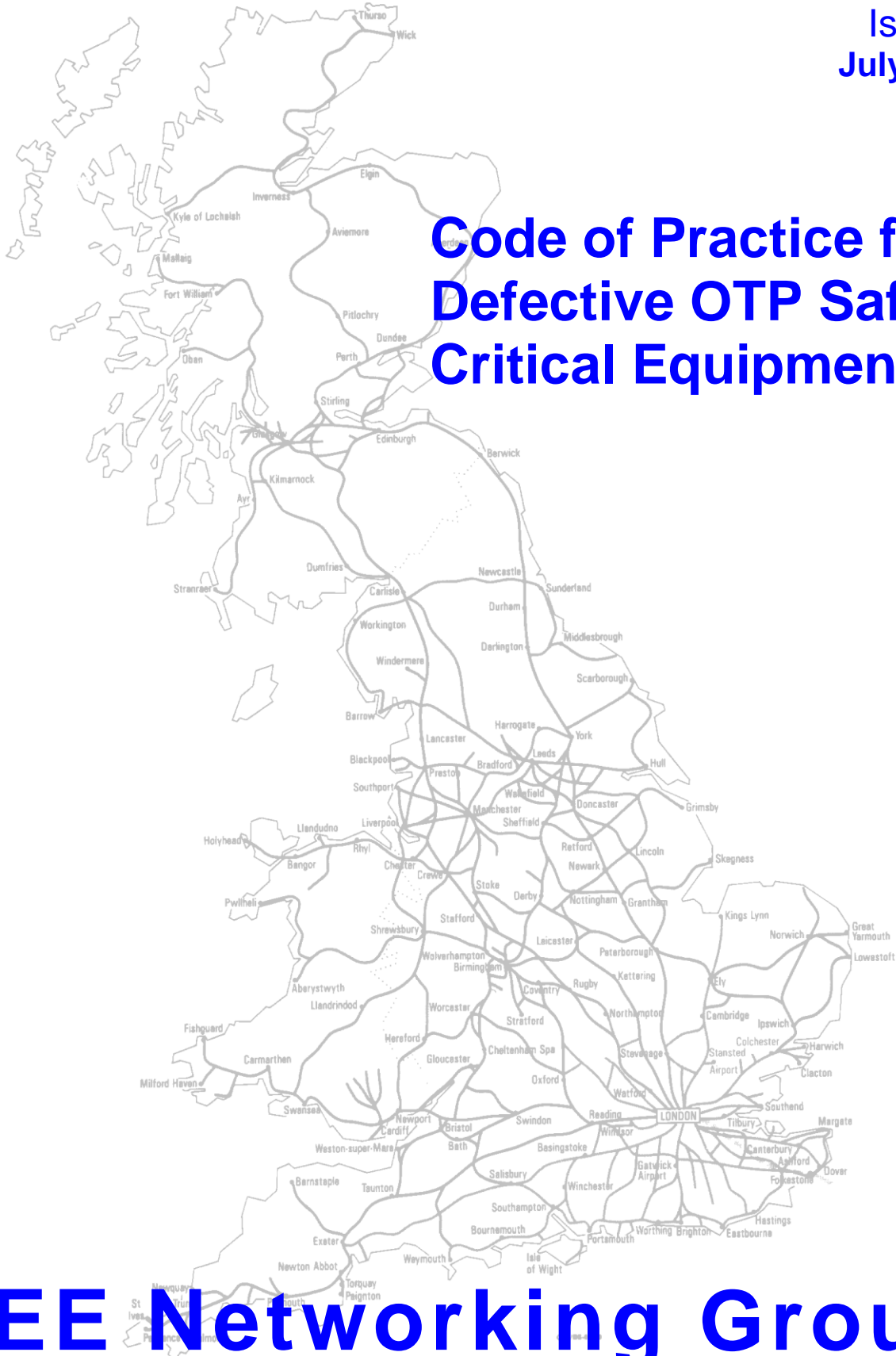


COP0038

Issue 1
July 2018



Code of Practice for Defective OTP Safety Critical Equipment

M&EE Networking Group

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Document revision history

Issue	Date	Reason for change
1	July 18	First issue

Background

A sub-group of the M&EE Networking Group have looked at the management of failed/defective OTP Safety Critical Equipment. The M&EE Networking Group recommend this COP as good practice for the industry.

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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Sign off

The M&EE Networking Group agreed and signed off this Code of Practice on 18 July 2018 and published on 1 September 2018

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Purpose

This code of practice has been developed to describe the actions to be taken by Plant Lead, Machine/Crane controllers and OTP Operators in the event of safety critical equipment becoming defective, or where it is isolated on any OTP prior to or during use on the railway infrastructure.

Scope

This Code of Practice details what actions should be undertaken when On-Track Plant (OTP) is discovered to have defective safety critical equipment prior to, or during use on any UK Railway Infrastructure.

Definitions

OTP	Machines with rail wheels capable of running on railway track, limited by their engineering acceptance to running within a possession only. For the purposes of this document they are split into three main groups: demountable machines, road-rail vehicles (RRVs), and trailers.
DSCE	Defective safety critical equipment
Plant Lead	Persons responsible for the safe use of OTP e.g. POS Rep, Plant Supervisor/manager etc.

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1. General Requirements

- 1.1 The Machine/Crane Controller should advise the Plant Lead immediately defective safety critical equipment (DSCE) has been identified.
- 1.2 The Machine Operator should record all defects in the machine log book.

2. Defective Safety Critical equipment :

2.1 List of Safety Critical OTP equipment (where fitted):

- Axles
- Bogie Part or Bogie Mounted Equipment
- Braking Systems
- Cab Heating/Cooling Equipment
- Data Logger
- Duplex Communication Equipment
- Emergency Equipment Including:-
 - Fire Extinguishers
 - Emergency Red/White Lamps
- Fire Detection/Suppression Systems
- Lifeguards
- Lights – Directional, Working and RCI
- Movement Limiting Device (MLD)
- Rated Capacity Indicator (RCI)
- Rail/Road Wheels & Guidance System (Locked Wheels, Wheel Flats, Shifted Tyres)
- Seat belts
- Speedometer
- Suspension
- Warning Horn
- Windscreens & Windscreen Wipers

List is not exhaustive

- 2.2 If any safety critical equipment is found to be defective during use, the first consideration should be to minimize the safety and operational risk.
- 2.3 Reported DSCE should be assessed by a technically competent person to determine what action is required and advise the Plant Lead of OTP degraded work limitations.
- 2.4 Where the DSCE does not affect the safe operation of the OTP (e.g. defective works lights during day shift, Windscreen wiper with no forecasted rain, etc.) it is permissible for the OTP to carry out the planned activities in degraded mode with a reviewed and documented amended OTP plan (See 2.8).
OTP working in degraded mode should be regularly reviewed to ensure the circumstances remain appropriate throughout the planned activity.
DSCE issues should be escalated via the OTP owner's on-call process for further guidance and/or approval.

- 2.5 Where the DSCE does affect the safe operation of the OTP, DSCE should be repaired or replaced by a competent technician or the OTP removed from use and replaced with a suitable machine for the planned work.
- 2.6 Immediately after the OTP has been identified with DSCE affecting the safe operation of the OTP, appropriate measures should be taken to bring the OTP to a safe condition and to secure any attached load or trailer to prevent unexpected movement and the vicinity of the site of failure should be made safe.
- The measures needed to bring the OTP to a safe condition will depend on the nature and circumstances of the failure. Precautions should be taken to ensure that personnel are not exposed to risk while the OTP is being secured. Specific consideration should be given for the potential of any other movements in the immediate vicinity.
- 2.7 Where OTP requires recovery, further guidance is set out in Code of Practice COP0027 OTP Recovery.
- 2.8 All OTP DSCE shall only be permitted to continue in use following a documented suitable and sufficient risk assessment and control measures have been developed and implemented.
- All personnel involved in the OTP operation should be fully briefed on the revised control measures prior re-commencement of work.
- 3. Axles, Bogie Part or Bogie Mounted Equipment, Suspension**
- 3.1 If any Axles, Bogie Part or Bogie Mounted Equipment or suspension is found to be defective in service affecting safe operation the OTP should be taken out of service at the nearest suitable location.
- 3.2 Stability of the OTP needs to be determined, to decide if the OTP can be moved in the configuration in which it failed, the assessment should also consider parts of the OTP are out of gauge and which items can be brought back into gauge and consideration given to unloading OTP if possible.
- This assessment also needs to cover the route to be taken to the point of removal from the line to ascertain what needs to be brought back into gauge.
- 4. Braking system**
- 4.1 In the event of total brake system failure the OTP should be taken out of service and recovered to the nearest suitable location.
- 4.2 If the service brake has failed, the OTP should be moved to the nearest suitable location, provided the secondary brake (e.g. direct wheel braking, park brake) remains fully operational and the maximum speed limited to 3 mph.
- If the secondary brake is not fully operational the OTP should be recovered to the nearest suitable location.
- 4.3 If the park brake has failed on, the OTP should be recovered to the nearest suitable location.

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5. Cab Heating/Cooling/De-misting Equipment

5.1 In the event of defective cab heating/cooling/de-misting equipment the OTP may remain in service provided the safe performance of the operator's duties is not compromised.

If no such agreement is reached the OTP should be taken out of service.

5.2 If the OTP has a positive pressure cab and the defective cab heating/cooling/de-misting equipment compromises the system, suitable RPE should be provided to the operator when required.

6. Datalogger

6.1 In the event of a datalogger being found to be defective all operations should be stopped until the system is repaired irrespective of whether starting or part-way through an operation'. (As per the OEM operations manual in accordance with RIS-1530-PLT clause 5.12.3)

7. Duplex Communication Equipment

7.1 If the duplex communication system be found to be defective during the pre-start checks then the affected OTP should not be used until fully operational duplex communication system is in place.

7.2 In the event of duplex communication system failure after work has started the OTP can remain in use provided:

- The MC/CC should attempt to source replacement equipment.
- If the time required to source alternative equipment imports risk to successfully completing the task within the given site working time, an alternative agreed safe system of work can be used.

(Spare duplex comms should be available / held on site in case this safety critical equipment fails).

7.3 If there are multiple OTPs in operation on site then a risk assessment should be undertaken to determine if a duplex communication system should be moved for a different OTP depending on the associated activity risk level.

8. Emergency Equipment

8.1 If emergency equipment requires replacement the Machine Controller should arrange for this to be done as soon as possible. The OTP may remain in service provided the Machine Controller is satisfied that other emergency equipment is provided on site/other machine readily accessible.

9. Fire Detection/Suppression Systems

9.1 Where the OTP is being used or stored in a confined space and found to have a defective fire detection / suppression system, the OTP should be taken out of use /moved to a suitable non enclosed location.

10. Life guards

- 10.1 If life guards are found to be missing or damaged the Machine/Crane controller should be instructed to be vigilant for any rail head obstructions during any movement and enforce an adequate exclusion zone.
Maximum speed limited to walking pace. (approx. 3mph)

11. Lights - Directional, Working and RCI

11.1 Direction lights

In the event of defective directional lights, the OTP may remain in service provided that a minimum of one white light and one red light at the leading and trailing end of the machine respectively are working. There needs to be agreement that both the operator's view and the visibility of the machine on site are not impaired to such an extent as to compromise safe operation.

Rail trailers can be used if they do not impact of the planned work or Bardic lamps fitted to the lamp iron bracket (the MC/CC should change the aspect for each movement)

If no such agreement is reached the OTP should be taken out of service at the nearest suitable location.

11.2 Work Lights

Work can only continue if suitable and sufficient localised lighting is in place.

11.3 RCI indicator Lights

If the RCI is confirmed as fully operational and it is only the RCI external indicator light defective the RCI should be locked in Lift mode with the key retained by either the POS Rep or MC/CC

12. Movement Limiting Device (MLD)

- 12.1 In the event of a MLD defect or failure the machine may only remain in service if it is used in for an activity where an MLD is not required.

OTP with a defective MLD shall only be permitted to continue in use following a documented suitable and sufficient risk assessment and control measures have been developed and implemented

13. Rated Capacity Indicator (RCI)

- 13.1 In the event of a RCI defect or failure the machine may only remain in service to complete essential work and only if no reasonably practicable alternative is available. The Crane Controller and Machine Operator should agree that the risk of overturning (or structural damage) can be properly controlled by:-

- Only lifting planned known loads (measured with a load cell or calculated) at accurately measured radii.

AND

Down rating the lifting duties (as displayed on the machine Load/Radius chart) by 10%.

Extra care should be taken for all lift and carry activities to ensure the boom configurations and mode are followed as detailed within the lift plan.

- 13.2 On completion of the essential work the OTP should be taken out of service.

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14. Rail/Road Wheel and Guidance System Defects

14.1 Any defect which compromises safe guidance in rail mode, the OTP should be taken out of service at the first suitable location.

This may require the OTP to revert to Road mode with the machine straddling the track to ensure safe recovery, in this event an assessment should be undertaken to determine the potential damage to track, structures and track furniture in conjunction with the infrastructure manager.

14.2 If rail wheel flats occur the machine may remain in use provided they are within the limits set out in the operations manual, and whether any restrictions (e.g. maximum speed, plain line only etc.) should be applied.

If it is considered that continued safe operation is not possible the OTP should be taken out of service at the first suitable location.

14.3 If a rail wheel(s) become locked and cannot be released the OTP should be taken out of service at the nearest suitable location. The machine should be lifted off track whenever possible to prevent rail head damage.

14.4 If a tyre becomes damaged or deflated, an assessment should be carried out to establish whether it is safe to continue in operation e.g. inner or outer wheel.

The assessment should consider the;

- Type of activity
- Effect on stability (especially with inner type damage/deflation when lifting operations are planned) and traction.
- Possibility of infrastructure damage to the components and/or furniture.
- Risk of environment contamination i.e. liquid or foam filled tyres.

14.5 If traction is affected, a decision must be made as to whether it is safe to travel the machine to the recovery point at a slower speed or, prepare for emergency recovery. However, it may be possible to repair the tyre in the same location.

15. Speedometer

15.1 If a speedometer becomes defective the OTP should be limited to walking pace. (approx. 3mph)

16. Warning Horn

16.1 In the event of a warning horn becoming defective the OTP may remain in service provided there is a suitable safe system of work, which will permit safe operation to continue (e.g. excluding ground staff from the area of operation, limiting speed of operation or an alternative method of warning).

If no such agreement is reached the OTP should be taken out of service.

17. Windscreen/Wiper Defect

17.1 In the event of damage to the windscreen or a defective wiper the OTP may remain in service provided the operator's view is not impaired to such an extent as to compromise safe operation.

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- 17.2 If continued operation requires the windscreen to be open then driver should wear eye protection, hearing protection and suitable respiratory protective equipment (RPE) if working in a dusty environment.
- 17.3 If no such agreement is reached the OTP should be taken out of service.