COP 0005
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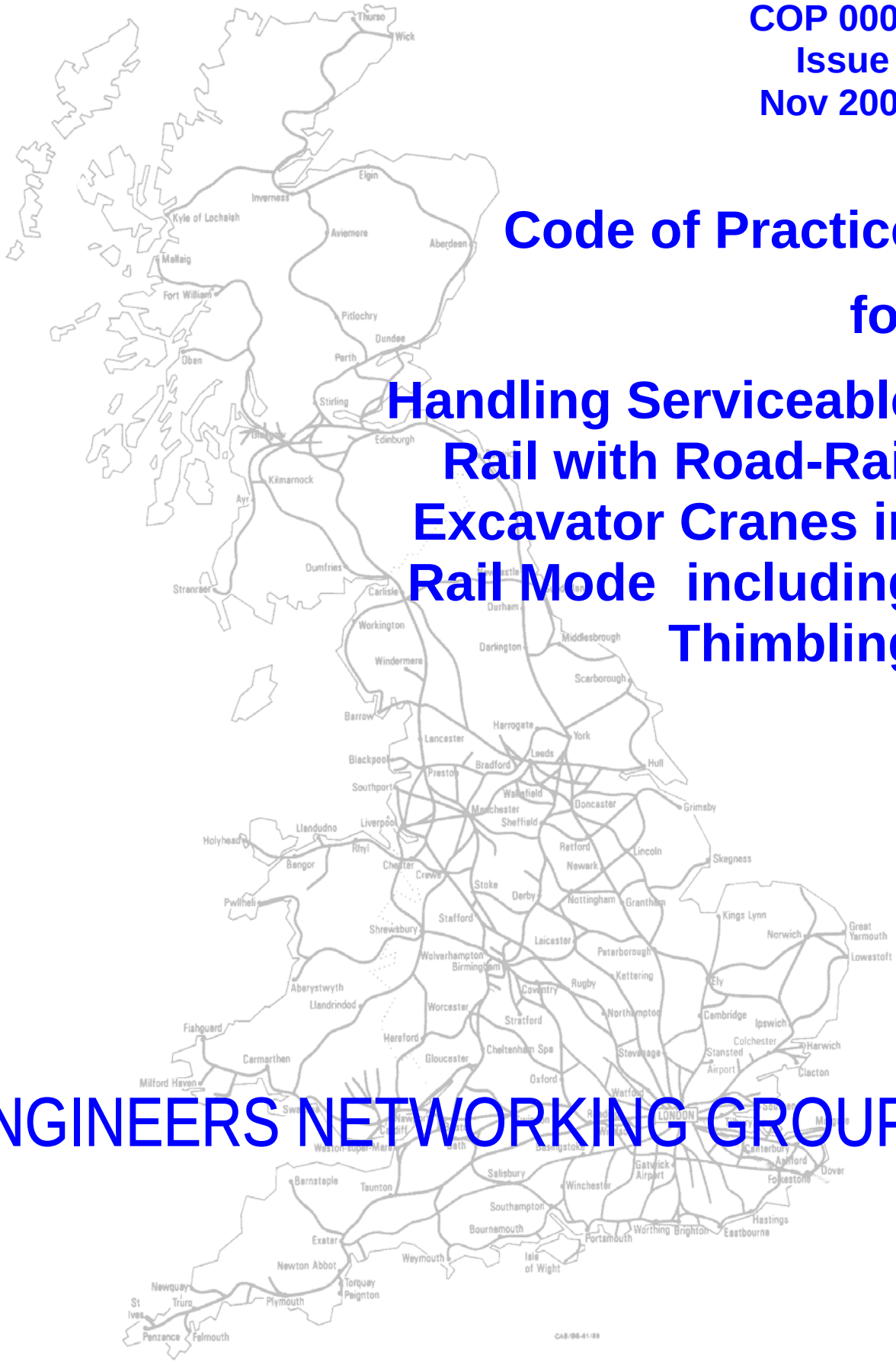
Code of Practice

for

Handling Serviceable Rail with Road-Rail Excavator Cranes in Rail Mode including Thimbling



M&E ENGINEERS NETWORKING GROUP

BACKGROUND

A sub-group of the M & E Professional Heads networking group have looked at the arrangements for handling rail and thimbling with road-rail excavator cranes whilst in rail mode and recommend the following as an Industry wide standard.

GROUP MEMBER	REPRESENTATIVE	POSITION	DATE
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CARILLION RAIL	J.M. Ockenden	Prof Head Plant	8.3.06
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GRANT RAIL		Ops Manager	8.3.06
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1. SCOPE

1.1 This Code of Practice applies to Handling Rail and Thimbling using road-rail excavator cranes in rail mode. This has been derived in the main from former BR documentation and site trials in co-operation with the RPA.

2. DEFINITIONS

2.1 **Pick & Lift' –** A process of lifting and moving rail with suitably rated lifting equipment and accessories (designed to prevent the rail slipping through or turning - unless a sufficient length of the rail remains in contact with the ground to act as a restraint), whilst suspended from a road-rail excavator crane with the excavator crane remaining static during the entire operation.

2.2 **'Pick & Carry'** – A process of lifting and transporting rail with a suitably rated lifting equipment and accessories (designed to prevent the rail slipping through or turning) whilst suspended from a road-rail excavator crane when moving along the track.

2.3 **'Thimbling' –** A process of laterally moving long welded rail with a road-rail excavator crane and lifting accessory fitted with guidance rollers suspended from the road-rail excavator crane. Minimum length of rail suitable for this process is 100m (300ft).

2.4 **'Rail' –** Individual serviceable rail released from fastenings and free of all loose material.

3. GENERAL REQUIREMENTS

3.1 Ensure lifting accessory to be used has Network Rail approval (Product Acceptance) for the rail section, rail-head condition concerned, method of lifting and proposed further use of the rail.

3.2 Lifting equipment to be used has the capacity and a rated capacity indicator fitted.

3.3 The operator must hold a CPCS road-rail excavator crane operator licence, (endorsed for "thimbling" if this operation is to be undertaken).

3.4 The person authorising the lift plan and/or directly in control of the operation must be competent to the National Machine and Crane Controller Competence Scheme, holding a suitably endorsed secure counterpart certificate for the duties being undertaken.

3.5 The person specifying the road-rail excavator crane must be familiar with COP 0002, to deal with the process including 6.2 below.

3.6 The following parameters must be determined at the planning stage:

3.6.1 Maximum cant & gradient (for excavator crane)

3.6.2 Overhead obstruction limitations

3.6.3 Site tail-swing restrictions

3.6.4 Length of rail to be lifted

3.6.5 Positions of rail to be moved from/to

3.6.6 Electrical isolations

3.6.7 Restrictions due to passing traffic

3.7 From site parameters the planner will select a suitable process from the following matrix:

Rail Length	**Pick-&-Lift**	**Pick-&-Carry**	**Thimbling**	**Lifting Accessory**
Up to 6m (20ft)	Yes	Yes	No	Chains, Camloks, Web-slings, Fassetta type Beams
6m to 20m (20ft) (75ft)	Yes	Yes	No	Beams required with 2 Camloks, Fassetta type Beam.
20m to 100m (75ft) (300ft) *Not Bullhead*	Yes Laterally only	No	No	Thimble, (Max. height of lift 500mm)
Above 100m (300ft) *Not Bullhead*	Yes Laterally only	No	Yes	

3.8 From the site parameters and process the planner will select a suitable road-rail excavator crane taking into consideration the potential need for height and slew limiters

3.9 At no time should any person be under or carry out work on a suspended load. Should work be required, the rail must be landed onto suitable blocks.

3.10 Consideration should be given, when landing the rail, to ensure its stability, safe release of the lifting accessory, and avoidance of damage to existing track components.

4. PICK-and-LIFT

4.1 The road-rail excavator crane selected must be fitted with a Rated Capacity Indicator (RCI)

4.2 For rail lengths up to 20m (75ft) the rail must be balanced and suitably restrained (either controlled handling device or ‘tag’ lines). An initial lift should be made to check balance and correct attachment of the lifting accessory, re-adjusting if necessary.

4.3 When using a thimble for laterally moving rail lengths of over 20m (75ft), sufficient length should remain on the ground to act as a restraint. All ground personnel must be at least 3m from the rail and at least 5m from the end of the rail when the free end is being raised off the ground due to the risk of rail “whipping”.

5. PICK-and-CARRY

5.1 The road-rail excavator crane must have an RCI with "Lift & Carry" duty. An assessment of the cant encountered over the distance to be travelled with the load must be carried out and the road-rail excavator crane selected must have the capacity for the most adverse cant identified.

5.2 For rail up to 20m (75ft) the rail must be gripped and balanced and suitably restrained (either controlled handling device or 'tag' lines). An initial lift should be made to check balance and correct attachment of the lifting accessory, re-adjusting if necessary.

5.3 Where practical, the rail should be kept parallel to the running line and as low as practicable

6. THIMBLING

6.1 **Planning for Thimbling**

6.1.1 Type, section and size of rail to be thimbled must be determined. If rail-head is badly lipped or side cut, thimbling should not be considered.

6.1.2 The Planner will decide the principle method and nominal radius from Appendix A.

6.1.3 With the majority of thimbles it is necessary to have the rail raised and placed on blocks to allow the thimble to be correctly closed around the rail. The lifting of the rail to place it on blocks can be carried out in a number of ways, one of which is to use the thimble located only under the head of the rail. The suitability of the thimble for this duty must be determined and if not suitable other means of lifting the rail must be planned and allowed for.

6.2 **Machine Capacity & Selection**

6.2.1 The road-rail excavator crane must have an RCI with "Lift & Carry" duty, and a suitable cant duty. Additionally the excavator crane must either be unrestricted in its use "green" sticker, or must only be used for thimbling in specific areas as denoted by the "orange" sticker. Machines without a green or orange sticker must not be used for any lifting operation.

6.2.2 The road-rail excavator crane should not be used where cant is in excess of 150mm unless the machine is specifically rated and certificated to lift beyond 150mm cant.

6.2.3 When road-rail excavator cranes are ordered the person requesting a road-rail excavator crane should specify the following:-

Road-rail excavator crane to be fitted with RCI with a minimum capacity of 2 tonne for lifting rail sections up to 113lbs/yrd, at radius as defined in the lifting plan. Adjustments will be necessary when lifting heavier rail sections and guidance should be sought.

6.3 **Thimble**

6.3.1 Thimbles are a lifting accessory with a minimum lift capacity of 2 tonnes and capable of securely locating the rail in the vertical position and have the capability of securely gripping the rail under the rail head (Pick & Lift capability).

6.3.2 The thimble must be designed such that the rail cannot be accidentally released. (e.g., integrity of the opening / closing circuits on a hydraulically operated thimble must be protected to avoid accidental opening under load (i.e. hose failure).

6.3.3 Thimbles must be suspended either:-

a) Direct to the main lifting hook, or

b) By the dipper arm nose pin.

In both cases the thimble must be able to swivel freely.

6.4 **Site Preparation**

6.4.1 All rail welds and other obstructions that cannot be removed should be clearly marked, briefed and indicated to the road-rail excavator crane operator before the thimbling operation progresses.

6.4.2 Pads, bonds, fishplates, creep adjusters and other loose material should be removed from rail or clearly marked.

6.4.3 Sufficient blocks be available for:-

- landing rail
- passing obstructions
- for use when attaching thimble

6.5 **Process**

6.5.1 All personnel should be at least 3m from rail and 5m from the free end of the rail when the thimble approaches due to possibility of “whipping”.

6.5.2 The crane controller must be satisfied that the thimble is correctly closed on the rail before commencing every lift during the thimbling operation.

6.5.3 When an obstruction is reached the rail should be lowered onto blocks, the thimble opened and moved past before continuing with the operation.

6.5.4 The excavator crane operator must monitor the RCI throughout the thimbling operation. If the load approaches close to 2 tonnes this may indicate when an obstruction is encountered (e.g., weld, pads, etc), or that the rail is fixed in position (e.g., keyed up), or snagged in some other way. In this event travel should be stopped, the load lowered, the cause identified and rectified.

6.5.5 The height of the rail being thimbled will also have an effect on the weight (the higher the rail is lifted the heavier the weight), therefore rail height should be kept to the minimum required to avoid unnecessary contact with other track components that may be in place through impact by the thimble itself or the rail being thimbled.

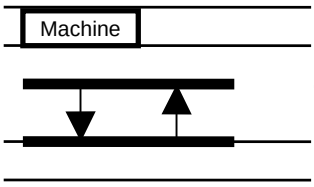
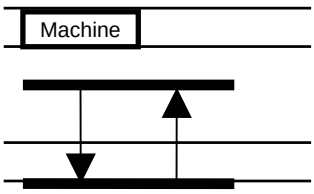
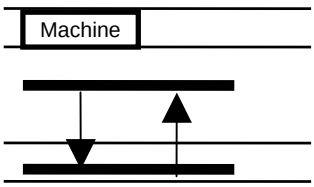
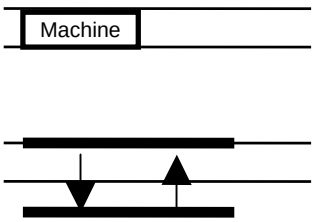
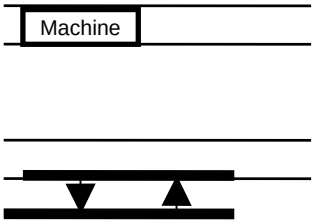
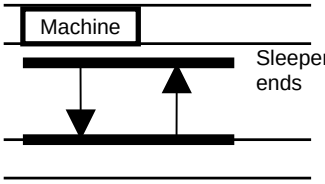
6.5.6 The operator must orientate the road-rail excavator crane to give themselves maximum vision in the direction of travel and of the rail being handled.

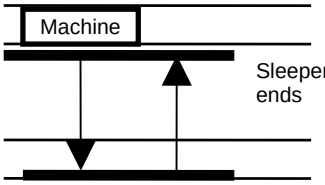
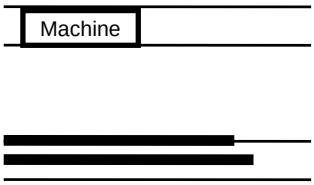
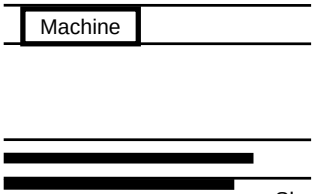
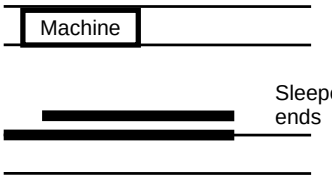
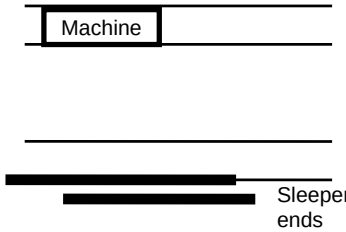
6.5.7 The load must be carried over the end of the road-rail excavator crane under-carriage, which has the maximum lift capacity (normally the fixed axle end). This must be taken into consideration when on-tracking the excavator crane so that the thimbling operation is undertaken over the correct end of the machine.

6.5.8 Overhead restrictions (e.g. O.H.L.E.) must be considered as this may influence the load/radius capacity of the road-rail excavator crane.

6.5.9 Speed of travel should be such that the Crane Controller can closely observe and control the operation, stopping should the thimble snag on any obstructions (e.g. pads, welds, creep adjusters), that have inadvertently not been previously removed or marked, or when personnel encroach within the 3m and 5m parameters described in 6.5.1.

APPENDIX A - METHODS FOR RAIL MOVEMENT

Rail Movement	Away / Towards Machine	Method	Nominal Radius
	TOWARDS	Thimbling Pick & Lift	3.85m 2.72m
	AWAY	Thimbling Pick & Lift	3.85m 2.72m
	TOWARDS	Thimbling Pick & Lift	5.87m 4.15m
	AWAY	Pick & Lift	4.15m
	TOWARDS	Thimbling Pick & Lift	5.45m 3.85m
	AWAY	Pick & Lift	3.85m
	TOWARDS	Pick & Lift	5.06m
	AWAY	Pick & Lift	5.06m
	TOWARDS	Pick & Lift	5.06m
	AWAY	Pick & Lift	5.06m
	TOWARDS	Thimbling Pick & Lift	3.85m 2.72m
	AWAY	Thimbling Pick & Lift	3.85m 2.72m

 **G**	TOWARDS	Thimbling	5.87m
	AWAY	Pick & Lift	4.15m
 **H**	TOWARDS	Pick & Lift	3.44m
	AWAY	Pick & Lift	3.44m
 **I**	TOWARDS	Pick & Lift	4.76m
	AWAY	Pick & Lift	4.76m
 **J**	TOWARDS	Pick & Lift	2.72m
	AWAY	Pick & Lift	2.72m
 **K**	TOWARDS	Pick & Lift	4.76m
	AWAY	Pick & Lift	4.76m

N.B.
Nominal Radius is true machine radius at 45° when thimbling and 90° for 'pick & lift'. Furthest rail position considered as worst case and based on minimum 6 ft track interval. The radius will increase in proportion to the increase in interval above the minimum "6 ft."