ALO
(Any line open)
Knowledge Briefing

OTPS LNE&EM
Disclaimer

In issuing this document for its stated purpose, the RRV Safety Improvement Programme & Network Rail makes no warranties, express or implied, that compliance with all or any documents it issues 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 and that there is an absolute duty to apply the Principles of Prevention as provided in Schedule 1 of the Management of Health and Safety at Work Regulations 1999 when planning work.
What is ALO?

“Where any railway line open to traffic could foreseeably be fouled by any vehicles including OTP, construction plant, HIABs, cranes etc., or the loads associated with them.”

This also includes:

- Delivery and retrieval activities
- Construction plant activities
Types of OTP but not limited to
Don’t forget the Attachments & Loads!
Examples of ALO Working: Off Track
Briefing

In order to undertake the ALO tasks outlined by the additional requirements detailed in the *Planning & Assurance Requirements document*, individuals MUST have received the relevant briefing for the task that they are undertaking.

The ALO briefing is to be delivered and recorded under the department or organisation’s local management regime. Any individuals who receive the briefing will do so under the instruction of the responsible line manager. All briefing records must be retained locally and clearly indicate the type of briefing attended by the individual with a signature of confirmation by the individual, their line manager and the person who delivered the brief (if different).

This is the detailed ALO brief.
So Why Are You Receiving This Briefing?

Plant working alongside lines open to traffic is now a frequent activity and presents significant risks to the operational railway. This briefing will:

- Highlight the tasks and responsibilities when working ALO.
- Provide you with a greater understanding of the risks and the control measures required to work with plant alongside lines open to traffic.
Network Rail & Our Suppliers

We will never plan work involving any part of plant or materials encroaching into the kinematic envelope of a line open to traffic and if that is necessary during a work activity, we will always block the line(s) affected beforehand.

Network Rail has conducted a review of a series of incidents involving near misses or collisions between plant and trains passing on an open line in this country and continental Europe. It has been concluded that there is the potential risk of plant inadvertently encroaching upon an immediately adjacent line. Such activity can only be safely undertaken by plant with known high-integrity physical or control interlock slew/reach limiters.
Catastrophic Consequences (Europe)

Top: Train derailed after colliding with an RRV that was working next to an open line. The impact of the load from RRV entered the passenger compartment.

Bottom: Collision and derailment - Feb 2012. Germany, Collision and derailment – RRV on tracked onto an open line.
Consequences United Kingdom
Recurring Themes of Non Compliance

- Lack of understanding that there is an “absolute duty to apply the Principles of Prevention when planning work”
- The lack of knowledge and understanding of ALO within the industry
- Inadequate planning in advance of the works
- Poor understanding of the complexity of plant selection
- Site Safety Issues/Poor Site Communication/Understanding the plant orientation or configuration
- Competence of those managing and operating plant
- Culture and Behaviours of site staff
ORR Inspections

- RRV working Unsupervised
- COSS had established a separated work zone with Site Warden upon inspection paperwork was for Possession
- Line open to traffic – 60mph/No slew lock on excavator.
Enforcement notices have been issued to Network Rail and our contractors

- Nov - Dec 2012 – 8 site visits were carried out by the ORR - Problems found at 6

- 14 Jan 13 – The ORR served an Improvement Notice on Network Rail for ALO working
HOW WE WORK
ALO
How we work ALO in Network Rail

Where it is foreseeable that any part of the OTP/plant or load might foul the any line during normal possession work (irrespective of whether the fouling is planned or unplanned) a Line Blockage With Additional Protection shall be taken during work; OR

- The OTP/plant shall be set up in such a manner that it is not capable of fouling any open line during work
- The documents are

  - Safe System of Work found within: NR/L2/RMVP/0200 – Infrastructure Plant Manual – Module P501
  - Code of Practice (COP0032) for Any Line Open Working

All relevant documents available on Safety Central
The Code of Practice document is for all work undertaken on Network Rail infrastructure where the work has the potential to foul lines open to traffic.

The document should also be used when work is being undertaken by railway organisations that are working outside the railway infrastructure boundary but where there is the potential to foul lines open to traffic.

The Code of Practice will provide you with: Definitions, Abbreviations, Planning Parameters, Generic Working Scenarios, Activity Considerations, Identifying Risk, Reliable Control Systems and support/guidance from a Virtual Panel of experts.
ALO Planning & Assurance Requirements

- This document provides mandated requirements for assurance of ALO activities that might affect Network Rail Infrastructure.

- Contains flow diagram detailing the process

- Contains 3 new onsite check sheets
The flow box that’s asks “Are all lines blocked” refers to lines under possession and not line blockages.

e.g. On a 4 line location, lines 1 and 2 under possession, lines 3 and 4 under line blockage. This is describes an ALO site.

ALO work plan must be completed and present on site. Where an open line cannot be fouled, the ALO Work Plan must still be present on site to show that an ALO assessment has been carried out to confirm that ALO working is not required.
ALO Tasks

- ALO Works Planner
- ALO Responsible Manager
- ALO Site Co-ordinator
- On call Management for Changes
- Management Assurance Checks
ALO PLANNING
Who is Involved in ALO Planning?

- ALO Planner
  - Plans the Work

- ALO Responsible Manager
  - Reviews the plan
  - Authorises ALO Working
Planning for ALO Working

Those planning ALO work should be working to the general principals of prevention as defined in the Management of Health and Safety at Work Regulations 1999.

- Consideration must be first given to remove hazards: can ALO working be eliminated? For example could the work be re-timed when all lines are blocked?
- Can the methodology or plant be controlled to prevent the fouling of an open line?
- Where the hazard cannot be removed, can it be isolated? Can the work be physically separated from open lines? Can physical barriers be erected?
- When selecting a method of work, a risk assessment must have been undertaken to determine if the level of risk is acceptable and that the controls implemented are So Far As Is Reasonably Practicable (SFAIRP).
Considerations for ALO Planning

Considerations when planning ALO working:

- How will RRVs be on-tracked, off-tracked and cross-tracked?
- Contingencies for late engineering trains or a late line block
- RRVs or other key plant breaking down
- Key staff not turning up

- Planning should be done as far in advance as possible and may need input from a number of different people
- Sufficient numbers of the right people and the right equipment have been identified to undertake the work safely
An ALO Work flow diagram can be found on Safety Central
This is an example of an ALO Work Plan document.

The ALO Plan should be approved by an ALO Responsible Manager with a unique authorisation number prior to issue to site.

The ALO Work Plan must contain As a minimum the information detailed in Table 6 of COP0032.
ALO Planning Process (1)

If the planning process has identified the requirement for ALO Working then you should consider the following:

- **Site Visit** – Visit the site of work to assess risks and hazards, the plan & methodology, the plant position, limit of working and the fouling point. Take all required measurements such as: the plant position and the distance from the nearest open line(s) and the planned limit of work measured from the fouling point

- **Risk Assessment** – Undertake a risk assessment of the site and the methodology of work

- **Control measures** – Reliable mounted movement limitation device, site demarcation

- **Work Methodology** – How is the work going to be undertaken?
ALO Planning Process (2)

**Track Access** – Possession availability, Access points, Work location

- **Materials / Design** – Procurement, materials to be used next to adjacent open line
- **Plant & Attachments** – Type, size, sufficient for task, availability, Supplier
- **Staff Competence & Supervision** – Who is on site? How will they be used? Who will be supervising the work?
- **Control System Calculator** – Identifying the control system required for each instance of Adjacent Line Open working
- **POS rep** – ensuring the OTP operations are carried out according to the OTP plan
Planning On and Off Tracking (1)

How are you going to on/off track the machine?

- Total Block - T3
- Line Blockages
- Physical Barrier

If none of the above are possible then a detailed risk assessment MUST be compiled with the following considerations:

- Where will the machine be on/off tracking
- Type and size of access: RRAP, Level crossing etc.
- Site conditions - lighting, access gates, weather, ground, cant, gradients, track intervals, high ballast
Planning On and Off Tracking (2)

- Testing of the Safe System of Work
- OHLE/ 3rd Rail present
- Separation distance from ALO – foul point, planned position at all times
- Machine movements & Configuration - staging of moves, speed, angle of approach, Jib fully knuckled in, slew angle, counterweight position
- Site access management plan - other movements around access
- Communication - DUPLEX comms, Constant contact, movement monitoring, emergency stop
- How to block Open line in an emergency situation
- Site diagrams and briefings to all individuals involved
- Competence
Changes in Track Layout
ALO Responsible Manager

“A person appointed within an organisation with suitable knowledge and experience to review and approve safe systems of work when the work is taking place when lines may remain open to traffic”.

Typically but not limited to IMDM; IME; Level 3 on-call manager (for out of office hours situations); Project Managers; Programme Managers
Projects – Contractors Nominated Manager

In the planning process the risks that are identified and the control measures selected should be recorded for review by the Responsible Manager and audit purposes.
ALO Responsible Manager Methodology

All Planned ALO work methodology must be assessed by your ALO Responsible Manager.

The Responsible Manager will review the control measures for adequacy and will do one of the following:

- approve the controls proposed;
- require the implementation of additional controls;
- refer to the ALO specialist/champions;
- or reject the proposed controls.

Where the Responsible Manager needs some advice, they may choose to refer the proposed work to the Plant specialists within their organisation.

Upon review of the plan, if the responsible manager is happy for the work to proceed then they will issue a unique Authorisation Number.
CONTROL SYSTEMS
Identifying Risk Control Systems

The main change introduced by COP0032 is to risk control systems.

Risk controls formerly managed under Control Systems 1, 2 & 3 have now been replaced with new controls within COP0032 (sections 3.3 to 3.5) which states when a low or high performance level Movement Limiting Device (MLD) must be fitted.
Risk Control Systems

Movement limiting devices shall protect against any inadvertent exceedance of lateral and vertical limits of work, there are 2 levels of MLD:

- Low performance
- High performance movement limiting devices shall be designed so that there is no credible single point failure that would cause the system to fail to an unsafe condition

as defined in RIS 1530 PLT issue 6 (or higher).
Identifying Risk Control Systems

- Fouling Point
- Less than 3 Metres but over 300mm from the Fouling Point
- 300mm
- Over 3 metres from the Nearest Open Line
- High Integrity MLD Working area
- 3 Metres
Choice of control systems should take into account at least the following:

1) The ability of any movement limiters on the plant to prevent it from fouling an open line
2) The ability to maintain the position and orientation of the machine relative to the open lines
3) The other controls required to be implemented to control the movements of the RRV
Choice of Control Systems (2)

4) The competence of those operating and controlling plant (which includes technical training, attitude, behaviour and ability)

5) Setting up, supervising and maintaining the required controls on site

- Operating in RAIL mode provides a fixed reference point for the machine, which can be relied upon as the orientation and position of the machine can be defined relative to the rail. This reliance is not present when operating in ROAD mode.

- When operating in ROAD mode, the machine’s position relative to a fixed reference point (rail) cannot be relied upon. The movement limiting system needs to provide a means of ensuring that the position and orientation of the machine can be guaranteed relative to an open line.
Common Controls to All Systems

The following control measures are to be applied to each control system implemented:

- Operations are supervised at all times
- The position and orientation of the machine relative to the open line can be maintained
- A load stabilisation method is in place (where required)
- The system is tested prior to the work commencing
- **Duplex communication system in use**
- Safety devices to be secured such that the operator is not be able to over-ride them
ALO SITE MONITORING
ALO On Site Assurance

3 checklists form part of the Toolkit:

- ALO Site Coordinator
- Change Control
- Management Assurance

These are tools which are designed to help confirm that your ALO sites are up to standard and any risks have been highlighted and controlled.
**ALO Site Coordinator (1)**

- The responsible manager appoints an individual who has sufficient detailed knowledge and experience to undertake site coordination duties for **ALL ALO works**.

- The ALO Site Coordinator **MUST** be in possession of an authorised copy of the ALO work plan and be able to review and challenge **ALL ALO Working** relevant to that individual plan.

- The ALO Site Coordinator **MUST** ensure that the control measures identified on the work plan have been tested, implemented and are monitored for all plant and load that is working ALO.

- The ALO Site Coordinator is responsible for the detailed briefing of all relevant site staff as to the arrangements of ALO working.

- The ALO Site Coordinator **MUST** ensure that the minimum permissible Planned Separation distance and the SSOW are implemented and tested prior to the work commencing.
ALO Site Coordinator (2)

- The ALO Site Coordinator **MUST** have a detailed knowledge of the ALO change control process and be able to implement on site change control if necessary using the on site Change Control Checklist.

- **The ALO Site Coordinator MUST complete the ALO Site Coordinators checklist for ALL ALO working.**

- Responsible line managers must determine who undertakes the ALO Site Coordinator task. These may be but not limited to the following individuals: Site Supervisor, Site Manager, Person in Charge of Work, Team Leader, Senior team member, POS Rep, Crane/Machine Controller.

- Those undertaking this task must have received and signed for the Detailed ALO Briefing.
ALO Site Coordinator (3)

- ALO Coordinators Site Checklist to be completed for each shift, per machine.
- For tandem lift operations a single checklist is permissible.
- Questions have been designed to ensure that key aspects of the ALO Work Plan are correctly implemented prior to use.
ALO Site Coordinator’s Questions

1) Have you received an approved ALO Work Plan?
2) Do site works match with the ALO Work Plan?
3) Has the ALO Work Plan been proven / tested prior to work commencing?
4) Does plant and attachments match that recorded in the ALO Work Plan and any SSOW documentation?
5) Are all Movement Limiting Devices (MLD) fully operational and set correctly, as per the ALO Work Plan?
6) Are all control measures, as defined in the ALO Work Plan, fully implemented in respect of plant position / activity?
7) Are you satisfied that the work can commence safely?
ALO
MANAGEMENT
ASSURANCE
ALO Management Assurance

- Formalises the assurance of ALO activities on site.
- Two page form for a management level individual to complete during a site visit, to confirm that ALO working is as per the approved plan.
- A reasonable understanding of ALO is required but not a detailed knowledge – BASIC briefing.
- ALO Planner – Identify the requirement during planning process.
- ALO Responsible Manager - Identify team members to undertake checks.
ALO Management Assurance

Adjacent Line Open (ALO) Management Assurance Checklist

All ALO working inspection documents MUST be filed for auditing purposes. For further guidance and practice please see Network Rail Guidance for Managing Plant Working Next to Lines Open to Traffic Issue 1.

Section 1: Site Details
Date: 
Location of Work: 
Project Name: 
ALO Authority No.: 

Section 2: ALO Working Inspection Checklist

1. Does the person responsible for testing, implementing and monitoring the ALO measures on site have a copy of the ALO Work Plan? 
   - YES
   - NO
   Comments:

2. Can the responsible person demonstrate that this plan matches with the on site work? 
   - YES
   - NO
   Comments:

Section 3: Site Staff Training and Demonstration of Understanding

Verify through Q&A that the following personnel have received a briefing on the ALO Work Plan and understand the ALO Control Measures as detailed in this Plan. You should also confirm that a test of these control measures has been completed prior to work commencing.

<table>
<thead>
<tr>
<th>Role</th>
<th>Briefing &amp; Understanding</th>
<th>System Test Carried Out</th>
</tr>
</thead>
<tbody>
<tr>
<td>Person Responsible for testing, implementing &amp; monitoring ALO measures on site</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>Bankmen (for construction sites)</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>Machine Controller / Crane Controller</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>Machine Operator</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>Signers</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>Any other staff</td>
<td>YES</td>
<td>NO</td>
</tr>
</tbody>
</table>

Comments:

Section 4: Further Questions

Please answer the following questions by detailing some of the observations you have made whilst on site.

1. Are the personnel who are operating and managing plant complying with the control measures that are identified in the ALO Work Plan?
   - Observations & Comments:

2. Are the personnel who are managing and operating RRVs utilising duplex communication equipment to control plant movements?
   - Observations & Comments:

3. Is the person responsible for testing, implementing & monitoring the ALO Control Measures ACTIVELY monitoring the implemented control measures for ALO working?
   - Observations & Comments:

4. Are you satisfied that the ALO Control Measures are adequate to protect the safe passage of trains on open lines?
   - Observations & Comments:

Section 5: Inspection Complete Declaration

By signing this ALO Management Assurance Checklist, you are confirming that you have observed activities related to ALO Working on site and have completed the inspection above.

Print Name: ____________________________
Role / Position: ________________________
Signature: ____________________________
Date: ____________________________
ALO Management Assurance

Checklist questions:

1) Does the person responsible for testing, implementing and monitoring the ALO measures on site have a copy of the ALO Work Plan?

2) Can the responsible person demonstrate that this plan matches with the on site work?

3) Verify (through Q&A) that the following personnel have received a briefing on the ALO Work Plan and understand the ALO Control Measures as detailed in this Plan. You should also confirm that a test of these control measures has been completed prior to work commencing. Person Responsible for testing, implementing & monitoring ALO measures on site. Banksman (for construction sites), Machine / Crane Controller, POS Rep, Machine Operator, Slingers, any other staff.
4) Are the personnel who are operating and managing plant complying with the control measures that are identified in the ALO Work Plan?

5) Are the personnel who are managing and operating RRVs utilising duplex communication equipment to control plant movements?

6) Is the person responsible for testing, implementing & monitoring the ALO Control Measures ACTIVELY monitoring the implemented control measures for ALO working?

7) Are you satisfied that the ALO Control Measures are adequate to protect the safe passage of trains on open lines?
ALO

CHANGE CONTROL
Change Control (1)

There are 2 types of changes:

- Planning Stage Changes
- On Site Changes

To assist with managing a change there is a flow diagram contained in COP 0032 which should be followed.
Change Control (2)

Planning Change

➢ Changes arising prior to site works commencing are to be dealt with as part of the planning process and be documented on the ALO Work Tracker - they do not have a specific check sheet.

➢ These changes are likely to be managed by the ALO Planner

On Site Change

➢ There must be a manager available at all times (normal office hours & out of hours) to review and authorise any on site changes that are required. The manager that authorises these change MUST have received this detailed briefing.

➢ These changes will be managed by the ALO site coordinator using the ALO Change Control document
ALO On Site Change Control

- New standard forms & process’s for dealing with on site changes
- Needs to be authorised by a manager who has received a Detailed Briefing.
  1) What is the reason for the change?
  2) What is the proposed revised methodology?
  3) Are risk control measures in place for the proposed ALO activity?
  4) Has a member of the management team reviewed and agreed the proposed change and issued an authorisation number?
ALO On Site Change Control

Appendix C: Template documents

ALO Coordinator Site Checklist
- ALO Coordinator Checklist
- ALO Change Control Checklist
- ALO Management Assurance Checklist

Section 1: Site Details
- Location of Work
- ALO Authorisation No.

Section 2: Change Control
- To be completed by the person responsible for testing, implementing & monitoring the ALO measures on site.
- Proposed Control System to be used
- Reason for change - a detailed reason for the change control (i.e., ALO work plan contains errors, or the inclusion removal or addition of work type, methodology, location, plant type, possession arrangements, control systems).

Section 3: Authorisation Questions
- Have you ensured that risk control measures are in place for the PROPOSED ALO activity and these have been recorded in section 2 of this document?
- Comments
- Has a member of the senior site management or on-call senior management reviewed and agreed, by way of a unique authorisation number, the proposed change?

Section 4: Declaration
- By signing the ALO Change Control Document, you are confirming that you have MANUALLY created a change control for ALO working which has been confirmed and authorised by either the ALO Responsible Manager of the Site Senior Manager, and is ready for implementation (Reference Section 11 of the M&ECC COP05032 Adjacent Line Open (ALO) Working).
- Print Name
- Signature
- Date

A new ALO Site Checklist must be completed following authorisation of this Change Control.
SITE CONSIDERATIONS
Before commencing any RRV movements alongside any lines open to traffic, it’s mandatory that the Machine or Crane Controller (MC/CC) set up effective DUPLEX COM communication with the plant operator. For off track works with construction plant DUPLEX COM is an optional communication tool which Network Rail regards as good practice.

The site supervisor, managers or POS rep should ensure that the DUPLEX COM system is tested by the MC/CC and plant operator prior to work commencing and monitor the communication throughout the work activities.

Whilst undertaking a work activity alongside a line open to traffic the MC/CC and the plant operator must maintain DUPLEX COM communication.
Machine/Crane Controller

- The machine or crane controller must undertake a pre operational test on control devices such as a reliable movement-limiting devices (mechanical reach or slew limiters).
- Where an RCI is fitted they must be set up correctly to the planned limit of work and active. The system should be set and tested to the planned limits before use and only used if the test is successful.
- **These tests must be witnessed by the ALO Site Coordinator**
Machine or Crane Controller

Prior to on or off tracking consider the approach to the RRAP and then the position / orientation of the machine relative to the open line.

Whilst manoeuvring the plant on the RRAP consider the following:

- the jib of an excavator or a MEWP boom/basket that can, at full extension, foul an open line
- the machines counterweight as this too could foul an open line
The MC/CC must reach a clear understanding with the plant operator about:

- The planned work activity
- How the position and orientation of the machine will be maintained relative to the open line and how the load movement will be controlled
- The MC/CC must confirm whether the load stabilisation methods to be used match the ones described in the site documentation and are adequate for the tasks being carried out.
ALO
WORKING
SCENARIOS
Identify the planned limit of machine working and foul point
Working Scenario (Road)

Identify the planned limit of machine working and foul point
Identify the planned limit of machine working and foul point
Emergency Arrangements

Emergency situations can develop at any time endangering site staff and those travelling on an operational railway. These situations can be made worse if the planned emergency arrangements are not fully “understood and implemented”. Supervisors should establish that:

- Planned emergency arrangements are documented, have been briefed, understood and can be discharged on site.
- They can confirm with the MC/CC/BM that emergency equipment is available on the plant.
- A test of the emergency arrangements by asking the MC/CC/BM to describe the arrangements to be followed if the plant failed and fouled an line open to traffic.
Safety Central

All information & documents can be found on Safety Central

www.safety.networkrail.co.uk
The End