

ERL MAINTENANCE SUPPORT SDN BHD

Co. Reg. No. 199901023674 (498574-T)



ROLLING STOCK DEPARTMENT

**ROLLING STOCK MANAGEMENT
PROCEDURE**

Ref. No. R00.OMR.M12990.BT.0010.G

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Release

Released:	f Ham Mow Wai	Maintenance	30.06.20	
Checked:	David Thiagarajan	Documentation & Administration	22.06.20	
Checked:	Sukhbir Singh	Safety & Security	30/06/2020	
Checked:	Darren Sta Maria	Performance Monitoring and Quality & Environment	23.6.20	
Checked:	Jayarajah Savarimuthu	Rolling Stock & Engineering	22.06.20	
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	Name	Dept.	Date	Signature

Amendments or additions to this procedure must be indicated with a vertical black line in the adjacent left margin.

Change Record and Configuration Control

G	20.01.20	Introducing new column for Planning of Changes Reference for Revision. Overall revision due to department reshuffled.	Norazman
F	18.07.16	Overall revision due to department reshuffled and updated to new template.	Masitah
E	30.04.13	Overall revision and to include QEMS matters	Mohamad
D	17.03.08	To combine & supercede the procedures, i.e. Setup, Process & Workflow, [R00.OMR.M12990.BT.0004.B] and Maintenance Concept/Philosophy, [G00.OMR.M12910.DT.0001.A] as per Section 4 & 5.2. Overall contains also have been revised.	Mohamad
C	16.07.07	Revised and included clause 4.4, 5.3 and 5.5	Md Jamil
B	14.12.06	Updated due to Department reshuffled.	Md Jamil
A	11.01.06	New	Md Jamil
Revision	Date	Modification	Name

Planning Of Changes Reference For Revision: R00.OMR.M12990.BT.0010.G

Issues To Consider	Checked <i>(Please mark X)</i>				Remarks
1) Are there any negative impact?	YES		NO	X	
2) Will the integrity of QEMS be affected?	YES		NO	X	
3) Resources available?	YES	X	NO		
4) Allocation or relocation of responsibilities and authorities required?	YES		NO	X	

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1 Purpose

The purpose of this document is to provide an overview and guideline on the management of Rolling Stock Department. This document shows a systematic way to manage Rolling Stock Department, in order to meet or satisfy the objectives of department in particular and Company in general as stated in Quality and Environmental Manual [G00.OMQ.M11421.AF.1009.*].

Where applicable or necessary, this procedure is to be read together with Company Procedure Manual (Intro & Index), [G00.OMM.M11160.BT.1001.*].

2 Scope, Distribution & Access

This Procedure is applicable to all Rolling Stock Department staff. The distribution and access shall be available to all staff via Electronic Document Management System at <http://express265>, RST Portal at <http://e-masportal.com/erl/indeks.php> and also a hardcopy at the Foreman's Room.

3 Reference, Abbreviations and Definitions

Abbreviations used in this document are;

DWE	Depot Workshop Equipment
EDMS	Electronic Document Management System
E-MAS	ERL Maintenance Support Sdn. Bhd. (Co. Reg. No. 199901023674 (498574-T))
EMS	Environmental Management System
ERLSB	Express Rail Link Sdn. Bhd. (Company No. 375839-H)
HM	Heavy Maintenance
HOD	Head of Department
KLIA	Kuala Lumpur International Airport
LM	Light Maintenance
MR	Appointed Management Representative for Quality Environmental Management System i.e. PQE HOD
MTN	Maintenance Department
MMT	Material Management
OCC	Operation Control Center
OPS	Operation Department
O&M	Operation & Maintenance
PRC	Procurement Department
QE	Quality and Environmental
QEMR	Quality and Environmental Management Representative
QEMS	Quality and Environmental Management System
PQE	Performance Monitoring and Quality & Environment
RST	Rolling Stock Department
SAP	System application Product
SAS	Safety & Security Department
DTA	Documentation & Administration

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ISO	14001:2015 & 9001:2015
*	Refer to the latest version

4 Rolling Stock Department

RST is responsible to carry out train maintenance that related to

- a. 10 KLIA Express trains
- b. 8 KLIA Transit trains

4.1 RST Objectives

RST objective is to deliver safe and reliable of trains, adopting highest quality and environment friendly maintenance practices.

RST is responsible to deliver the required number of trains for KLIA Express and KLIA Transit every day as required as stated in O&M Contract, [G00.OMG.M15000.GD.1004.*]. Therefore, RST has to carry out maintenance activities on the trains in order to ensure the trains are running in the most safest and reliable conditions.

RST is striving to optimize all the available resources effectively whilst maintaining the required safety and work standard and also to implement environment friendly maintenance practices.

RST objective also established and published in Rolling Stock Department Function Chart, [R00.OMR.M12990.DD.0001.*].

4.2 RST Working Structure

RST is structured to ensure all the maintenance works are carry out smoothly and systematically. RST is divided into three (3) groups as below. They are selected depending on their qualification, experience, competency and performance that they have and shown. The group's functions are as described as follows:

- i. **LM** – Covering train maintenance works as below:
 - a. Scheduled Maintenance - Daily Inspections, T2 @ 10K km & 13K km, T3 @ 30K km & 40K km, T4 @ 150K km & 200K km, T5 @ 750K km & 1M km, ultrasonic (NDT) inspection and provide additional support for T6 @ 1.5M km & 2M km.
 - b. Unscheduled Maintenance – Modification, troubleshooting, repairs, testing & mainline monitoring when required.
 - c. Others – Train leveling, train axle load test, train swaying inspection, wheel re-profile and brake disk skimming, train movement IN/OUT of main workshop and etc.
- ii. **HM** - Covering train maintenance works as below:
 - a. Scheduled Maintenance;
 - T6 @ every 1.5M km & 2M km,

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- Wheel change program, approximately 2,000,000 km
 - Brake disc replacement, approximately 1,150,000 km
 - Primary and secondary dampers replacement, approximately 1,300,000 km
 - Primary spring replacement, approximately 1,300,000 km
 - Overhaul and refurbishment component parts such as gearbox, traction motor and etc.
- b. **Unscheduled Maintenance – Supporting Light Maintenance** when the failure/damage is required for major repair and mechanical component change.
- c. Supporting other group when required such as T2 – T5, train leveling, train axle load test, train swaying inspection, wheel re-profile and brake disk skimming, train movement IN/OUT of main workshop and etc.
- iii. **Engineering Support –** Covering management & maintenance works as below:
- a. Major Troubleshooting and upgrading or modification of the train subsystems such as auxiliary power converter container reinforcement, passenger door overhaul and etc.
 - b. In house fabrication
 - c. Train swaying monitoring
 - d. Handling ISO documentation for RST
 - e. Selective crucial component monitoring and analysis such as gearbox oil monitoring & analysis, train transformers monitoring and etc.

4.2.1 Job Description

The responsibility and function of every position is described in their respective Job Description. The Job Description is issued and signed by the personnel involved in new employment and promotion.

The guideline in handling, distribution and administration the Job Description could be referred to Job Description Procedure, [G00.OMH.M11720.ZP.0004.*]

The reference of Job Description regarding the position is as per listed in Table 1 below:

No.	Reference	Position
1.	Job Description - Manager (HOD - RST)	G00.OMH.M11120.ZJ.0084.*
2.	Job Description - Assistant Manager (Assistant HOD - RST)	G00.OMH.M11120.ZJ.0090.*
3.	Job Description - Engineer (RST)	G00.OMH.M11120.ZJ.0092.*
4.	Job Description - Technical Executive (RST)	G00.OMH.M11120.ZJ.0085.*
5.	Job Description - Technical Executive E2 (RST)	G00.OMH.M11120.ZJ.1194.*
6.	Job Description – Executive (RST)	G00.OMH.M11120.ZJ.1195.*
7.	Job Description - Supervisor (RST)	G00.OMH.M11120.ZJ.0086.*

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8.	Job Description - Inspector (RST)	G00.OMH.M11120.ZJ.0087.*
9.	Job Description – Inspector G4 (RST)	G00.OMH.M11120.ZJ.1196.*
10.	Job Description - Senior Technician (RST)	G00.OMH.M11120.ZJ.0091.*
11.	Job Description - Technician (RST)	G00.OMH.M11120.ZJ.0088.*
12.	Job Description - Rescue and Re-railing Team Leader [RST]	G00.OMH.M11120.ZJ.1163.*
13.	Job Description - Rescue and Re-railing Support [RST]	G00.OMH.M11120.ZJ.1164.*
14.	Job Description - Rescue and Re-railing Trainer [RST]	G00.OMH.M11120.ZJ.1165.*

5 Maintenance Management

The RST shall be maintained in accordance with the manuals provided by the ERLSB. ERLSB is obliged to provide these manuals under the O&M Contract. These manuals are available in softcopy and hardcopy for reference.

RST internal procedures and technical instructions are also created to support maintenance activities, in accordance with the O&M Manuals. These documents will provide guideline or instruction to the Rolling Stock personnel. The list of these documents could be viewed in RST Documentation Structure, [G00.OMR.M10100.BK.0001.*].

5.1 Maintenance Concept

The RST maintenance concept is based on the maintenance intervals given by the manufacturers as stipulated in the O&M Manuals. The types of maintenance activities performed by Department are as follows:

5.1.1 Scheduled Maintenance

In brief, the Schedule Maintenance includes the following activities as prescribed under the Maintenance Manuals and/or internal procedures:

RST Maintenance scheme:

- i. Daily Inspection – every night (for trains scheduled for Operations)
- ii. T2 at 10K / 13K km ~ every week
- iii. T3 at 30K / 40K km ~ approximately every month
- iv. T4 at 150K / 200K km ~ approximately every 6 months
- v. T5 at 750K / 1M km ~ approximately every 2 years
- vi. T6 at 1.5M / 2M km ~ approximately every 4 years
- vii. Primary and secondary dampers replacement at 1,300,000 Km
- viii. Conditions Monitoring – i.e. wheel change, brake disc replacement, gearbox oil analysis and etc.

Further detail of RST scheduled maintenance could be referred to Scheduled & Unscheduled Maintenance Guideline, [R00.OMR.M90001.BT.1001.*].

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5.1.2 Unscheduled Maintenance

The Unscheduled Maintenance includes all the rectification work performed upon receiving failure notification from OCC (Service Failure Notification – SF) or upon discovery during carry out maintenance on the train or equipment itself (Maintenance Related Notification – MR).

Further details of RST unscheduled maintenance could be obtained from Scheduled & Unscheduled Maintenance Guideline, [R00.OMR.M90001.BT.1001.*].

A guideline for RST corrective maintenance is also provided in order to provide instruction for safe and efficient maintenance of ERL & CRS train. This document specifies the various maintenance manuals and processes that govern corrective maintenance activities within RST. Refer to RST System Corrective Maintenance Guideline, [R00.OMR.M90000.BT.0002.*].

5.1.3 Modifications/Upgrade

As part of system improvement and operational requirements from experience, modification or upgrade is planned and carried out from time to time. But they must be approved by ERLSB.

5.1.4 Additional Services

As specified under the O&M Contract covering additional scope, as and when requested by ERLSB.

5.2 Setup, Process & Workflow

In order to inculcate a sense of delivering works on the basis of client-serving and clear mindset on priorities of RST, both on train deliverables and management matters. Therefore, what trigger works or other type of action are charted in the following logical sequence:

- i. Input level (category of information received)
- ii. Decision level (filtering information and deciding what action to take)
- iii. Process level (general flow of action taken for respective decision level)
- iv. Recording level (recording of all work activities undertaken)
- v. Audit level (auditing process of all recorded activities)

The Documents will act as a platform for further improvements as and when discovered during its implementation are;

- i. Department's Process Flow
This is detailed under Rolling Stock Department Process Flow, [R00.OMR.M12990.BT.0002.*] - refer Attachment 1
- ii. Department's Typical Workflow
This is detailed under Rolling Stock Department Process Flow – Personnel [R00.OMR.M12990.BT.0003.*] - refer Attachment 2.1 & 2.2

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5.3 Maintenance Philosophy

Based on the Maintenance Concept above, the Maintenance Philosophy below are based on industry best practice as well as incorporating scheduled component change as described under the Maintenance Manual for defect liability safeguarding on behalf of ERLSB.

- i. Quick-change concept for strategic items such as bogies, air-conditions, transformers.
- ii. Must change as recommended in the Manual, such as gearbox oil at 200, 000 Km.
- iii. Condition monitoring replacement such as brake pads, wheels, carbon strip.
- iv. As and when failed/required, such as electronic card, sensors, fuses.
- v. Repair over replace provided cost-effective and/or quick turnaround such as transformer.
- vi. Recommendation for component lifesaving such as Energy Saving Programme
- vii. Continuous improvement

5.4 Maintenance Record Management

RST uses three (3) types of software applications commonly used to ease maintenance record keeping and monitoring process. The applications used are as Table 2.

Applications / File Location	Access
SAP System	Appointed SAP key user only
EDMS	Appointed personnel only
As stated in Record Matrix	All RST Personnel

Table 2 - Applications used

5.4.1 SAP System

All RST maintenance processes are carried out and recorded in SAP System via work order. The man-hours utilization and materials consumed are recorded in various types of work orders depending on the work type.

Any failure found during operation or maintenance, is reported in SAP System by creating a notification and subsequently is followed up by the unscheduled maintenance work order (ZUMO). All the data entered then could be recalled for analysis and reference.

The supervisor / assignee is responsible to close work orders. They are also responsible to ensure the accuracy of data input into work orders. Work orders with task completed are not to be left unclosed for more than a month.

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The supervisor / assignee is required to justify (either by written form or verbally) the unclosed work orders when requested by management.

5.4.2 Checklist

All maintenance instructions and its interval achieved from the maintenance manuals were converted into starchart and checklist to ease maintenance work and to be kept as record. All checklists must be stamped/sign by the personnel who carried out the maintenance and must be counter signed by the respective Supervisor or Inspector.

The entire checklists used by RST are listed in Record Matrix – RST, [G00.OMR.M11460.QB.0001.*]. This document shows the procedure reference, retention time and storage location.

5.4.3 Softcopy Record

Softcopy record is widely used for data keeping and monitoring maintenance activities and normally created in Microsoft Excel format. The Shift Supervisor or Inspector is responsible to update these entire files accordingly after every maintenance activities are carried out.

The entire softcopy record used by RST is listed in Record Matrix – RST, [G00.OMR.M11460.QB.0001.*]. This document shows the procedure reference, retention time and storage location.

5.5 Safety Management

Some maintenance work is in potentially hazardous environments. The risk is managed through understanding the consequences of failure and being competent in the response to those failures. To work safely and avoid injuries, all maintenance personnel must understand and follow all the safety instruction given in the maintenance manual and procedures. All the safety issues have to be addressed to the maintenance personnel during training and briefing.

5.5.1 Maintenance Safety Note

All the maintenance manuals provided by manufacturer or supplier contains a safety note. The maintenance personnel must understand and follow all the safety instruction given in the maintenance manual before commencing any maintenance work.

Safety notes in plain language should warn the maintenance personnel of the described components or system. The terms DANGER, WARNING, CAUTION and NOTE are used to draw attention to special dangers or to exceptional or unusual information.

5.5.2 Personnel and Workplace Safety

RST, OPS and SAS are working together in order to ensure safe work environments to avoid injuries and accidents. From time to time Safety & Security Meetings within E-MAS are conducted by SAS for discussing the safety and security issue for development or improvement.

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A few safety relevant procedures also have been released and all personnel are strictly to follow. The list of safety related procedures are as Table 3.

Document Name	Document Code
Incident Procedure - Rerailing of Vehicles	G00.OMR.M15880.NG.0001.*
Train/Track Bound Vehicle Movement Into & Out of Work Areas Within Depot Procedure	G00.OMR.M11450.DS.0002.*
Protection of Staff Working in the workshop	D00.OMR.M15881.BT.0002.*
Administration of Train Toilet Discharging at Stabling Yard	G00.OMR.M12990.BT.0001.*
Emergency Response Plan Incorporated with Incident Command System	G00.OMZ.M11451.CB.0001.*
Safety Procedure	G00.OMZ.M11451.NP.0006.*
First Aid Kit Procedure	G00.OMZ.M14100.QP.0001.*
Safety Critical Work	G00.OMZ.M11154.BT.0001.*
Fire Evacuation Plan KRU	G00.OMZ.M15400.DS.0009.*
Safe Lifting Procedure	G00.OMZ.M18250.CA.0001.*
Scaffolding Procedure	G00.OMZ.M11450.DS.0040.*
Rulebook - Section A	G00.OMZ.M10100.BT.0001.*
RST System Corrective Maintenance Guideline	R00.OMR.M90000.BT.0002.*

Table 3 - List of safety related procedures

5.6 Incident Reporting

All incidents or accident occurred within RST responsibilities shall be reported accordingly as described below. Any written report shall be prepared in E-MAS report template in accordance with Documentation Manual, [G00.OMM.M11160.BT.0001.*].

5.6.1 Train and Workshop Equipment Incident/Accident Report

The Incident/Accident must be notified in SAP System as required in SAP Plant Maintenance Process Guide, [G00.OMN.M11070.CZ.1001.*].

In case of major Incident/Accident, a written report shall be forwarded to General Management. All relevant information i.e. notifications, pictures, maintenance records, cost of manpower and material for rectification and etcetera shall be attached.

5.6.2 Maintenance Resources Incident/Accident/Missing Report

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Refer section 4.2. The responsible person or the person in-charge of the maintenance resources shall immediately inform HOD via e-mail. A written report then shall be forwarded to HOD complete with the detail descriptions of maintenance resources, nature of defect/missing, caused of defect/missing and recommendation action in order to avoid same incident/accident occurrences.

5.6.3 Safety & Health Incident/Accident Report

All Incident/Accident which related to Safety & Health and is potentially hazardous, shall be reported in accordance with Safety Procedure, [G00.OMZ.M11451.NP.0006.*].

5.6.4 Spillage Incident/Accident Report

Spillage incident shall be handled and reported in accordance with Spillage Control Process Flow, [G00.OMQ.M11426.AH.1002.*].

6 Quality & Environment Management

Any activity carry out in RST shall comply with Quality and Environmental Management System Manual, [G00.OMQ.M11421.AF.1009.*].

RST HOD is responsible to;

- Implement and maintain the QEMS and documentation structure within RST.
- Ensure that all procedures and work processes conform to the principles of ISO Standard.
- Ensure RST QEMR have adequate time and resources to fulfill the obligations of as QEMR

QEMR is nominate by each department and shall attend all aspects regarding Quality & Environment according to ISO Standard within their department and will be members to the QEMR.

RST QEMR is responsible to ensure that RST adheres to the requirements detailed in the Quality and Environmental Management System Manual, [G00.OMQ.M11421.AF.1009.*].

All RST personnel have the responsibility to be aware of the general requirements of the QEMS through RST HOD & RST QEMR.

7 Maintenance Resources

In order to ensure all maintenance activities are carried out effectively, the E-MAS allocates RST with required resources. The resources provided are briefed in the next sub chapter.

7.1 Tool

7.1.1 Personal tool

RST personnel are provided with personal tool depending on their work requirement. The tools are to be kept and maintained by the respective personnel and they are accountable

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for any lost tools. Damaged tool shall be returned back to MMT for replacement. The tools were categorized as follow;

- i. Heavy tool trolley
- ii. Light tool trolley
- iii. Tool Bag (Troubleshooter)
- iv. Tool Box (5 tray)

7.1.2 Tools in RST Tool Store

Some of the common and special tools are kept in the RST Tool Room, in order to allow all the groups to share the tools among themselves. To ease for returning and monitoring processes, all the tools are labeled and the designated slot for keeping it were shadowed for easier tracking. Supervisors or Inspectors are responsible to ensure all tools are complete, serviceable and cleaned during shift handing over. They will be held accountable for any losses of these tools.

7.1.3 Calibration of tools

In order to ensure the correct functioning of measurement tools/equipments, they shall be calibrated. The HOD and Department Calibration Committee Representative are responsible to ensure the calibration process is carried out. Softcopy record sheet for monitoring purposes is profiled in EDMS, refer to RST Calibration Monitoring Record, [R00.OMR.M12990.DC.0004.*]

The in-house technical instruction for calibration could be referred to Calibration & Verification Management, [R00.OMR.M90000.QP.1001.*].

7.1.4 Audit

Tools shall be audited once a year. The HoD is responsible to ensure tool audit is done and report submitted to top management. For RST, tool audit is once a year.

Tools owner shall make available tools to be audited (internal audit / external audit) as and when requested by management.

7.2 Telecommunication facilities

In order to ensure efficient communication internally and externally, the Company has provided a few types of telecommunication devices as follows.

7.2.1 Fixed telephone line/ DECT phone

The holders and telephone number of Company Fixed telephone line / DECT phone could be referred to the latest E-MAS Phone Directory. The Company wide procedure governs the usage of fixed telephone line / DECT phone could be referred to Telecommunication Facilities Procedure, [G00.OMM.M11150.CD.1005.*].

7.2.2 Company Hand-phone

The Company Hand-phones are provided only to HOD, Technical Executive and relevant Supervisors. The holders and telephone number of Company Hand-phone could be

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referred to the latest E-MAS Phone Directory. The Company wide procedure governs the usage of Company Hand-phone could be referred to Telecommunication Facilities Procedure, [G00.OMM.M11150.CD.1005.*].

7.2.3 Portable Radio

Portable Radios are provided to Light Maintenance Group on sharing basis among the groups in order to ease communication within RST during carry out maintenance or train movement. Portable Radio is also used for communication between OPS particularly to communicate during train movement and to report train failure during operation.

7.3 Laptops

The list of laptop inventory is available in RST Maintenance Laptop Record, [R00.OMR.M12990.CI.0004.*]. Laptops are provided and accessible to all RST personnel. All RST personnel are responsible to ensure all the laptops are in good working condition at all the time. Engineering support group shall audit all train sub-system and equipment maintenance tools, which stored in the laptops at every 6 months interval.

Shift Supervisor/Inspector has to check the condition and functionality of the laptop and record it in RST LM Supervisor's Handing & Taking Over Sheet, [R00.OMR.M14100.PT.0003.*].

7.4 Spare

Spare parts and consumables are stocked and controlled by MMT. The work order or an identified Cost Center must be presented to the storekeeper prior to the issuance of the material requested. SAP System is used for keeping the material data and material movement record, including automatically triggered Material Re-order Point (MRP).

The Company wide procedure governs the warehouse operation procedure could be referred to Warehouse Operation Procedure, [G00.OML.M13500.CA.1001.*].

7.4.1 Defective Part

All the defective parts and used consumable containers must be returned back to store either for warranty claims, repairing or scraping. For repairing purposes, the ZRPO work order shall be created.

The detail process procedure for returning the defective part could be referred to Warehouse Operation Procedure, [G00.OML.M13500.CA.1001.*].

7.4.2 Purchasing

When necessary a purchase order could be generated for purchasing new item not available in the stock list or for getting services from third party. The purchasing process guideline could be referred to Purchasing Procedure, [G00.OMU.M10540.CD.0008.*]

For purchasing of tool, services, spare and consumable, the dedicated personnel from RST has to submit the ERL Purchase Requisition Form to PRC. RST also has to provide technical assistance on the item requested and to follow up on the delivery date with PRC.

<i>Location</i>	<i>Reference</i>	<i>Rev.</i>	<i>Date</i>	<i>Page No.</i>	<i>Document Title</i>
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A budget for spare and services will be prepared on annual basis.

7.5 Train Movement Within Depot

Every train movement within depot area including train request and release procedure, shall be conducted in accordance with Train/Track Bound Vehicle Movement Into & Out of Work Areas Within Depot Procedure, [G00.OMR.M11450.DS.0002.*].

8 Performance Monitoring

In order to achieve RST objective and all the planned strategies, management and resources as mentioned earlier in this document successfully, a few analysis and report have been produced to indicate performance of RST. The report produced as follow:

- i. Daily availability of trains - updated daily via e-mail and also in SAP System, Y_PRD_02000053 - Rolling Stock Status.

RST performance also can be measured from ERL O&M Monthly Report that is generated within SAP and submit to ERLSB which is managed by DTA. The reports produced are as follow:

- O&M Vehicle Kilometers Report, [G00.OMN.M11095.RL.1002.*]
- O&M Missed and Cancelled Trip Report, [G00.OMN.M11095.RL.1003.*]

Appendices

Appendix 1 - Rolling Stock Department Process Flow - Attachment 1
[R00.OMR.M12990.BT.0002.*]

Appendix 2 - Rolling Stock Department Process Flow – Personnel - Attachment 2
[R00.OMR.M12990.BT.0003.*]