All electrical incidents must be reported internally as per CS-IM-1.

#### 3.4.2 External Notifications

The table summarises, the external notification requirements.

Incident Type	External Authority	Timeframe
Serious Bodily Injury	Queensland Police Service Workplace Health and Safety* Department of Natural Resources and Mines **	Phone immediately all three Authorities

\* Workplace Health and Safety must be notified within 24 hours of the incident on the approved form by the site Health and Safety Advisor.

\*\* The Division of Mines and Energy must be notified on the prescribed form within 7 days by the Authorised Person.

### 3.5. Investigation

The Power Station site Authorised Person and Health and Safety Adviser are to:

- 3.5.1 Establish whether or not an electrical hazard exists.
- 3.5.2 Where a hazard exists warn persons in the area of the hazard and implement immediate temporary control measures.
- 3.5.3 Commence investigations to determine the cause of the accident and if necessary and safety can be ensured, recreate the accident situation.
- 3.5.4 Ensure the supply to the equipment involved in the accident is isolated.

## 4. Responsibilities

### Site Manger

Ensure notification and reporting (section 3.4) occurs.

Ensure injured person is accompanied by the supervisor or a management representative to the medical provider.

## 5. Definitions

**AC** - Alternating current

**Authorised Person** – a person appointed by the Electrical Safety Office.

**DC** – Direct current

**Electric shock** – the physiopathological effect resulting from the direct or indirect passage of an external electrical current through the body. It includes direct and indirect contacts and both unipolar and bipolar currents.

**Electric shock (minor)** – An electric shock that is low voltage where the current is low enough that no physical injuries are evident (eg. no burns or entry/exit points). In these cases the current is usually lower than 10mA..

**Electrocution** – electrical incident resulting in a fatality.

**Extra Low Voltage** – not exceeding 32 volts (AC) or 115 volts (DC).

**High Voltage** – above 1000 volts (AC) or 1500 (DC).

**Low Voltage** – 32 up to 1000 volts (AC) or 115 up to 1500 volts (DC).

**Serious Bodily Injury** – an injury that causes death or overnight hospitalisation of the casualty.

**V** - Volt

## 6. Reference Documentation

AS3000 The Australian Standard Wiring Rules

Workplace Health and Safety Regulation

Electricity Act

CS Energy Occupational Health & Safety Management Systems

CS-OHS-4 Workplace Rehabilitation and WorkCover Claims

CS-IM-1 – Incident Management

Site Isolation Procedures / Permit to Work

## 7. Attachments

7.1 Potential Effects of Electric Shock

## 8. Document History

Issue Date	Nature of Changes
28/03/00	Original Issue
10/06/2005	Changes to the procedure to reflect the Electrical Safety Act requirements.

## Attachment 7.1 Potential Effects of Electric Shock

### Background Information

The effect of an electrical current on the body depends on:

- the magnitude of the current (amps);
- its frequency (hertz); and
- its path.

It is the current that determines both the heat released and the effect on the body. The current is determined by the voltage and resistance. Resistance can be influenced by environmental factors, the condition of the skin, contact area and individual factors.

For example: where a person is soaking wet with no shoes on (low resistance) and connected to a 240 Volt outlet, it is likely that they will suffer a severe electric shock. Where the person comes into contact with the same outlet and they are dry with good boots on (high resistance), it is likely they will receive a lesser shock.

### Effects on the Human Body.

The table below indicates the effects different currents will have on the human body.

Current	Effect
Below 1 mA	No known effect
1 – 3 mA	Can be felt
10 - 15 mA	Muscles contract. Difficult or impossible to let go.
25 – 30 mA	Chest muscles contract – breathing difficult
50 – 250 mA	Lower limit of ventricular fibrillation
250mA – 5A	Increasing probability of ventricular fibrillation
Above 5A	Heart muscles clamp, tissue burns

mA – milliAmp

A – Amp

Detailed explanation of each effect.

#### 1. Muscle Contraction

Electric current may result in muscular contractions (ie. of the hand and arm) that prevent the casualty from letting go of an energised object. The muscle contractions cannot be overcome voluntarily. The 'let go' current varies from person to person with the average for men being 16mA and for women 10.5mA. The casualty may be able to disconnect themselves from the electrical supply using other parts of their body.

Where the current passes through the heart, uncoordinated contraction of the heart muscle may result in ventricular fibrillation. Ventricular fibrillation is the most common cause of death following an electric shock and the likelihood of ventricular fibrillation will depend on the current and the duration of the shock. For a shock of a few milliseconds duration, ventricular fibrillation is unlikely to occur except in high voltage incidents. The contact time necessary to induce ventricular fibrillation with 240V is unlikely to be less than 0.5 seconds.

## **2. Asphyxia**

Asphyxia can occur as a result of: *inhibition of the respiratory system*, usually as a result of the current pathway being from head to limb; *tetanic contraction of respiratory muscles*, through an alternating current pathway passing across the chest; and *ventricular fibrillation*.

## **3. Burns**

Electrical burns result from the rise in temperature that occurs due to an electrical current flowing through the body. Because of the “cooking effect” on deeper tissues, such as muscles, an electrical burn may be much more serious than it initially appears. Thermal burns may occur due to an electric arc between the live conductor and the casualty. This can occur due to either contact with the live conductor or approaching sufficiently close to it. The arc is an unstable stream of ionised gas with a core temperature of many thousands of degrees. Thermal burns can also occur from other causes eg. electric ignition of flammable materials.

At low voltage contacts, burns are usually localised at the point of contact with the electrical source. The heating effect of the current may result in the burn being quite deep. At high voltage contacts (and in some cases low voltage), the current may pass through the body leaving entry /exit burns and damage to internal organs and muscles

## **4. Secondary Effects**

Secondary effects may occur as a result of, for example, a fall or fire.