



AUSTRALIAN RAIL TRACK CORPORATION LTD

Discipline: Engineering (Signalling)

Category: Procedure

# Management of Signalling and Control System Failures

## ESM-00-04

### Applicability

ARTC Network Wide	✓	CRIA (NSW CRN)	✓
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### Primary Source

SMP 04
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### Document Status

Version	Date Reviewed	Prepared by	Reviewed by	Endorsed	Approved
1.2	13 August 2010	Standards	Stakeholders	Chief Operating Officer	Risk & Safety Committee 06/04/2009

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Version	Date Reviewed	Clause	Description of Amendment
1.0	21 Sep 08		First issue. Supersedes NSW Standard SMP 04 v1.3 in part
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# 1 General

Maintainers responsible for signalling maintenance shall clearly understand that the object of good maintenance is to prevent failures by planned maintenance activities and intelligent anticipation rather than to wait until they happen.

In the case of an accident, emergency or disruptive failure of signalling, control systems or level crossing apparatus, maintainers shall attend with all due urgency in order to deal promptly and safely with the apparatus and rectify any failure. Assist where possible, to minimise train delays caused by the failure (each failure is either a potential or actual source of delays).

## 1.1 Report to Network Controllers

Any failure or alleged failure, including the failures caused by accidents or derailments, shall be reported immediately to the Network Controller.

## 1.2 Reporting and Recording Failures

Every signalling, control system or level crossing failure shall be reported, recorded and analysed so that appropriate measures can be taken to reduce such failures and prevent reoccurrence. All failures requiring the attention of a maintainer shall be fully investigated and all details must be documented on the appropriate Incident/Failure Report Form.

All details of the signalling, control system or level crossing failure shall be entered on the Incident/Failure Report Form and sent through by fax or electronically to the appropriate nominated representative within the agreed timeframe and reviewed by the Signal Manager or Signal Engineer or Team Manager.

The timeframe shall be:

Monday to Friday – within 24 hours

Weekends – by close of business the following Monday.

Public holidays – by close of business the next working day.

The information contained in the Incident/Failure Report Form shall be entered into the appropriate failure database.

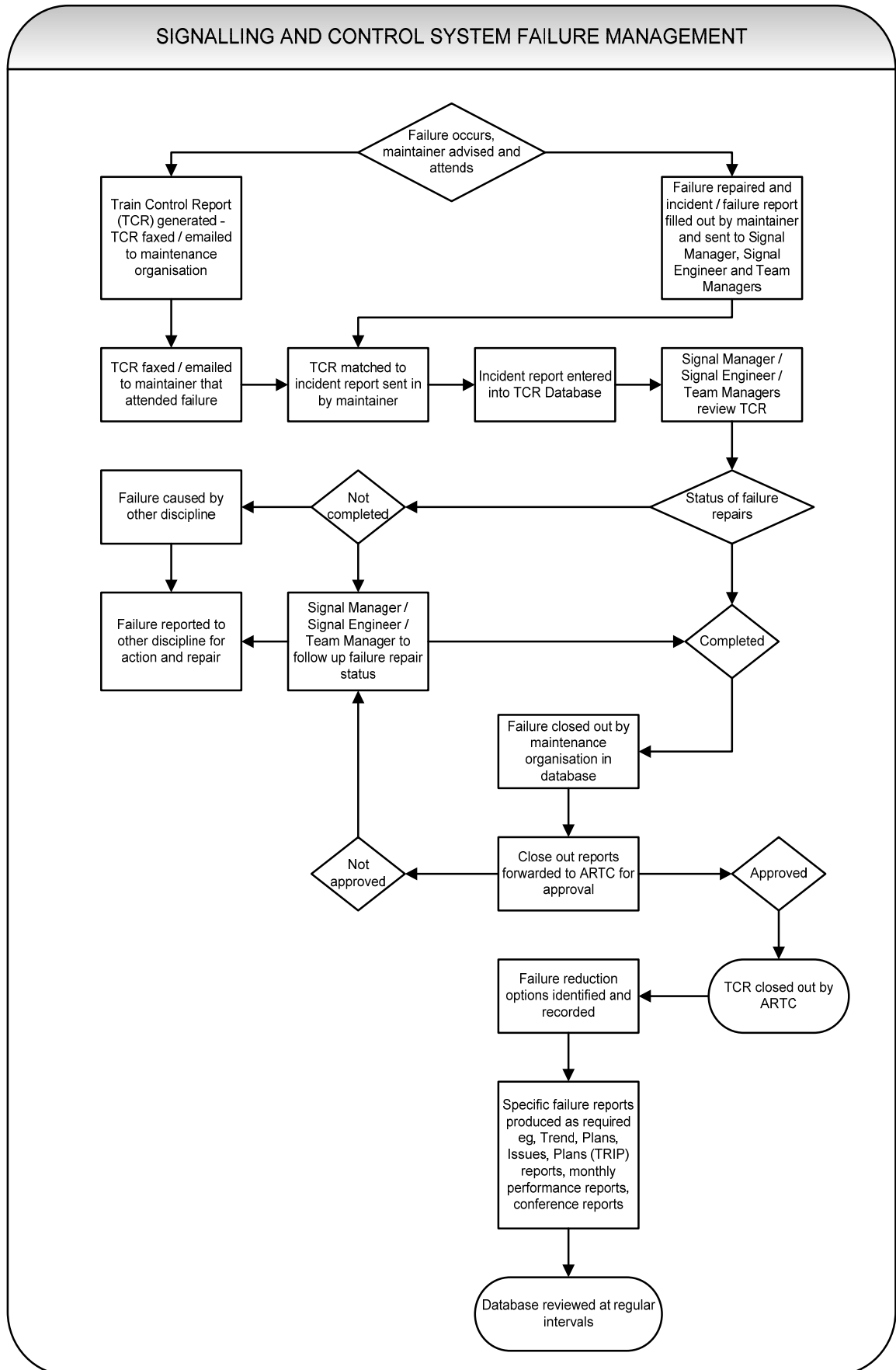
## 1.3 Close Out of Failures

The failure shall be reviewed by the Signal Manager or Signal Engineer or Team Manager for the maintenance organisation and closed out.

The report shall be forwarded onto the appropriate ARTC Corridor Signal Manager for approval and close out.

If the report is not approved for close out by the ARTC Corridor Signal Manager. The Signal Manager or Signal Engineer or the Team Manager for the maintenance organisation shall review and resubmit for close out when the concerns raised have been addressed.

### 1.4 Flowchart for Management of Failures



## 2 Signal Failures Not Replicated

This includes failures that self rectify or rectify after the passage of a train or other unknown circumstances.

### 2.1 Reporting and Recording of Signal Failure Not Replicated

Every signal failure not replicated shall be reported, recorded and analysed.

The investigation should identify possible causes consistent with the failure symptoms. Appropriate measures can be taken to minimise these possible causes and thereby reduce such failures to a minimum.

The appropriate incident/failure report form shall be completed with all relevant information.

### 2.2 Investigation of Signal Failure Not Replicated

This includes no cause found, intermittent and cleared on arrival failures.

In the case of a failure for which the cause is not replicated the failure must be fully investigated such as but not limited to:

- All voltage and current readings associated with the equipment
- Earth leakage tests
- Cable condition assessment
- Visual inspection of all equipment
- Terminal condition and tightness
- Track circuit integrity (eg. walk the track)
- Point layout inspection - Lock and detection, fasteners, rail condition (stock rail and blade), geometry.
- Ask questions and seek answers from Network Controllers, Train Crews etc.

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*Note: take and review all relevant logs for the equipment involved.*

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Steps shall be taken to avoid the recurrence.

The self rectification of a failure shall not, in itself, be considered as the final action to be taken.

Follow up investigation and review will be required to minimise the likelihood of the failure reoccurring.

If the failure should happen again, and cannot be replicated then the maintainer shall escalate to the Signal Manager, Signal Engineer or Team Manager for determination to investigate further.

A Signal Failure Not Replicated Report form shall be completed with all relevant information.

### 3 Failures caused by Other Disciplines

Where signalling equipment has been damaged by derailment or other event, it is not to be assumed that the equipment did not contribute to the cause. Whatever investigations that can be undertaken shall be conducted.

If a defect or a failure in signal apparatus is found and the cause of which is due to another discipline, then the Maintainer shall bring the defect or failure to the attention of the Signal Manager or Signal Engineer or Team Manager. The maintainer shall submit a report clearly describing the nature of the defect or failure. Any evidence to support the defect or failure such as photographs, Incident/Failure Report Form etc shall be collected and submitted with the report.

The defect or failure shall be entered into the appropriate defect module of the maintenance management system.

The Signal Manager or Signal Engineer or Team Manager shall forward the report via fax or electronically to the appropriate representative of the other discipline with the priority for attention as per the matrix table below.

#### 3.1 Priority Matrix

Signal Condition	Related Cause	Impact	Corrective Action	Priority
Point failure	Poor turnout condition	Derailment Point failure Train delays	Maintain turnout to standard	1 – 7 days based on severity
Track circuit failure	Contaminated rail	Track circuit fails to detect train. Level crossing fails to operate. Train delays	Maintain track, ballast, rail and drainage to standard.	Wrong side failure – immediate attention.
Track circuit failure	Poor ballast condition Defective insulated joints	Train delays	Maintain track, ballast, rail and drainage to standard.	1 – 7 days based on severity
Signal Sighting	Obstruction by vegetation or structure	SPAD Increased running time	Remove vegetation or obstruction	1 – 7 days based on severity