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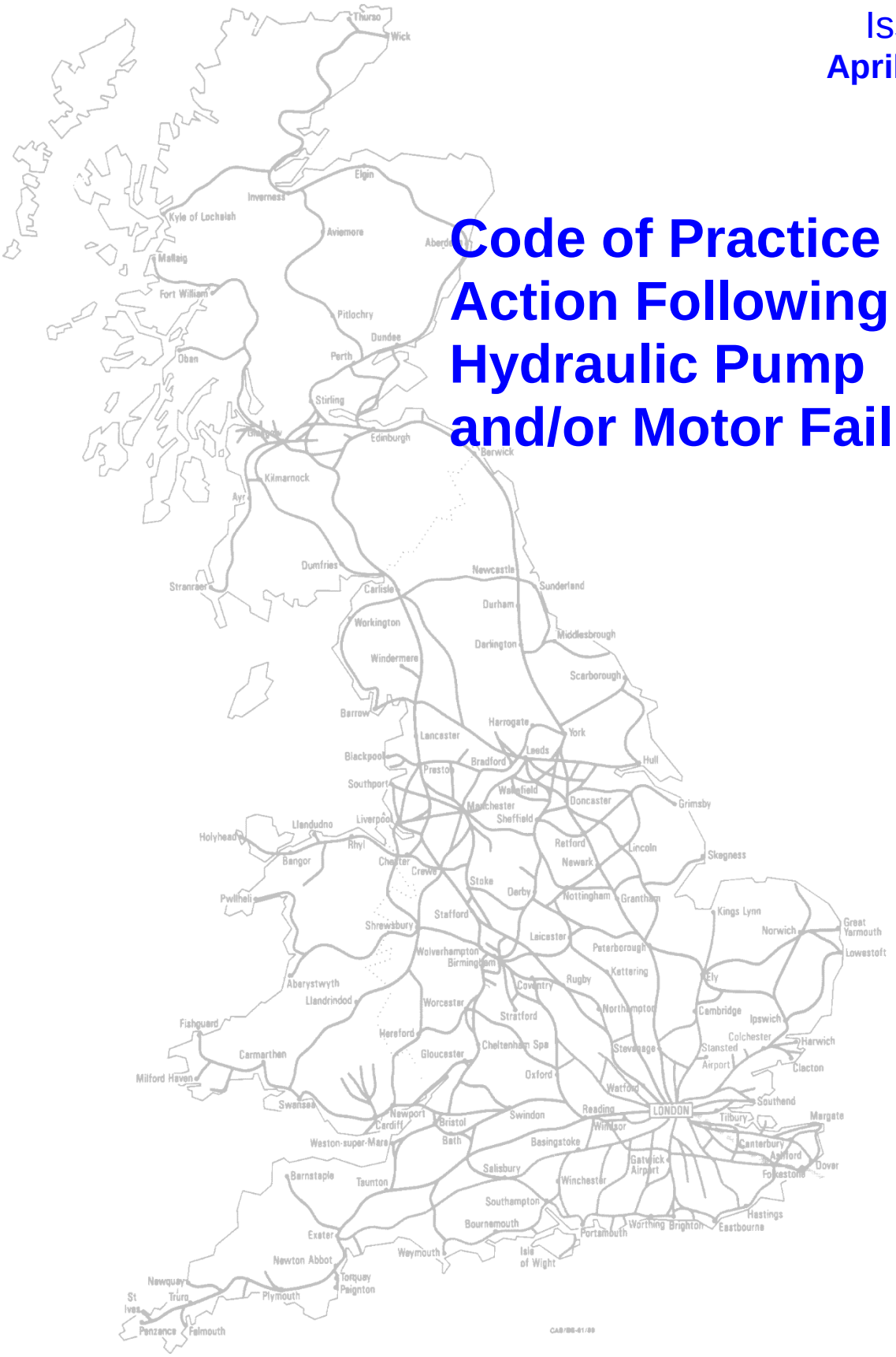
Code of Practice for Action Following Hydraulic Pump and/or Motor Failure



M&EE Networking Group

Document revision history

Issue	Date	Reason for change
1	Apr 2019	First issue

Background

A sub-group of the M&EE Networking Group have looked at the results of failures of hydraulic pump and/or motors on track machines and provide guidance the most expeditious course of action as a result. The M&EE Networking Group recommend this COP as good practice for the industry.

M&EE COP 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 17 April 2019 and published on 1 June 2019

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Purpose

This Code of Practice details the action to be taken following the failure of an hydraulic pump and/or motor on an on-track machine (OTM).

Scope

This Code of Practice concerns all on-track machines currently in use on GB infrastructure.

1 Immediate action following a catastrophic hydraulic system failure

1.1 Except as shown in 1.3 or 1.4, when an OTM has a catastrophic hydraulic system failure (excluding external leakage) and it is suspected that a new hydraulic pump and/or motor is required, the machine should immediately be taken out of service and returned to a repair location. If the failure is the hydraulic pump that drives the traction motors then the machine should be towed to the repair location (see also COP0037).

1.2 At the repair location, as a minimum, the actions shown in section 2 should be undertaken. The eventual repair location should be suitable to undertake the change of failed component(s) and work on the hydraulic system shown in section 2. Guidance on the suitability of repair locations nationally is given in COP0125.

1.3 Where the failure is one of the hydraulic traction motors, and the traction motor can be isolated, then the motor should be isolated, and then the machine is able to continue work. Once the machine is at a convenient repair location the motor should be changed and the actions shown in section 2 should be undertaken.

1.4 If the work being undertaken by the OTM is:

a) essential to complete, and

b) it is possible to safely change the hydraulic pump and/or motor concerned

then the work could continue.

Once the possession is handed back the machine should go to a repair location for another pump and/or motor change and the actions shown in section 2 should be undertaken.

2 Action at repair location

2.1 Initial action

2.1.1 Drain the hydraulic tank and decontaminate the tank as follows:

- Remove the all covers from the hydraulic tank. Examine the tank and fittings internally and externally for any signs of damage, defects and corrosion.
- Investigate and rectify any defects.
- Clean the tank thoroughly, including all fittings, to remove corrosion, debris and contaminants.
- Refit the covers, ensuring they seal correctly. Renew fasteners as necessary.

2.1.2 Renew all filter elements ensuring that the filter housings are also decontaminated.

2.1.3 Completely remove the hoses to either side of the pump and/or motor and inspect the hoses. Ensure they are free of debris and the hose lining is intact and undamaged. If debris/damage is found, examine the next attached hose/component and repeat this process until the extent of the damage/contamination is exhausted. Remove/replace hoses/components as necessary.

2.1.4 Replace the failed hydraulic pump and/or motor and refit/replace hydraulic hoses as necessary.

2.1.5 Depending on the quantity of debris found around the circuit, consideration should be given to flushing the hydraulic system using an off-line filtering system.

2.1.6 Replenish the hydraulic tank (with new or filtered hydraulic fluid) and check for leaks; rectify as necessary.

2.1.7 Start the diesel engine and allow to idle for approximately 20 seconds and switch off. Take steps to prevent the engine starting and check for leaks. Investigate and rectify, repeat as necessary until machine is leak-free.

2.1.8 Restart the engine and allow to idle for 1 hour, listening for any unusual noises and looking for any leaks; rectify as necessary.

2.1.9 After 1 hour, shut down engine and inspect all filters. If debris is found, decontaminate filter housing and replace filter. Repeating until no further debris is present.

2.1.10 Carry out full testing of all hydraulic systems, as detailed for the individual machine, at all times listening for any unusual noises - shut down engine and investigate as necessary.

2.1.11 When no further debris/contamination is present, take a hydraulic fluid sample from the return manifold and send for analysis.

2.1.12 Return the machine to service.

2.2 Subsequent action

2.2.1 After the next working shift, inspect all filters. If debris is found, decontaminate filter housing and replace filter. Repeating until no further debris is present.

2.2.2 Root cause analysis of the failed component should be undertaken. Any lessons learnt should be shared with OTM Engineering sub-group.