AUSTRALIAN RAIL TRACK CORPORATION LTD

Maintenance Plan Development for Signalling Systems

Issue 1
Revision 2

Engineering Process Procedure

(PP-150)

DOCUMENT CONTROL

1 Document Status Record

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Issue 1 Revision 2	12 Jan 04	Engineering Services	Asset Managers	GM E&I	Executive Committee

2 Document Distribution List

Copy No.	Position	Organisation
1	Chief Executive Officer	ARTC
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PROCESS PROCEDURE PP-150

MAINTENANCE PLAN DEVELOPMENT FOR SIGNALLING SYSTEMS

1. Purpose

The purpose of this procedure is to ensure that the integrity of Signalling Systems is cost effectively and safely maintained throughout their service life.

2. Scope

The scope of this procedure is limited to the identification and implementation of resources and activities for maintenance of ARTC Signalling Systems.

3. Reference Documents

NCOP Vol 4 Part 1 (Infrastructure Management), 30 June 2002

AS4292.4 Clause 6.3 Performance Monitoring, 5 April 1997

4. Responsibility

The Asset Managers are responsible for the development of Technical Maintenance Plans for Signalling Systems

5. Determining Maintenance Requirements

AS4292.4 Clause 6.3 refers to the maintenance and monitoring of safety related systems, taking into account the following factors:

- Loss of route integrity;
- Loss of system availability;
- Events and conditions that are likely to result in reduced operating safety (failure modes);
- Methods of detecting the onset of failures; and
- Requirements for scheduled inspections.

5.1. ARTC Maintenance Concept

Asset Managers are responsible for accepting the engineering and operational changes to the existing maintenance regime practised on the Defined Interstate Network (DIN). Additionally, Asset Managers exercise pro-active control of the costs of maintenance through continuous improvement of the maintenance methods

The establishment of a maintenance regime for the Signalling Systems which complies with AS4292.4 Clause 6.3 generally requires a risk and reliability based approach. The most appropriate, structured methodology for determining the maintenance requirement is Reliability-Centered Maintenance (RCM). The justification for RCM is the immediate impact single point failures of safety related systems will have on the ability to ensure safe passage of trains, within the prescribed timetable parameters

The outsourced maintenance concept adopted by ARTC provides effective and appropriate maintenance of safety related systems, whilst retaining an acceptable response time following notification of faults during peak and of-peak periods. As the infrastructure owner, ARTC must be satisfied that the provider of the maintenance is also cognisant of the requirements of AS4292.4 Clause 6.3, demonstrated by a maintenance plan derived from an RCM approach.

The maintenance concept must provide the basis for establishing supportability requirements when undertaking the design of specified configuration changes to the system.

The maintenance concept progressively changes over time, to reflect changes in the engineering and operating environment of the system.

The maintenance concept is intended to guide the development of:

- continuously improving planning and control procedures;
- supporting information systems;
- configuration changes resulting from operational requirements or maintenance improvements;
- amended maintenance plans and procedures; and
- upgraded information systems and data.

5.2. Pre-requisite Data Requirements

The Asset Manager should make reference to the following data in determining the maintenance requirements for safety critical systems:

- Manufacturer or vendor data
- Recommendations from Asset Maintainers
- Recommendations from Manufacturers, Vendor or suppliers
- Change data from Design Contractor
- Proposals from ARTC (Asset Manager, Project Manager)

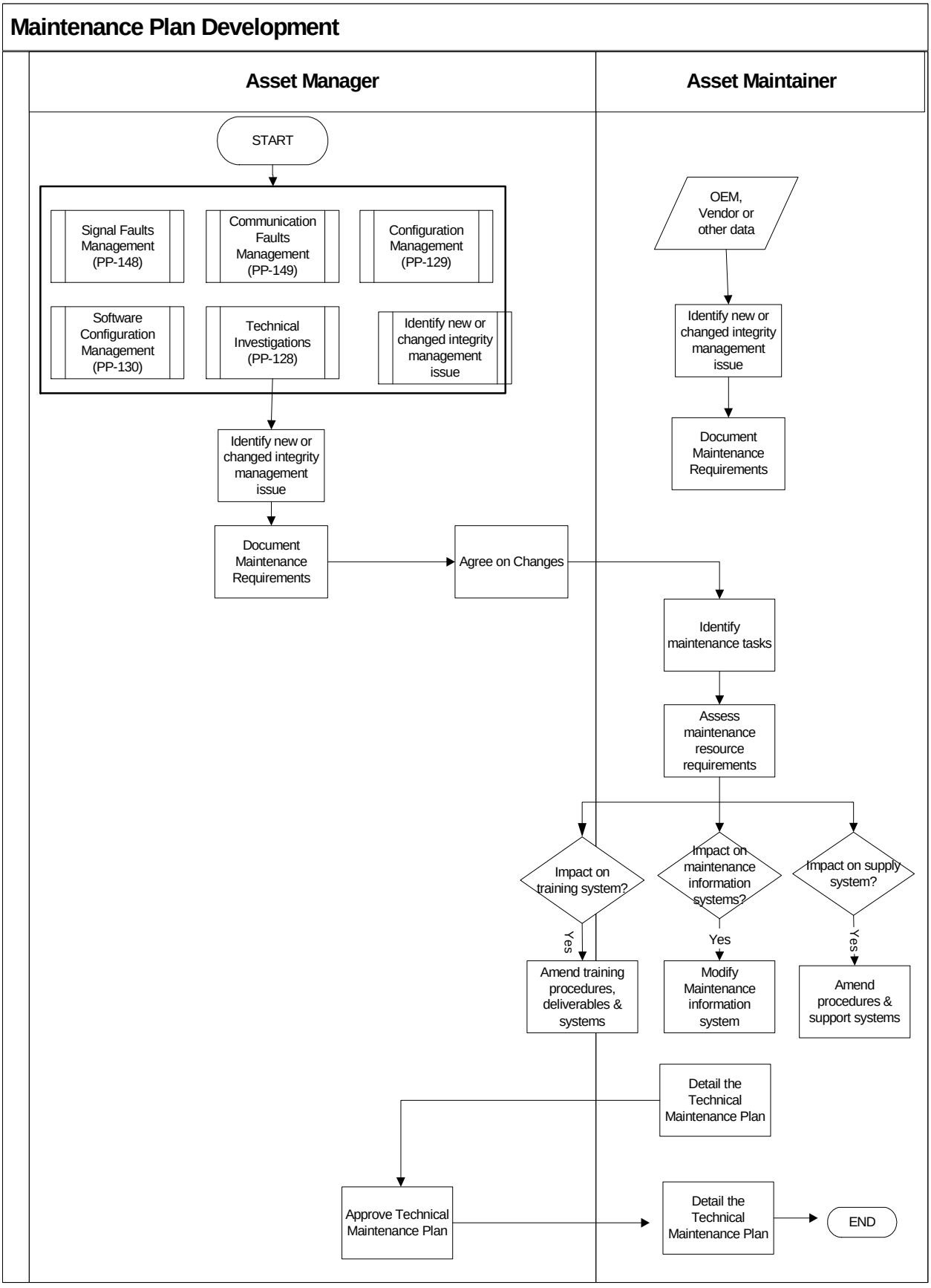
6. Procedure

The process for identifying and managing the development of maintenance requirements is illustrated in the attached flow chart. The key steps are:

1. Asset Managers review any changes to system configuration or capability for impact on the maintenance requirements.
2. Asset Managers and Asset Maintainers jointly apply the RCM principles to identify critical failure modes, effects and maintenance tasks.
3. Asset Managers and Asset Maintainers jointly assess the maintenance tasks in terms of frequency, resources and people.
4. Asset Managers and Asset Maintainers determine the impact on existing systems, including training, supply and information management.
5. Asset Managers arrange for amendment of the relevant documentation in the maintenance support systems.
6. Asset Managers procure the required support resources.

7. Flow Chart

Refer overleaf.


Maintenance Plan Development
Asset Manager
Asset Maintainer
START
Signal Faults Management (PP-148)
Communication Faults Management (PP-149)
Configuration Management (PP-129)
Software Configuration Management (PP-130)
Technical Investigations (PP-128)
Identify new or changed integrity management issue
Identify new or changed integrity management issue
Document Maintenance Requirements
Agree on Changes
OEM, Vendor or other data
Identify new or changed integrity management issue
Document Maintenance Requirements
Identify maintenance tasks
Assess maintenance resource requirements
Impact on training system?
Impact on maintenance information systems?
Impact on supply system?
Yes
Yes
Yes
Amend training procedures, deliverables & systems
Modify Maintenance information system
Amend procedures & support systems
Detail the Technical Maintenance Plan
Approve Technical Maintenance Plan
Detail the Technical Maintenance Plan
END