Code of Practice for Route Knowledge within Possessions

M&EE Networking Group

COP0128

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Background

A sub-group of the M&EE Networking Group have looked at the process for the management of route knowledge specifically within possessions. The M&EE Networking Group recommend this COP as good practice for the industry.

GE/RT8000/OTP issue two was issued in April 2004 which underwent a complete review as concerns were raised by industry over the completeness of instructions for the safe operation of On-track Plant (OTP). The process for the appointment and presence of a machine controller and as such the competence would be clarified and expanded upon.

The Railway group Standards clause requirements:
A Machine Controller must be appointed and be present with the OTP when the OTP will be:
- Placed on, or removed from, the running line or siding
- Set up
- Operated
- Cross tracked

However, the rule book allowed for the OTMs not to have a machine controller with it as the staff are ‘train drivers’ who could undertake the function of the machine controller as they are competent in Rules and Regulations. This was due to the ‘professional driving’ concept whereby a holistic approach is taken to ensure the train driver is given the skills to handle the train effectively, the knowledge to make effective decisions and judgments (including SPAD training, lifestyle training, route & traction knowledge and an understanding of the roles of others in the operation of the railway) and finally, by providing opportunities for this knowledge to be regularly updated and practised.
Although there is an exemption from the requirements of the Train Driver Licenses and Certificates Regulations 2010. Part 1.3.(2) in relation to ‘driving of trains on track which is temporarily closed to normal traffic for the purpose of maintaining, renewing or upgrading railway infrastructure’. There is still a requirement for railway undertakings to ensure that their employees have the necessary training and competence to carry out their duties safely. This includes having the necessary level of knowledge of the routes over which they are required to work and a suitable and sufficient risk assessment is carried out to consider the level of knowledge required to safely operate over a route within a possession based on any route risks identified as contained within the Rail Industry Standard RIS-3702-TOM.

M&EE COPs are produced for the benefit of any industry partner who wishes to follow the good practice on any railway infrastructure. Where an infrastructure manager has mandated their own comparable requirements, the more onerous requirements should be followed as a minimum for work on their managed infrastructure.

The M&EE Networking Group makes no warranties, express or implied, that compliance with this document is sufficient on its own to ensure safe systems of work or operation. Users are reminded of their own duties under health and safety legislation.

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Purpose

This Code of Practice contains guidance and generic good practice for the management of route knowledge for train drivers within a possession. It sets out the minimum requirement for these arrangements to minimise the risk associated with route knowledge in possessions and provides individual companies with a framework that they can tailor according to local circumstances in order that staff have sufficient knowledge of route factors and risks and appropriate practical operating experience to enable them to work safely over the route and be able to have the necessary skills and confidence to predict and react to environmental changes and conditions.

The requirements within this document have been established to assist the M&E Networking Group to control interface risks that have been identified and that require a degree of reciprocal action and co-operation.

This document is a guide for railway undertakings who are engaged with OTM/train operational movements when working within a possession of a running line.
Scope

This Code of Practice details the route knowledge required within possessions and applies to On Track Machine Drivers. Railway undertakings should consider the individual learning needs of staff when determining the risks, so that the individual route learning plans can be aligned to previous experience, skills, knowledge and abilities.

Route learning procedures may be reviewed in light of infrastructure changes and technological advances so that any necessary changes can be made to route learning procedures and to enable staff skills and knowledge to be updated. The introduction of European Rail Traffic Management System, for example, may impact on route knowledge learning requirements.

Definitions

Operational Railway
When the lines are open to normal traffic.

Possession
When a section of track is required for maintenance and trains cannot run, it is handed over by the operators to the engineers, who take 'possession'. Special protective measures are used to prevent access by unauthorised trains. When the track is returned to the operators, the engineers "give up possession". (reference; Network Rail Safety Central website)

Train Driver
The person in charge of a train movement, or an On Track Machine (OTM).

Supporting Documents

This COP supports the relevant provisions in the National Operating Publications (NOPS) and does not amend or alter their provisions in any way.

The following documents support this COP:

- RIS-3702-TOM Rail Industry Standard for Management of Route Knowledge for Drivers, Train Managers, Guards and Driver Managers
- Rule Book Module TW1 Preparation and movement of trains.
- Professional Driving Policy (individual companies)
- GE/RT8000/HB15 – Duties of a Machine Controller (MC) and on-track plant operator
- M&EE COP0126 - Management of OTM Speeds within T3 Engineering Possessions
1. Objectives

1.1 Discussions held with industry members have revealed differing views regarding the requirements, for appropriate route knowledge within possessions, on what is necessary to ensure that railway undertakings are meeting their legal obligations in connection with these works. This COP is intended to provide a documented basis for the subsequent hazard identification and risk management work.

In particular, it provides a basis for:

- Undertaking a suitable and sufficient risk assessment to determine the level of knowledge required to safely operate over a route within a possession and any route risks identified as contained in the RIS-3702-TOM
- Consider principles of prevention where possible & reasonable
- Inform and provide instructions to suitably trained, competent staff
- Involve and consult other affected parties

This process should be underpinned within each individual company’s competence management system.

2 Functions and Elements -

2.1 Human

2.1.2 Route learning is related to the development of non-technical competence of drivers. For example, elements of situational awareness are required for a large proportion of driving tasks including detailed monitoring tasks, observing speed limits, retaining information, managing distractions, looking out for hazards, assessing and understanding driving situations, and changing driving strategies depending on changing situations. A series of workshops were undertaken to understand the systems inputs and outputs and how the overall process could enhance the M&EE competence management process for the required route knowledge in possessions taking into account:

- Individual factors
- Interface with other operational departments

2.2 Technical
2.2.1 The RIS-3702-TOM Rail Industry Standard for Management of Route Knowledge for Drivers, Train Managers, Guards and Driver Managers was used as the basis to ensure that the staff had the necessary training and competence to carry out their duties safely in a possession.

2.3 Operational

2.3.1 The introduction on this code of practice does not change any driver interface arrangements with operational departments, lineside signaling, infrastructure manager and the emergency services. These arrangements will remain the same to ensure processes for dealing with emergency situations are fit for purpose; The supporting references such as the Railway Industry Standards, Sectional Appendix, rolling stock technical specifications and operational procedures are to remain current.

3 Interfaces and Boundaries -

3.1 Physical

3.1.2 To provide sufficient knowledge of route factors and route risks and to operate trains under all climatic and operating conditions

3.2 Human

3.2.1 Each railway undertaking will ensure that the training, development, monitoring and assessment of staff on route knowledge and route risks and appropriate practical operating experience to enable them to work safely over the route to give them the necessary skills and confidence to predict and react to environmental changes and conditions.

3.2.2 The interface between a person planning a possession and the railway undertaking(s) whose services will be affected by it must be considered throughout the planning process.
3.3 **Functional**

3.3.1 There is no change to the input of the information required but the outputs and the process will be to provide an example of a planning check sheet for route knowledge in possessions (Appendix A) and an example of ways to manage the process for route knowledge requirements within a possession (Appendix B) to ensure the staff have sufficient route knowledge within the possession.

3.3.2 The instructions and authority for movements when working within a possession of a running line or siding for an On-track plant (OTP) are documented within the relevant GE/RT8000/Handbooks.

3.4 **Environmental conditions**

3.4.1 All movements must be made at caution.

3.4.2 The train is operated in such a way and at a speed no greater than 25 mph (40 km/h) at any part of the journey to enable drivers to stop within the distance that can be seen to be clear ahead when entering, making a movement within, or leaving the possession.

3.4.2 The maximum speed within worksites will be at no greater than 5 mph (10 km/h) unless you are given specific instructions by the ES or SWL. When a driver is requested to travel at a speed greater than 5mph (10 km/h) in a worksite by the ES or SWL the driver will travel at caution using his professional discretion at what is an appropriate speed up to a max of 15mph. This will vary depending on such factors as curvature of the line, weather conditions, low rail adhesion and poor visibility etc.

4 **Operational Procedures and Rules**

4.1 Each railway undertaking shall identify and document the elements of route knowledge essential for safe operation of their trains on the routes over which they operate and identify route risks in normal and degraded operations.

4.2 **Railway Group Standards**

4.2.1 The RIS-3702-TOM Rail Industry Standard for Management of Route Knowledge for Drivers, Train Managers, Guards and Driver Managers has been adopted by the M & EE group in order to assist in the management of training, development, monitoring and assessment of route knowledge and route risks.
The National Operations Publication (NOPS) GE/RT8000/HB15 has been adopted as industry good practice, this along with the requirements of the machine controller and the specific details of the brief to be provided for staff, which includes for specific local features and conditions such as speed restrictions, lineside signs, gradients, poor railhead conditions and location of marker boards etc.

5

Existing Safety Measures that Apply

5.1 As part of The Railways and Other Guided Transport Systems (Safety) Regulations 2006 the M&EE have embedded arrangements in place for ensuring their staff have the required capability.

5.2 As part of the core training, development, monitoring and assessment the following principles are covered. Route knowledge is central to ensuring that drivers are fully aware of, and understand the implications of the general characteristics of the routes over which they will drive, the specific SPAD risks and any other significant risks that may be encountered. A defensive driving approach focuses on enabling the driver to anticipate and respond to scenarios in a way that minimises the inherent risk. Lifestyle factors have can have a significant effect on the performance of drivers and the members of M & EE have developed policies, training packages and support for drivers in this area, including understanding the impact of shift work, adequate rest between shifts and drug/alcohol abuse.

5.3 Driving cab discipline focuses on the working environment of the driver, including potential distractions. There are many factors that challenge a driver’s cab discipline and again the M&EE has been working to make improvements in this area including not permitting unauthorised personnel in the driving cab, ensuring that unnecessary tasks and/or communication does not take place whilst driving.
6 Risk Assessment and Hazard Identification

6.1 The purpose of the hazard identification exercise is to identify all reasonably foreseeable hazards and document the control measures which are in place or need to be implemented to eliminate or reduce risk.

6.2 A risk assessment has been undertaken by the M & EE operations group to identify all reasonably foreseeable hazards, associated risks and their control measures. The responsibility for ensuring this risk assessment is maintained and updated will be for the individual companies concerned and as such will be communicated to the relevant staff.

6.3 Additionally

6.3.1 Are there other recent changes to consider Yes x No (if yes list below)

Changes to Rule Book Module T3 and Handbooks 9, 11, 12 & 15

6.4 Rule Changes

6.4.1 Reduction of maximum permitted speed from 40 mph to 25 mph in possessions with additional requirement for ES/SWL & PICOP to instruct drivers/OTM operators or MC/Operators to proceed at caution, without specifying an upper speed limit

6.5 Benefits

6.5.1 Collision avoidance - Consistent instructions given to drivers/operators/MC to allow them to control their vehicles safely, maintaining control, using their expertise to travel at a speed to stop safely within the distance the line ahead can be seen to be clear

6.5.2 All infrastructure companies undertake mandatory T3 engineering possession assessments within their Safety Management System (SMS) to ensure, so far as is reasonably practicable, that the competence of all safety-critical staff under their control is developed and maintained to a minimum safe standard.
6.6 **Novelty**

6.6.1 The task undertaken is routinely performed and highly practiced.

6.6.2 When driving in possessions and worksites, compliance with the Rule Book relies on the driver making continual judgements about the appropriate speed to enable drivers to stop within the distance that can be seen to be clear ahead and about the stopping distance that can be achieved by the OTM/train braking performance.

6.7 **Complexity**

6.7.1 The task undertaken is routinely performed and highly practiced.

6.7.2 To acknowledge the different levels of experience, the procedure should be adapted so that it takes into consideration the individuals competencies and understanding of the task.

6.7.3 A review of the worksite suitability will take place to identify key possession risks and determine if the risks are of a minor nature or more complex and whether risks are mitigated by suitable control measures. If the risk is deemed as unacceptable due to complexity of possession or insufficient time to provide all information to the driver, then an external route conductor will be provided. If a route conductor cannot be sourced then the job maybe amended or cancelled as appropriate.

6.7.4 A risk based training needs assessment workshop was undertaken to identify the risks and potential hazards.

7 **Failure Consequence**

7.1 Using the RSSB Safety Risk Model the worst case identified in an event of a failure is a collision between two non-passenger trains resulting from a non-passenger train cat A SPAD and a collision between trains inside possessions (including OTP), which could result in a derailment, personal injury, vehicle equipment damage, financial loss, Infrastructure damage.
7.2 Judging Significance

![Matrix for Judging Significance]

<table>
<thead>
<tr>
<th>Uncertainty of outcome</th>
<th>1 = Very Low</th>
<th>2 = Low</th>
<th>3 = Medium</th>
<th>4 = High</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Consequence of failure</th>
<th>1 = Insignificant</th>
<th>2 = Marginal</th>
<th>3 = Critical</th>
<th>4 = Catastrophic</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>X</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Apply Additional Criteria</th>
<th>Non-Significant Change</th>
<th>Significant Change</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

8 Applying Additional Criteria
8.1 Monitoring

8.1.1 Performance will be reviewed by any of the following applicable data sources

- Control logs
- Verbal advice
- Performance reports
- Individual company management group
- Accident/incident investigations
- Audit results

8.2 Reversibility

8.2.1 A review of the possession suitability will take place to identify key risks and determine if the risks are of a minor nature or more complex and whether risks are mitigated by suitable control measures. If the risk is deemed as unacceptable due to complexity of possession, individual factors or insufficient time to provide all information to the driver, then an external route conductor will be provided or the shift amended or cancelled.
The information supplied in the route knowledge in possessions pack is intended for use by the train driver and it is the responsibility of the train driver to check the contents for adequacy and accuracy and that all necessary information has been provided. Should any of the details be missing, inaccurate or inappropriate they should reject the pack and return it to the OTM Standards team or other nominated person, detailing the alterations required.

The Railway undertaking should consider the individual needs of the staff when determining the required learning that will be needed, so that the individual training needs can be met, taking into account the previous experience, skills, knowledge and abilities.

<table>
<thead>
<tr>
<th>Sectional appendix extract for entire mileage</th>
<th>YES</th>
<th>NO</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Signalling system</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Signal boxes</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Station names</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Level crossings</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Running lines</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Speed limits</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tunnels</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Junctions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Location of any points or crossovers</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Power supplies</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Areas of poor rail adhesion</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operational conditions (Changes of track, one way running, etc)</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Weekly Operating Notice (WON) for a line blockages &amp; Possessions</th>
<th>YES</th>
<th>NO</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temporary speed restrictions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Engineering arrangements</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Signalling and permanent way alterations (new items)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>General instructions and notices</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Miscellaneous instructions</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Route map/5 mile diagrams extract for entire mileage | YES | NO | N/A |
| Whistle boards                                           |     |    |     |

| Route video extract for entire mileage | YES | NO | N/A |
| Topographical profiles                  |     |    |     |
| Whistle boards                           |     |    |     |

<table>
<thead>
<tr>
<th>Cab runs</th>
<th>YES</th>
<th>NO</th>
<th>N/A</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Emergency contact details included for the controlling signal box(es)</th>
<th>YES</th>
<th>NO</th>
<th>N/A</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>OTM Notice Report</th>
<th>YES</th>
<th>NO</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nature of work (detailed information provided)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Start and end mileage shown</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Location (sufficiently detailed)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All lines for the work shown not just those being worked</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protection signals shown</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
## Requirements for basic Route Knowledge within Possessions

Specific compliance requirements have not been specified since these will be subject to company procedures.

<table>
<thead>
<tr>
<th>Company Specific Route Hazards</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>The following must be included, but not limited to:</td>
<td>Mandatory</td>
</tr>
<tr>
<td>- The effect the infrastructure can have on the braking capabilities of the types of train that are to be driven</td>
<td></td>
</tr>
<tr>
<td>- Signals which have been identified as multiple SPAD signals</td>
<td></td>
</tr>
<tr>
<td>- Signals which may be misread by drivers because of the effects of sunlight, positioning on gantries, the presence of overhead line equipment or other factors</td>
<td></td>
</tr>
<tr>
<td>- Differences between driving over the route in daylight, darkness and poor visibility</td>
<td></td>
</tr>
<tr>
<td>- Signals which may be misread by drivers because of the effects of sunlight, positioning on gantries, the presence of overhead line equipment or other factors.</td>
<td></td>
</tr>
<tr>
<td>- Unusual moves</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Physical factors</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>The following must be included, but not limited to:</td>
<td></td>
</tr>
<tr>
<td>- Whistle boards</td>
<td></td>
</tr>
<tr>
<td>- The complexity of station, junction and yard layouts and associated signalling</td>
<td></td>
</tr>
<tr>
<td>- Time of day and year when climatic conditions may negatively affect a route or part of a route.</td>
<td></td>
</tr>
</tbody>
</table>

## COMMENTS/OBSERVATIONS

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Appendix B | Example - Route Knowledge in Possessions

**ROUTE KNOWLEDGE REQUIREMENTS WITHIN A POSSESSION**

- Driver not available with RK for required route
  - Initial Risk assessment, to consider external or internal source?
    - RK External Conductor
      - RK External Conductor sourced?
        - No
          - Amend Job Yes/No?
            - No
              - Inform NWR
                - Yes
                  - Job Cancelled
            - Yes
              - RK External Conductor allocated to shift
              - Yes
                - Inform NWR
                  - Yes
                    - Job Cancelled
              - No
                - Initial planning, produce pack for RK in T3
                - Yes
                  - Pack briefed to Driver
                    - Paperwork to store as per company std.
                    - Yes
                      - NWR Line charges/amendments?
                        - No
                          - Shift delivered
                            - Finished
                        - Yes
                          - Explain T3 arrangements and risk are adequate and accurate
                          - Methods of Route Learning, i.e., Cab pass, Video, Maps