ORF

Operational Rules for fjernbane

ORF-19-A00 valid from 15.05.2019
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Reader’s instructions

IN.2 Throughout the document the reader will notice that symbols have been used to identify certain statements.

IN.3 Procedure symbol. The symbol indicates a Railway Undertaking procedure e.g. procedures ensuring safe parking of rolling stock is a procedure put in place by the Railway Undertaking (RU).

IN.4 Procedure symbol. The symbol indicates a procedure issued by the Infrastructure Manager.

IN.5 System restrictions. The symbol is used to provide information concerning system functionality, e.g. if a Driver fails to control the train to a standstill at an End of Authority, the onboard system will command a brake intervention.

IN.6 **DEFINITION** At the end of many procedures, a list of definitions has been included. These are key words used within the procedure, which will be defined in parallel with the procedures but not necessarily complementary. The items identified for definition are considered to be important information for the reader to understand the procedure, and contain in some cases specific responsibilities for the role.
### Abbreviations

<table>
<thead>
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<th>IN.8</th>
<th>AML</th>
<th>Akseltryk, Metervægt, Læsseprofił</th>
</tr>
</thead>
<tbody>
<tr>
<td>IN.9</td>
<td>ATC</td>
<td>Automatic Train Control</td>
</tr>
<tr>
<td>IN.11</td>
<td>DMI</td>
<td>Driver Machine Interface</td>
</tr>
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<td>IN.12</td>
<td>ETCS</td>
<td>European Train Control System</td>
</tr>
<tr>
<td>IN.13</td>
<td>FKI</td>
<td>Fjernbane KørestrømsInstruks</td>
</tr>
<tr>
<td>IN.14</td>
<td>FS-mode</td>
<td>Full Supervision mode</td>
</tr>
<tr>
<td>IN.15</td>
<td>IS-mode</td>
<td>Isolation mode</td>
</tr>
<tr>
<td>IN.17</td>
<td>MA</td>
<td>Movement Authority</td>
</tr>
<tr>
<td>IN.18</td>
<td>NL-mode</td>
<td>Non Leading mode</td>
</tr>
<tr>
<td>IN.19</td>
<td>O&amp;M coordinator</td>
<td>Operations and Maintenance coordinator</td>
</tr>
<tr>
<td>IN.20</td>
<td>OS-mode</td>
<td>On Sight mode</td>
</tr>
<tr>
<td>IN.21</td>
<td>PICOP</td>
<td>Person In Charge Of Possession</td>
</tr>
<tr>
<td>IN.22</td>
<td>PICOSS</td>
<td>Person In Charge Of Site Safety</td>
</tr>
<tr>
<td>IN.23</td>
<td>PT-mode</td>
<td>Post Trip mode</td>
</tr>
<tr>
<td>IN.24</td>
<td>RFID</td>
<td>Radio-frequency identification</td>
</tr>
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<td>IN.25</td>
<td>RID</td>
<td>Regulations Concerning the International Carriage of Dangerous Goods by Rail</td>
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<td>Supervisory Control And Data Acquisition</td>
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<td>SF-mode</td>
<td>System Failure mode</td>
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<tr>
<td>IN.28</td>
<td>SH-mode</td>
<td>Shunting mode</td>
</tr>
<tr>
<td>IN.29</td>
<td>SR-mode</td>
<td>Staff Responsible mode</td>
</tr>
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<td>IN.30</td>
<td>SN-mode</td>
<td>STM National mode</td>
</tr>
<tr>
<td>IN.31</td>
<td>SRO-system</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>IN.32</td>
<td>TR-mode</td>
<td>Trip mode</td>
</tr>
<tr>
<td>IN.33</td>
<td>TWSC</td>
<td>Track Work Safety Coordinator</td>
</tr>
<tr>
<td>IN.34</td>
<td>UN-mode</td>
<td>Unfitted mode</td>
</tr>
<tr>
<td>IN.35</td>
<td>VTS</td>
<td>Vessel Traffic Service</td>
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</table>
Introduction

The content of these rules are to be interpreted in compliance with the following regulatory documents:

1. LOV nr. 686 af 27/05/2015, Lov om jernbane, issued by the Danish Ministry of Transportation
2. BJ 5-3-2015, Bestemmelser for drifts- og trafikstyringsregler (DTR) på jernbaneområdet, issued by the Danish Transport Authority
3. ERTMS OPERATIONAL PRINCIPLES AND RULES, version 4, issued by the European Railway Agency - ERTMS unit

Area of validity

These Operational Rules apply to driving of trains, shunting and operation and maintenance, on the parts of the Fjernbane infrastructure equipped with ETCS and on shunting areas adjacent to this area.

Exceptions to these Operational Rules will be described by location specific description or "supplerende sikkerhedsbestemmelser" applicable to the area.

Fundamental principles

The core aim of the fundamental operational principles is to enable the safe and timely delivery of people and goods to their destination.

Fundamental operational principles:

1. The method of signalling must maintain a spatial separation between trains that is safe.
2. Before a train is allowed to start or continue moving, it must have an authority to move that clearly indicates the limits of that authority.
3. Trains proceeding over any portion of line must not be obstructed in a way that threatens their safety.
4. Trains must be prevented from proceeding onto a portion of line if it is known or suspected that it would not be safe for them to pass.
5. Trains must not be allowed to begin or continue their missions until it is clear that it is safe for them to do so.
6. Trains must only be allowed to operate over any portion of line as long as the rolling stock is compatible with the infrastructure on that portion of line.
7. Trains must not continue to operate after they have been found to be unsafe in any respect, until measures have been taken to allow them to continue safely.
8. People must be kept a safe distance from moving trains.
9. The workforce must be protected from the hazards associated with the operational railway.

The fundamental principles are to provide guidance to railway competent persons when performing their duties on or about the operational railway infrastructure. These principles have been identified as a method to help guide behaviour to ensure safe and efficient rail traffic operations.
Roles

RF.110 A user role is not an individual but a defined area of responsibility that is referenced under the heading of the user role. One individual may be competent and licensed to perform the duties of more than one role, for example a user may act as both PICOP and Shunter. Additionally, a user role may be delegated and divided between more than one individual, e.g. the role of Network manager represents both the Infrastructure Manager and all of the applicable Railway Undertakings. Role descriptions and job descriptions are not to be confused. A role description is applied to one or more competent individuals but a job description is specified for each person, and is not part of these Operational Rules.

RF.111 All roles defined by the Operational Rules must be able to communicate in Danish.

RF.112 All individuals employed to undertake activities on the railway infrastructure controlled by Banedanmark must undertake these activities within the constraints of a defined role. Individuals are permitted to undertake activities for several roles provided they are competent for each role, and there is no conflict or reduction in safety when performing activities.

RF.113 The applicable role is indicated next to all rules and some definitions. Roles and responsibilities are defined here and are used to empower the users to use their training and competence within the limits set out as the authority of the role.

RF.114 All roles engaging in activity on infrastructure controlled by Banedanmark have a shared responsibility to alert the Signaller, Emergency services or their immediate supervisor if they become aware of a potentially hazardous situation.

RF.115 Railway Undertaking roles are defined by the Railway Undertaking, and may resemble a role defined by Banedanmark in OR. These roles and their connected responsibilities are only used internally in the Railway Undertaking procedures, and they do not substitute any of the roles and responsibilities regulated by OR.

RF.1 Signaller

RF.2 DEFINITION The Signaller works within the traffic control centre and is responsible for the day-to-day management and coordination of all operations within the area controlled by the Signaller. The Signaller must cooperate with all relevant parties to perform these duties.

The Signaller controls the operation of trains and maintenance operation in a designated control area by the use of the traffic management systems.

The Signaller must not perform the role of O&M coordinator simultaneously.

Competencies:

- The Signaller must maintain railway competences as a Signaller
- the Signaller must be competent in the use of the procedures and equipment provided for use in the workplace
- the Signaller must have sufficient knowledge of the infrastructure within the area of control to identify locations in the infrastructure and applicable rules and instructions.
**Driver**

**DEFINITION**

The Driver is responsible for the safe movement of a train or a vehicle. This includes observing the maximum permitted speed and controlling the brakes.

**Competencies:**

- The Driver must maintain railway competences as a Driver
- The Driver must be competent in the use of the procedures and equipment provided for use in the workplace
- The Driver must have sufficient knowledge of the infrastructure where the train or vehicle is to be driven to identify locations in the infrastructure and applicable rules and instructions.

**O&M coordinator**

**DEFINITION**

The O&M coordinator is responsible for supervising the status of the infrastructure. The O&M coordinator is responsible for overall coordination of maintenance and fault correction and for ensuring that the relevant staff is called in for various tasks such as undetected points, axle counter faults, broken rails or balise errors.

The O&M coordinator must not perform the role of Signaller simultaneously.

**Competencies:**

- The O&M coordinator must maintain railway competences as an O&M coordinator
- The O&M coordinator must have sufficient knowledge of the signalling system to be able to evaluate the implication of error messages and failures of technical equipment
- The O&M coordinator must be competent in the use of the procedures and equipment provided for use in the workplace.

**Shunter**

**DEFINITION**

The Shunter is responsible for the safe movement of rolling stock within a designated shunting area or on a route for shunting. The Shunter can only be responsible for the movement of one train or vehicle at a time.

The responsibilities of a Shunter can be performed by a Driver provided that the traction and brakes can be controlled from the front end cab for the direction of travel.

**Competencies:**

- The Shunter must maintain railway competences as a Shunter
- The Shunter must be competent in the use of the rules and instructions specific to shunting operations
- The Shunter must have knowledge of the relevant infrastructure and location specific descriptions of where the train is to be shunted.
**Shunting area manager**

**DEFINITION**  The Shunting area manager is responsible for the safe coordination of movements of rolling stock within a designated shunting area.

The Shunting area manager coordinates all entries and exits from the shunting area with the Signaller.

The responsibilities of a Shunting area manager can be performed by a Shunter.

**Competencies:**

- The Shunting area manager must maintain railway competences as a Shunting area manager
- The Shunting area manager must be competent in the rules and instructions specific to shunting operations
- The Shunting area manager must have knowledge of the relevant infrastructure and location specific descriptions of the shunting area.

**Bridge guard**

**DEFINITION**  The Bridge guard is responsible for ensuring that the bridge infrastructure is safe for the passage of trains when required, and the bridge infrastructure is moved to accommodate the movement of other forms of traffic when required.

**Competencies:**

- The Bridge guard must maintain railway competences as a Bridge guard
- The Bridge guard must be competent in the use of the procedures and equipment provided for use in the workplace
- The Bridge guard must have knowledge of the infrastructure within the area of control and any additional requirements relating to the safe movement of other non-rail traffic.

**PICOSS**

**DEFINITION**  The Person in charge of site safety (PICOSS) is responsible for safety at any worksite where work takes place in the tracks or in close proximity to the tracks. A PICOSS is required both for planned work and for corrective maintenance.

**Competencies:**

- The PICOSS must maintain railway competences as a PICOSS
- The PICOSS must be competent in the use of the procedures and equipment provided for carrying out their duties
- The PICOSS must have knowledge of the infrastructure where the work is to take place.
Assistant PICOSS

**DEFINITION**
The Assistant PICOSS assists the PICOSS and can only have the responsibility for part of the work under the control of the PICOSS.

Competencies:

- The Assistant PICOSS must maintain railway competences as a PICOSS
- The Assistant PICOSS must be competent in the use of the procedures and equipment provided for carrying out their duties
- The Assistant PICOSS must have knowledge of the infrastructure where the work is to take place.

PICOP

**DEFINITION**
The Person in charge of possession (PICOP) is responsible for railway safety including all movements taking place inside a possession agreed with the Signaller and all safety related communication regarding this. The communication between the PICOP and the Signaller is expected, but not limited, to take place by the use of a handheld terminal.

The PICOP performs the responsibilities of a Shunting area manager in a possession.

Competencies:

- The PICOP must maintain railway competences as a PICOP
- The PICOP must be competent in the use of the procedures and equipment provided for carrying out their duty
- The PICOP must have knowledge of the infrastructure where the possession is to take place.

Work supervisor

**DEFINITION**
The Work supervisor is responsible for controlling and communicating with the PICOSS all issues regarding the technical installations where they are expected to have either a safety or a punctuality impact on the operation of the railway.

Competencies:

- The Work supervisor must have a proven competence in managing and handling the technical systems to be supervised.

Maintainer

**DEFINITION**
The Maintainer has specific technical skills and works in the infrastructure and/or surrounding railway buildings either with or without possession. The Maintainer may be accompanied by working units and other track vehicles.

Competencies:

- The Maintainer must be competent in the use of the procedures and equipment provided for use in the workplace
- The Maintainer must be competent in evaluating the consequences of maintenance work to railway safety.
**Watchman**

**DEFINITION** The Watchman is responsible for warning personnel working closer than 4 metres to the nearest rail where no possession has been established.

**Competencies:**
- The Watchman must maintain railway competences as a Watchman
- The Watchman must be competent in the use of the procedures and equipment used to carry out their duties.

**Visitor**

**DEFINITION** A Visitor is a person assigned to perform a task within the safety distance of 4 metres from the nearest rail, but with a special permission to deviate from the requirement of possessing a valid railway ID card. A Visitor always receives a written instruction and is always accompanied by a Railway competent person.

**Competencies:**
- The Visitor must be able to understand and follow instructions given by the accompanying Railway competent person.

**Contractor**

**DEFINITION** The Contractor is a company that contracts to undertake work within the infrastructure managed by Banedanmark.

**Competencies:**
- The Contractor must be competent in the use of the rules and instructions specific to infrastructure work
- The Contractor must keep a valid Banedanmark license to perform infrastructure work.

**TWSC**

**DEFINITION** The Track Work Safety Coordinator (TWSC) approves and audits work to take place on or near the railway infrastructure. The TWSC is responsible for ensuring that any work that is planned to take place has employed the necessary safety measures and will provide assistance to the Contractor and the client to determine what measures are appropriate and while the work is taking place they shall audit and assure that the measures have been employed.

**Competencies**
- The TWSC must maintain railway competences as a TWSC
- The TWSC must have a detailed knowledge of railway safety legislation, railway safety procedures and best practice guidelines for the correct and safe use of maintenance equipment and the application of maintenance processes.
RF.30  

**Catenary manager**

**DEFINITION**
The Catenary manager is the person in charge of supervising and monitoring the catenary system. The Catenary manager is competent in high voltage regulations and assesses and supervises catenary isolations in all operational situations.

Competencies:

- The Catenary manager must be competent in the use of the procedures and equipment provided for use in the workplace
- The Catenary manager must have sufficient knowledge of the infrastructure within the area of control to identify locations in the infrastructure and applicable rules and instructions.

RF.66  

**Catenary field leader**

**DEFINITION**
The Catenary field leader is competent in high voltage regulations, and has been appointed through written instructions by the Catenary manager to be responsible for catenary worksite safety.

Competencies:

- The Catenary field leader must be competent in the use of the procedures and equipment provided for use in the workplace
- The Catenary field leader must have sufficient knowledge of the infrastructure within the area of the worksite to identify locations in the infrastructure and applicable rules and instructions.

RF.69  

**Network manager**

**DEFINITION**
The Network manager is responsible for coordinating the railway traffic during disruptions, in cooperation with the Signaller, Railway Undertakings, Emergency services, Contractors and others using or working on the rail network managed by Banedanmark.

Competencies:

- The Network manager must be able to communicate with all parties involved in railway operations
- The Network manager must be competent in the use of emergency procedures to act efficiently as liaison to Emergency services.
RF.73

**Person responsible for traffic operation**

**DEFINITION**
The Person responsible for traffic operation is responsible for ensuring traffic operation takes place according to rules and regulations and that necessary competence and resource is available to perform the traffic operation tasks. The Person responsible for traffic operation agrees and coordinates temporary rules and railway safety issues.

If parts of the responsibility are delegated a written agreement must be produced describing the detailed and specific placement of the responsibility.

**Competencies:**

- The Person responsible for traffic operation must be knowledgeable of the procedures and regulation governing traffic operation and railway safety.

RF.117

**Person responsible for operational rules**

**The Person responsible for operational rules** has the responsibility of these operational rules and additional instructions in connection with these. The Person responsible for operational rules has the right to interpret these operational rules as well as the additional provisions in connection with these.

The Person responsible for operational rules ensures that new or updated rules and derogations for existing rules are processed and submitted to the Danish Transport, Building and Housing Agency with a request for approval.

RF.77

**Person responsible for technical operation**

**DEFINITION**
The Person responsible for technical operation is a technical specialist responsible for the operational condition of the technical installations of the Banedanmark rail network.

**Competencies:**

- The Person responsible for technical operation must be knowledgeable of the specific procedures and regulations governing technical installations and railway safety within their area of specialist knowledge (eg. tracks, catenary, signalling).
Banedanmark incident investigator

**DEFINITION**

During accidents or safety related incidents, the Banedanmark incident investigator is responsible for carrying out the immediate incident investigation.

During accidents, the Banedanmark incident investigator has authority to implement and manage the necessary measures to assist the Emergency services in ensuring that the tracks are cleared and the service is restored.

The Banedanmark incident investigator makes the necessary coordination of the investigations with both external authorities, internal units and railway undertakings.

The Banedanmark incident investigator is responsible for cooperation with the Danish Accident Investigation Board.

The Banedanmark incident investigator is authorised to revoke any permission to perform safety related tasks from any staff if:

- Severe violations of safety regulations have been observed ...or
- considerable safety considerations have been ignored ...or
- questionable staff competence has been observed.

Competencies:

- The Banedanmark incident investigator must maintain railway competences as an incident investigator
- the Banedanmark incident investigator must have knowledge about procedures and instructions providing railway safety.
Definitions

DMI symbols and marker boards

Indicated running level

The active running level is indicated on the DMI by a level indication. The level indicates how the train is supervised and the operational rules that must be applied by the Driver.

The route book contains information identifying the level of the train control system for the infrastructure.

Responsibilities

Driver

- When the symbol for running in level 0 is displayed you must observe operational rules for the level 0 area.
- When the symbol for running in level ATC is displayed you must observe operational rules for the level ATC area.
- When the symbol for running in level 2 is displayed you must observe operational rules for the level 2 area.
- You must bring the train to a standstill and inform the Signaller when the level indicated on the DMI is not consistent with the infrastructure you are occupying.

Announced data radio hole

An announced data radio hole is an area known to have unreliable data radio coverage. When a train encounters an announced data radio hole the onboard will automatically suspend the monitoring of the data radio connection until the train has exited the announced data radio hole.

Responsibilities

Driver

- When the symbol for an announced data radio hole is displayed on the DMI you may continue on any valid movement authority displayed on the DMI. If you reach the end of authority and the symbol for data radio hole is still displayed the movement authority cannot be updated and you must contact the Signaller.
**Dual faced stop marker**

**DEFINITION**
A dual faced stop marker is a moveable sign placed in between the rails which shows "STOP" on both sides. "STOP" is indicated as a white circle with a red disc inside.

The dual faced stop marker indicates the boundaries of a worksite within a possession. The purpose of the dual faced stop marker is to act as the last barrier against unauthorised movement into or out of a worksite. All movements must stop at the marker until authorised by the PICOP to pass.

**Responsibilities**

**Driver**
You must bring your train or vehicle to a standstill before reaching the stop marker.

You may only proceed when the PICOP has authorised the movement and the stop marker has been removed from the track.

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**ETCS stop marker**

**DEFINITION**
An ETCS stop marker is placed trackside to identify the end location for authorities to move and to demarcate shunting areas, possessions, and level crossings.

An ETCS stop marker shows a yellow arrow pointing at the track for which it applies and is associated with a marker containing a unique identifier.

The location of ETCS stop markers is indicated in the Route Book and on the signalling control display.

When an ETCS stop marker is placed in front of a level crossing it will be equipped with an additional marker indicating the ID number of the level crossing.

ETCS stop markers are only passed on movement authorities, written order authority or when authorised by a Shunter.

**Responsibilities**

**Driver**
You must only allow your train or vehicle to pass an ETCS stop marker when authorised by a movement authority, a written order or by the responsible Shunter.

If you identify that the ETCS stop marker at the limit of your authority when running on written order authorisation is missing, you must bring your train to a standstill and request further instructions from the Signaller.

If you identify that an ETCS stop marker is missing or obscured, you must always inform the Signaller.
**Data radio communication failure**

**DEFINITION**
A data radio communication failure exists when the onboard is unable to establish radio communication to the RBC.

**Responsibilities**

**OR.DEF.244**
**Driver**
When the symbol for data radio communication failure is displayed on the DMI you must verify and correct the information on the DMI used to create the connection. You must check that the ETCS level, radio network identification and RBC phone number are correct as provided by the Route Book.

**Exit SH-mode**

**DEFINITION**
Exit SH-mode is done by the Driver using the "Exit Shunting" button on the DMI when all shunting movements to be performed in the area by that train has ended. When leaving SH-mode the onboard changes to SB-mode.

**Responsibilities**

**OR.DEF.143**
**Driver**
You must press the "Exit Shunting" button on the DMI when instructed by the Shunter.

**Fouling point**

**DEFINITION**
The fouling point is the location where two tracks intersect or converge onto each other and indicates the minimum distance necessary to the neighbouring track in order for any train or vehicle to stay outside the safe gauge of the neighbouring track.

The fouling point is marked by a fouling point indicator.

**Responsibilities**

**OR.DEF.600**
**Driver**
When you are parking your train or vehicle near a point where two tracks are intersecting or converging you must ensure the train or vehicle does not overhang the fouling point and is clear of adjacent tracks.
FS-mode

**DEFINITION**

FS-mode is a fully supervised driving mode offered to the onboard by the signalling system. FS-mode cannot be selected by the Driver.

FS-mode allows movements on a FS MA with the signalling system ensuring that the technical conditions for issuing a movement authority are met.

The train is supervised to the most restrictive speed profile. This takes into account the allowed speed of train consist, line speed, speed restrictions, level crossing restrictions and an end of authority.

The supervision is based on the speed and location of the train to ensure that the train remains within the speed and distance limits.

**Responsibilities**

**Driver**

You must control the train within the permitted speed indicated on the DMI as long as the symbol for FS-mode is shown on the DMI.

If the text message "Entering FS" is displayed on your DMI you must observe any speed restriction related to the part of your train not yet covered by the FS MA. The speed must not exceed 25 km/h when the message is indicated while driving from a possession or shunting area and 40 km/h when the message is indicated while driving in an interlocked area.
**Low adhesion setting**

Rolling stock specific alteration of the train’s calculated stopping distance to be more restrictive.

The low adhesion setting is only an assisting tool for the Driver and does not provide any guarantee that the train will not overrun the end of authority during braking.

The low adhesion setting can be ordered by the signalling system when the train enters an active low adhesion area, or manually activated by the Driver.

When the low adhesion setting is ordered by the signalling system, the low adhesion setting is removed when the train exits the active low adhesion area, or the area is de-activated in the signalling system.

When the Driver manually activates the low adhesion setting, it will remain active until the Driver manually cancels the setting.

**Responsibilities**

**OR.DEF.30** Driver

When the symbol for low adhesion setting is shown the low adhesion setting is activated. You must control the train according to the low adhesion conditions experienced and not rely on the onboard to protect against overrun of the end of authority during braking.

**OR.DEF.69**

**Keep main circuit breaker open**

**OR.DEF.70** Definition

Keep main circuit breaker open marks the section where the main circuit breaker must remain open.

**Responsibilities**

**OR.DEF.71** Driver

When the symbol for keep main circuit breaker open is displayed on the DMI you must keep the main circuit breaker open until the symbol to close main circuit breaker is shown.

**OR.DEF.40**

**Keep pantograph lowered**

**OR.DEF.41** Definition

Keep pantograph lowered marks the area where the pantograph(s) must remain lowered.

**Responsibilities**

**OR.DEF.42** Driver

When the symbol for keep pantograph lowered is displayed on the DMI you must keep the pantograph(s) lowered until the symbol to raise the pantograph is shown.
**Close main circuit breaker**

**OR.DEF.73**  
**DEFINITION**  
Close main circuit breaker marks the end of a neutral section and will be indicated on the DMI when the front of the train has passed the neutral section.

**Responsibilities**

**OR.DEF.74**  
**Driver**  
You may close the main circuit breaker when the pantograph(s) has passed the close main circuit breaker marker.

**OR.DEF.75**  
**Driver**  
When the symbol for close main circuit breaker is displayed on the DMI it indicates that the front of the train has passed the neutral section. You may close the main circuit breaker when the pantograph(s) has passed the neutral section.

The DMI will indicate the symbol in grey if closing the main circuit breaker happens automatically.

**Raise pantograph**

**OR.DEF.44**  
**DEFINITION**  
Raise pantograph marks the end of a lowered pantograph area. The pantograph(s) on an electric traction unit can be raised once the pantograph(s) has passed out of the lowered pantograph area.

**Responsibilities**

**OR.DEF.45**  
**Driver**  
You may begin raising the pantograph(s) when the pantograph(s) has passed the raise pantograph marker.

**OR.DEF.46**  
**Driver**  
When the symbol for raise pantograph is displayed on the DMI it indicates that the front of the train has passed the lowered pantograph area. You may raise the pantograph(s) when the pantograph(s) has left the lower pantograph area.

The DMI will indicate the symbol in grey if raising the pantograph(s) happens automatically.

**OR.DEF.455**  
**Unprotected level crossing**
A level crossing is unprotected until the signalling system reports that it is protected.

All supervised trains with a movement authority across an unprotected level crossing will have the unprotected level crossing symbol displayed in the DMI along with and a speed restriction of 10 km/h covering the width of the level crossing. The symbol and speed restriction will normally be lifted, when the level crossing is reported as protected by the signaling system, or when the lead cab has passed the unprotected level crossing.

In exceptional cases where more level crossings are placed close after each other, it can happen that the symbol is still indicated after the level crossing is reported as protected by the signaling system and the speed restriction is lifted. In this case the symbol applies to the next level crossing which is not yet protected.

A train travelling over an unprotected level crossing will be released from the level crossing speed restriction of 10 km/h, when the lead cab has passed the level crossing.

If a train is approaching an end of authority where a level crossing is located immediately after, the symbol may also be displayed. The symbol is only applicable for trains passing the level crossing.
Change per 2019-05-15:

A level crossing is unprotected until the signalling system reports that it is protected.

All supervised trains with a movement authority across an unprotected level crossing will have the unprotected level crossing symbol displayed in the DMI along with a speed restriction of 10 km/h covering the width of the level crossing. The symbol and speed restriction will disappear normally be lifted, when the level crossing is reported as protected by the signaling system, or when the train lead cab has passed the unprotected level crossing.

In exceptional cases where more level crossings have are placed close each other, of the a speed restriction of 10 km/h happen covering the width of the level crossing after the symbol is still indicated. The level crossing speed restriction reported is as included protected in any the movement signaling authority system past the unprotected speed level restriction crossings, and lifted. When the symbol applies to the next level crossing which is reported not yet protected.

A train travelling over an unprotected level crossing will be released from the level crossing speed restriction of 10 km/h, when the lead cab has passed the level crossing.

If a train is approaching an end of authority where a level crossing is located immediately after, the symbol may also be displayed. The symbol is only applicable for trains passing the level crossing.

Responsibilities

OR.DEF.457 Driver

When the symbol for an unprotected level crossing is displayed on your DMI along with a speed restriction of 10 km/h, or when the information is included on a written order you, must consider the level crossing to be unprotected.

Change per 2019-05-15:

When the symbol for an unprotected level crossing is displayed on your DMI along with a speed restriction of 10 km/h, or when the information is included on a written order you must consider the level crossing to be unprotected.
**IS-mode**

IS-mode is a driving mode used under onboard failure conditions when the onboard has been isolated and the interface between the onboard and the brakes completely bypassed. No onboard supervision of train movement is available in IS-mode.

Maximum permitted speed in IS-mode is 40 km/h.

A clear indication of the onboard being isolated is available to the Driver. A train in IS-mode will be indicated on the signalling control display as a train with isolated onboard.

No indications are available on the DMI when in IS-mode.

Movements in IS-mode are unsupervised movements authorised by written order from the Signaller. Trains are only moved in IS-mode as far as practicable and do not form part of the normal service. To exit IS-mode the onboard is proven safe for service by a competent maintainer.

**Responsibilities**

**Driver**

When the onboard is isolated, you must only move your train according to written orders received from the Signaller, or according to authority provided by the Shunter.

When driving in IS-mode you must observe the conditions of on sight.

**Kilometre marker**

A kilometre marker is a trackside sign indicating the distance from a fixed starting point.

The top number indicates the kilometres travelled and the bottom number indicates the first digit after the decimal point of the distance measure per 100 metres.

The kilometre markers are placed at 200 metre intervals.

**Responsibilities**

**Driver**

You must observe kilometre markers to assist your knowledge of your position in the infrastructure.
**Acknowledge Level Transition**

**OR.DEF.206**

**DEFINITION** Level transitions must be acknowledged where the Driver is required to perform safety related operations that would have been performed by the previous signalling system.

If the Driver does not acknowledge the change in supervision, the onboard will perform a brake intervention.

**Responsibilities**

**OR.DEF.207**

**Driver** When the symbol requesting an acknowledgment of entry into level 0 is displayed on the DMI you may acknowledge and then apply the operational rules for the Level 0 area.

**OR.DEF.208**

**Driver** When the symbol requesting an acknowledgment of entry into level ATC is displayed on the DMI you may acknowledge and then apply the operational rules for the Level ATC area.

**OR.DEF.209**

**Driver** When the symbol requesting an acknowledgment of entry into level 2 is displayed on the DMI you may acknowledge and then apply the operational rules for the Level 2 area.

**OR.DEF.78**

**Acknowledge OS-mode**

**OR.DEF.79**

**DEFINITION** Acknowledge OS-mode indicates that the signalling system requires the onboard to change driving mode into OS-mode.

If the Driver fails to acknowledge OS-mode, the train is supervised to a standstill at the ETCS stop marker indicating the end of authority.

**Responsibilities**

**OR.DEF.80**

**Driver** When the symbol for acknowledge OS-mode is indicated on the DMI you may acknowledge. By acknowledging OS-mode you are accepting a change into OS-mode and you must observe the conditions for running on sight.
**Acknowledge SH-mode**

**DEFINITION**

Acknowledge SH-mode can be offered by the signalling system for the Driver to acknowledge.

If the Driver fails to acknowledge SH-mode, the onboard switches automatically to SH-mode and triggers a timer of 5 seconds for the Driver to acknowledge. If the Driver does not acknowledge within the 5 seconds, the onboard will automatically perform a brake intervention.

**Responsibilities**

**OR.DEF.135**  
**Driver**

When the symbol on the DMI indicates an order from the signalling system to change to SH-mode, you must only acknowledge the change if agreed with the Shunter. If you are offered to acknowledge SH-mode in a situation where shunting is not expected, you must inform the Signaller.

You must not accept a change to SH-mode if you are driving a passenger train.

**OR.DEF.137**  
**Driver**

You must only request or acknowledge the change to SH-mode if you definitely know that the train is prepared for the specific shunting movement.

**Acknowledge SN-mode**

**DEFINITION**

Acknowledge SN-mode indicates that the signalling system requires the onboard to change driving mode into SN-mode.

If the Driver fails to acknowledge SN-mode, the onboard will automatically perform a brake intervention. Upon acknowledgement of SN-mode the brake intervention will be released.

**Responsibilities**

**OR.DEF.154**  
**Driver**

When the symbol for acknowledge SN-mode is indicated on the DMI you may acknowledge the change in supervision if you are at a location compatible with SN-mode. By acknowledging SN-mode you are confirming that you understand the change in applicable operational rules and that you are accepting a change into SN-mode.
**Acknowledge SR-mode**

**DEFINITION**

Acknowledge SR-mode indicates that the signalling system requires the onboard to change driving mode into SR-mode.

**Responsibilities**

**Driver**

When the symbol for acknowledge SR-mode is indicated on the DMI, you must only acknowledge SR-mode when the relevant written order is issued by the Signaller.

By acknowledging SR-mode you are confirming that you understand the change in supervision, and that you are accepting a change into SR-mode.

**Acknowledge TR-mode**

**DEFINITION**

Acknowledge TR-mode is a confirmation from the Driver that the emergency brake application has been noted. Following an acknowledgement of TR-mode the onboard will enter into PT-mode.

**Responsibilities**

**Driver**

When the symbol for acknowledge TR-mode is displayed on the DMI you may acknowledge the change to PT-mode.

**Acknowledge UN-mode**

**DEFINITION**

UN-mode must be acknowledged before the onboard can change driving mode into UN-mode.

**Responsibilities**

**Driver**

When the symbol for acknowledge UN-mode is indicated on the DMI you may acknowledge. You may only acknowledge UN-mode if a change into UN-mode is appropriate for the area and you are competent in the operational rules of the area.

By acknowledging UN-mode you accept a change into UN-mode, and you must observe the operational rules specific to the level 0 or level ATC area.
Announce Level Transition

**OR.DEF.200**

**Announce Level Transition**

**OR.DEF.201**

**DEFINITION**
The Driver will be warned when approaching a level transition about which level of control the train will be entering.

The announcement will be displayed as an indication on the DMI.

**Responsibilities**

**OR.DEF.202**

**Driver**
The symbol announcing a transition to level 0 is displayed on the DMI when approaching a location of transition into level 0.

**OR.DEF.203**

**Driver**
The symbol announcing a transition to level ATC is displayed on the DMI when approaching a location of transition into level ATC.

**OR.DEF.204**

**Driver**
The symbol announcing a transition to level 2 is displayed on the DMI when approaching a location of transition into level 2.

**OR.DEF.205**

**Driver**
You must not allow your train to enter an area where you are not competent to run under the announced level.

If you do not expect to make a transition to the level indicated, you must stop the train no later than the transition point and inform the Signaller.

**Attention marker**

**OR.DEF.679**

**DEFINITION**
An Attention marker specifies the location where the Driver will sound the train horn to warn members of the public that a train is approaching.

The Attention marker is placed at non interlocked level crossings with low or limited sighting distances.

**Responsibilities**

**OR.DEF.681**

**Driver**
You must sound the train horn with sound signal "Warning" when passing the Attention marker.

**OR.DEF.682**

**Driver**
You must sound the train horn with sound signal "Warning" when passing the Attention marker in case of low visibility.
Neutral section announcement

Neutral section announcement is an indication on the DMI that the train is approaching a neutral section and the Driver must be prepared to open the main circuit breaker.

Responsibilities

Driver
When the symbol for open main circuit breaker is displayed on the DMI you must be prepared to open the main circuit breaker before the train reaches the neutral section.

The DMI will indicate the symbol in grey if opening of the main circuit breaker happens automatically.

Driver
You must open the main circuit breaker before the train reaches the open main circuit breaker marker.

Driver
You must immediately inform the Signaller in case your train enters a neutral section with the main circuit breaker closed.

NL-mode

NL-mode is when one or more traction units are mechanically, but not electrically coupled to the leading traction unit and a Driver is required to control the non-leading traction unit.

The onboard will not supervise movement authorities but only display information on speed and track conditions on the DMI.

Responsibilities

Driver
You may only select NL-mode when instructed by the Driver of the leading cab to provide additional traction as an assisting Driver.

You are responsible as Driver of the non-leading traction unit for obeying the orders associated to track conditions when they are displayed on the DMI, but it is the Driver of the leading traction unit who has the overall responsibility for driving the train.
**OS-mode**

**DEFINITION**

OS-mode is a supervised driving mode offered to the onboard by the signalling system. OS-mode cannot be selected by the Driver.

OS-mode allows movements on an OS MA in situations where a track could be occupied by another train or any kind of obstacle.

The train is supervised to a maximum speed of 40 km/h, speed restrictions and a target distance.

**Responsibilities**

**OR.DEF.83**

**Driver**

You must observe the conditions of on sight as long as the symbol for OS-mode is shown on the DMI.

If the text message "Entering OS" is displayed on your DMI you must observe any speed restrictions below 40 km/h related to the part of your train not yet covered by the OS MA. The speed must not exceed 25 km/h when the message is indicated while driving from a possession or shunting area.

**Override end of authority**

**DEFINITION**

The override end of authority symbol is indicated on the DMI when the Driver has used the override function.

The override end of authority symbol always appears together with SR-mode. The symbol disappears once the end of authority has been passed. In case the train fails to pass the end of authority within 200 metres or 60 seconds of activating the override function, the onboard will enter TR-mode.

**Responsibilities**

**OR.DEF.721**

**Driver**

When the symbol for override end of authority is indicated on the DMI, you must be prepared to enter TR-mode if the train fails to pass the end of authority within 200 metres or 60 seconds of activating the override function.

**OR.DEF.722**

**Driver**

As long as the override end of authority symbol is indicated in the DMI, you must observe the speed of SR-mode and the condition of on sight.
**PT-mode**

The onboard enters PT-mode when the Driver has acknowledged TR-mode. In PT-mode the emergency brake can be released. If the change to TR-mode is caused by an emergency stop the onboard will wait for the emergency stop to be revoked before the onboard can receive a movement authority.

The change to PT-mode is reported by the onboard to the signalling system.

**Responsibilities**

**Driver**

When you have acknowledged TR-mode the symbol for PT-mode will be shown on the DMI and you must remain at standstill and inform the Signaller or Shunter.

**SB-mode**

SB-mode is the default standby mode of the onboard. SB-mode cannot be selected by the Driver but is entered automatically on closing the desk or exiting SH-mode.

Train awakening is performed from SB-mode. Onboard train data can be entered and updated by the Driver when in SB-mode.

In SB-mode, the train is supervised against runaway movements.

**Responsibilities**

**Driver**

When the symbol on the DMI indicates the train is in SB-mode you must not attempt to move the train.

You may, however, move the train up to 1 metre in SB-mode when it is required for splitting of the train.

**Change per 2019-05-15:**

When the symbol on the DMI indicates the train is in SB-mode you must not attempt any to move the train.

You may, however, move the train up to 1 metre in SB-mode when it is required for splitting of the train.
**SF-mode**

**DEFINITION**
SF-mode is an onboard state that prevents any further movements using ETCS. It is entered automatically when the onboard detects a safety critical failure.

When the onboard equipment is in SF-mode, the emergency brakes are applied.

**Responsibilities**

**OR.DEF.159**  
**Driver**
When the symbol indicating SF-mode is displayed on the DMI you must consider the onboard as failed.

**SH-mode**

**DEFINITION**
In SH-mode the onboard equipment supervises the train movements against a speed limit of 25 km/h.

SH-mode can be requested by the Driver, or ordered by the signalling system as part of a movement authority into a possession or shunting area.

If the train exceeds the SH-mode speed limit an automatic brake application will be applied.

The SH-mode does not require any onboard train data to be entered by the Driver.

**Responsibilities**

**OR.DEF.700**  
**Driver**
If SH-mode is not ordered by the signalling system you may only request SH-mode by pressing the "Shunting" button on the DMI when instructed by the Shunter.

**OR.DEF.132**  
**Driver**
When the symbol on the DMI indicates the train is in SH-mode you must observe the rules for shunting.

You must only move your train when authorised by the Shunter.

**SH-mode refused**

**DEFINITION**
When the request from a Driver of changing to SH-mode cannot be granted the signalling system will respond by refusing SH-mode.

**Responsibilities**

**OR.DEF.140**  
**Driver**
When the text message "SH refused" is displayed on the DMI you must inform the Shunter about the situation.
SN-mode

DEFINITION
Running in SN-mode enables ETCS equipped trains to use the STM to run on lines equipped with train control systems other than ETCS. Trains in SN-mode run in level ATC.

SN-mode is the standard driving mode for trains operating in level ATC, and is only available in level ATC.

Responsibilities

Driver
When the symbol for SN-mode is indicated on your DMI you must check that the mode is appropriate for your location and you must observe operational rules valid for the line concerned.

SR-mode

DEFINITION
SR-mode is a driving mode used in degraded situations. SR-mode is selected by the Driver using the override function, or offered by the signalling system for the Driver to acknowledge.

SR-mode enables the train to move whenever a movement authority cannot be issued by the signalling system. The authority to select or acknowledge SR-mode can only come from the Signaller using a written order.

Train movements are supervised against:

- Maximum permitted speed of 40 km/h
- running in the direction opposite to the direction faced by the active cab.

Responsibilities

Driver
Before using the override function you must receive a written order and check the applicable speed limit. Following the use of the override function the symbol for running in SR-mode is displayed on the DMI.

When driving in SR-mode you must observe the conditions of on sight.
**Platform markers**

Platform markers are placed at different locations along, or after, the platform to assist the Driver of a passenger train in identifying the correct stopping location corresponding to the length of the train.

Two different platform markers exist:
- The metre marker
- The S marker

The metre marker indicates the optimum stopping location along a platform by numerical values denoting the length of the train.

The S marker indicates the stopping location for trains that are longer than indicated by the metre markers, or where no metre marker are present.

**Responsibilities**

**OR.DEF.572**  
Driver  
When you approach a platform for the purpose of exchanging passengers, you must bring your train to a standstill at the correct stopping location as indicated by metre marker and rolling stock specific Railway Undertaking procedures.

**OR.DEF.573**  
Driver  
When you approach a platform for the purpose of exchanging passengers, with a train that is longer than indicated on the metre markers, you must bring your train to a standstill at the S marker according to rolling stock specific Railway Undertaking procedures.
**Electrical unit stop marker**

**DEFINITION**
The electrical unit stop marker is a marker placed in the catenary system or at trackside to indicate to the Driver that from the location of the marker and beyond, the catenary power supply ends.

At locations with multiple directions, and one direction leads into a track without catenary power, the electrical unit stop marker is supplemented with an arrow indicating the direction to which the marker applies.

Tracks with no catenary power can be identified in the route book.

**Responsibilities**

**Driver**

You must as far as possible bring your electrical powered unit to a standstill before any pantograph passes the electrical unit stop marker.

In case you identify that the pantograph(s) will pass the electrical unit stop marker, you must immediately lower the pantograph(s).

**Stop at danger point**

**DEFINITION**
The “Stop at danger point” marker indicates the location where the train must be stopped when no authority to move is given out of the area.

The marker is placed in permanent shunting areas in front of danger points located so close to routes or the like, that driving to the danger point indicated on the marker could cause a risk of coming into conflict with other routes, derailment or the like.

Train awakening is performed in front of the marker. There may be hand operated points located between the marker and the danger point indicated on the marker.

**Responsibilities**

**Shunter**

When the train does not have authority to move out of the area, you must ensure that the train is stopped in front of the marker.

You must ensure that hand operated points between the marker and the danger point indicated on the marker are in the correct lie.
Start of ATC-signalling

**DEFINITION**

Start of ATC-signalling is a collective term of start of ATC-signalling and start of ATC-togstop-signalling.

The start of ATC-signalling is the location at which signalling is transferred to ATC-signalling.

**Responsibilities**

**Driver**

When passing the location of the start of ATC-signalling marker you must observe operational rules for the level ATC area.

**Driver**

When passing the location of the start of ATC-togstop-signalling marker you must observe operational rules for the level ATC area.

**Signaller**

You must only coordinate train movements up to the start of ATC-signalling marker.

Authority over the transition area is shared between the two Signallers controlling the adjacent track sections.

Start of ETCS-signalling

**DEFINITION**

The start of ETCS-signalling is the location at which signalling is transferred from lineside signals to ETCS-signalling.

**Responsibilities**

**Driver**

When passing the location of the start of ETCS-signalling marker you must observe operational rules for the level 2 area.

**Signaller**

You must coordinate train movements from the start of ETCS-signalling marker.

Authority over the transition area is shared between the two Signallers controlling the adjacent track sections.

End of ETCS-signalling

**DEFINITION**

The end of ETCS-signalling is the location at which signalling is transferred from ETCS-signalling to level 0 and lineside signalling.

**Responsibilities**

**Driver**

When passing the end of ETCS-signalling marker you must apply operational rules for the area you are entering.

**Signaller**

You must coordinate train movements up to the end of ETCS-signalling marker.

Authority over the transition area is shared between the two Signallers controlling the adjacent track sections.
**Lower pantograph**

**DEFINITION**
Lower pantograph marks the beginning of a lowered pantograph area. The pantograph(s) on an electric traction unit must be lowered for the train to safely travel through e.g. because there is a change of traction voltage supply.

These areas are indicated in the Route Book and defined in the signalling system.

The location of the lower pantograph area is indicated by marker boards and for supervised trains, also on the Drivers DMI.

**Responsibilities**

**OR.DEF.38**  
*Driver*
When the symbol for begin lowering pantograph is displayed on the DMI you must begin lowering the pantograph(s). The DMI will indicate the symbol in grey if lowering the pantograph(s) happens automatically.

**OR.DEF.39**  
*Driver*
You must have the pantograph(s) lowered when the train reaches the lower pantograph marker.

**System electrical supply**

**DEFINITION**
System electrical supply describes the power supplied by the overhead wire by indicating the voltage and frequency.

**Responsibilities**

**OR.DEF.49**  
*Driver*
You will encounter the system electrical supply marker when leaving a lowered pantograph area.

When your train reaches the system electrical supply marker you must only raise the pantograph(s) if your train is capable of receiving the indicated power.

**TR-mode**

**DEFINITION**
TR-mode is an irrevocable application of the emergency brakes by the onboard until the train is at a standstill and enters post trip. TR-mode is triggered by a failure, an attempt to pass an end of authority or by the Signaller applying an emergency stop.

The TR-mode removes the movement authority and the change to TR-mode is reported by the onboard to the signalling system.

**Responsibilities**

**OR.DEF.190**  
*Driver*
When the symbol for TR-mode is displayed on the DMI you must assume that there is a dangerous situation. You must perform all actions necessary to avoid or reduce the effect of this situation.
**UN-mode**

Driving in UN-mode is used for driving in an area not equipped with ETCS or ATC. Rules for driving in UN-mode are not contained in these Operational Rules.

UN-mode only supervises to a ceiling speed set to 120 km/h and is a driving mode used for driving in a level 0 area. UN-mode cannot be selected by the Driver but is entered during start of mission when level 0 is selected or following transition into a level 0 area.

Route book and location specific descriptions will give information on permissible speed limits.

**Responsibilities**

**Driver**

You must control your train according to the operational rules of the level 0 area as long as you remain in the level 0 area. The symbol for UN-mode on the DMI indicates that only a ceiling speed of 120 km/h is supervised by the onboard.

**Failed Train**

**Disabled train**

A disabled train is a train which cannot complete its mission because it is no longer safe and fit for service.

The responsible Railway Undertaking evaluates the failure on the disabled train to determine if it can be repaired at the site or moved by an assisting train.

**Assisting train**

An assisting train is used to move another train if it is not able to continue by itself. Assisting trains can be called for as a result of malfunctions or incidents.

Assisting trains are announced by the Network manager either by updating the signalling system with a new timetable, or changing the timetable of an existing train.

An assisting train runs according to a timetable. The assisting train will join/share the section with the failed train. The assisting train can be coupled to the front of the failed train or assist from the rear. Once the assisting train has been coupled to the failed train, the entire consist either continues with one of the existing train running numbers or becomes a new train with a new timetable.
Failed train marking

The failed train marking is a signalling system function applied by the Signaller to the train running number of a failed train. Once applied, the signalling system will shorten any movement authority associated with the train. The signalling system will avoid routing trains into gridlock around the failed train as far as practicable, and will suggest possible production plan updates.

When the failed train marking is activated, it is indicated to the Signaller on the signalling control display.

Accidental division

An accidental division is when unintentional splitting occurs and may be caused by faulty or insufficient train preparation or failures on a train.

Infrastructure

Axle counter

An axle counter is a device which is used, in connection with counting heads placed trackside, to detect railway movements in and out of an axle counter section.

An axle counter section can be indicated occupied, unoccupied or failed.

An axle counter section is proven unoccupied when a matching number of axles are counted in and out.

Following a miscount the axle counter section can be reset. A reset axle counter section will be cleared once a train has passed through the axle counter section. If the first train passing the axle counter section is supervised, the train will be restricted to an OS MA.

Track under Construction

Track under construction is tracks that have not previously been attached to the operational railway. Rules for movements on tracks under construction is provided by the responsible for the track.

If work is to be performed closer to the operational railway than 4 m, this have to be done according to the rules in “Rules for working in infrastructure”.

When a track under construction is connected to the operational railway this is done according to the engineering rules. Rules for movements between a track under construction and the operational railway is set out by the operational rules responsible.
**Track under renewal**

Operational tracks that in a longer period is only to be used for infrastructure work can be track under renewal if:

- the work in the responsible track is performed without the Signallers participation
- the boundary to operational railway is clear according to the engineering rules for track under construction.

The operational rule responsible determines when and under which conditions a track becomes track under renewal and sets out the rules for movements between the track under renewal and the operational track.

**Depot**

A depot is a non interlocked area of the infrastructure used for parking and/or maintenance of rolling stock. A depot is a permanent shunting area.

A single depot can have more than one point of entry and exit.

All depots are identified by a location name and these can be found in the route book.

**Hand operated point**

A hand operated point can be manually thrown from one position to the other. Hand operated points are found in permanent shunting areas.

**User worked crossing**

A user worked crossing is a private road or footpath crossing the railway. User worked crossings are protected by manually operated gates. The gates should only be opened by a member of public when authorised by the Signaller.

At a user worked crossing no technical installation to safeguard against railway movements exists.

Locations of user worked crossings can be found in the Route Book and are indicated on the signalling control display.
**Closed track**

The Person responsible for technical operation can determine that a track for a longer period or permanently is closed for all driving and shunting and becomes a closed track. The Person responsible for technical operation informs The Person responsible for traffic operation.

The Person responsible for traffic operation ensures that:

- possible lock of points or other measure that prevents driving and shunting
- necessary announcement of the condition.

**Clamp**

A clamp is the mechanical device used by competent maintainers and Drivers to prevent movement of the point. The clamp can be used to secure the closed switch rail (and the open switch rail after trailing) and allow movements to pass the point without risk. Clamps are also used during point renewal.

The clamp is always secured by a pin and can be supplemented with a padlock. Only competent maintainers are permitted to mount a padlock to a clamped point.

**Trailing direction**

The trailing direction through a point is the direction where the two routes through the point converge onto each other.

Passing a point not in the correct lie in the trailing direction will result in a trailing.

**Facing direction**

Facing direction is the approach to a point from where it is possible to direct a movement in the right or left direction.

**Marker board**

A marker board is placed in the infrastructure to indicate information to railway competent persons.

Only marker boards defined in the Operational Rules are relevant to the operational railway. Other marker boards can be found in the infrastructure. The layout of these marker boards does not resemble any of the marker boards defined in the Operational Rules.

The location specific descriptions may contain information about the meaning of marker boards not defined in the Operational Rules.
Neutral section

A neutral section is a powerless section of the catenary system that bridge between two separate electrical supplies. The locations of neutral sections are indicated in the Route Book and are defined in the signalling system.

The locations of the neutral sections are indicated by marker boards, and are provided to Drivers of supervised trains using the DMI.

Bascule bridge

A bascule bridge is a low railway bridge, or a combined railway and road bridge, that can be elevated in order to allow the passage of ships. Railway traffic across the bridge is controlled by the Signaller.

Bascule bridges are locally operated by a Bridge guard.

The normal position for a bascule bridge is to allow for railway and road traffic. To allow ships to pass, or for maintenance purposes, the bascule bridge is requested released for operation by the Bridge guard.

Level crossing

A level crossing is where a road and the railway intersect at the same level.

The position and the protection status of level crossings in interlocked areas, are indicated on the signalling control display. Controls are provided for the Signaller to operate the level crossing if needed.

The locations of level crossings are indicated in the Route book.

All level crossings can be operated from a local control box. The local control box is used in case of failures, fault correction or planned maintenance. The level crossing status "protected" is indicated by a light in the local control box. The location of the local control box can be found in the location specific description.

Responsibilities

Shunter

You must observe from the indication in the local control box that the level crossing is protected before authorising a shunting movement to pass a level crossing in a possession or temporary shunting area.
Parking track

A parking track is a track in interlocked area designated for storage of rolling stock in-between missions. If a train is to end a mission at a parking track, this will be indicated in the timetable.

Sharing of track sections in a parking track is to be expected.

The location of parking tracks can be found in the Route Book.

Responsibilities

Driver

When you are routed into a parking track in OS-mode you must always expect to be routed into an occupied track.
Passenger and staff crossings

Warning systems are placed at some staff crossings and passenger crossings, on the trackside, to provide a warning to passengers or staff crossing the track about approaching trains.

Passenger crossings are placed at platforms where passengers are permitted to cross the track to get to the opposite platform. For passenger crossings equipped with a warning system, red warning lights and warning sound will warn the passengers about approaching trains. For passenger crossings not equipped with a warning system, signs are placed to remind passenger to look for approaching trains.

Staff crossings are placed on the trackside for railway staff to use. Staff crossings can be provided with yellow flashing lights indicating to the railway staff that a train is approaching.

The warning system is not guaranteed to provide a warning and railway staff needs to be vigilant to approaching trains at all times.

A non activated warning system will be detected by the signalling system and a temporary speed restriction of maximum 40 km/h will automatically be imposed at the crossing. The Driver will be informed via a text message which will be displayed along with the movement authority if a warning system is not activated. The signalling system will inform the O&M coordinator and the Signaller about failures in a warning system.

Responsibilities

Driver

When passengers have to cross a passenger crossing to leave your train, or to get to it, you must be vigilant to other trains approaching the crossing and if necessary warn the passengers.

All

You must be vigilant to approaching trains at all times, regardless of the indication of the warning system.

Correct lie

Correct lie is when the position of the point blades corresponds with the intended direction.

The status of the points operated by the interlocking is indicated to the Signaller on the signalling control display.
Protected level crossing

A level crossing is protected when the signalling system has received confirmation that protective devices have completed their sequence.

When a level crossing becomes protected this is indicated on the signalling control display.

Level crossings are protected by a combination of warning devices (sound and light) and barriers - if available - to warn users of an approaching train.

Track section

A track section is a predefined part of the infrastructure limited by two consecutive ETCS stop markers.

One track section may include several axle counter sections.

Handheld terminal operated point

Handheld terminal operated points are placed at the entrance to a non interlocked area. A handheld terminal operated point is protected by the signalling system in the correct lie to allow for supervised movements in the interlocked area.

In order to throw the point using the handheld terminal, the Signaller will establish a temporary shunting area. In case the handheld terminal is not available, a handheld terminal operated point can be thrown by the Signaller, when a temporary shunting area is established.

Handheld terminal operated points can also be thrown by maintainer using a hand crank after permission from the Signaller.

Responsibilities

Signaller
Before throwing a handheld terminal operated point from the Traffic control centre you must contact the Shunting area manager and request a visual inspection of the point to ensure that no rolling stock occupies the point.

Maintainer
You must obtain permission from the responsible Signaller before using a hand crank to throw a handheld terminal operated point.

Signaller
Before you permit a Maintainer to throw a handheld terminal operated point using a hand crank you must ensure that it is safe to do so.
**Point position indicators**

**DEFINITION**

Point position indicators are located at all points leading into a track area not equipped with catenary power. If the point position indicator shows a yellow aspect it indicates entry to an area not equipped with catenary power.

Point position indicators are installed at trap points and derailers.

**Responsibilities**

**Driver**

When you are controlling an electrical powered unit, and you observe a yellow aspect on a point indicator, you must as far as possible bring your train to a standstill before the electrical unit passes the yellow aspect on a point indicator and inform the Signaller or Shunter.

In case you identify that the train will pass the yellow aspect on a point indicator, you must immediately lower the pantograph(s).

**Shunter**

In case you identify that the train will pass the yellow aspect on a point indicator, you must instruct the Driver to immediately lower the pantograph(s).

**Buffer stop**

**DEFINITION**

The buffer stop is placed at locations where the track terminates after the buffer stop. Buffer stops in interlocked areas are equipped with an ETCS stop marker.

A buffer stop can be marked by red and white retro reflective markings and may be supplemented by two red light indications.

**Interlocked point**

**DEFINITION**

An interlocked point is a point controlled by the signalling system.

Interlocked points can be thrown by the Signaller via the signalling system, via a handheld terminal controlling a temporary shunting area or possession or by a maintainer using a hand crank.

When an area has been released for shunting/possession the points within the area can be thrown by use of handheld terminal.

**Responsibilities**

**Maintainer**

You must obtain permission from the responsible Signaller before using a hand crank to throw an interlocked point.

**Signaller**

Before you permit a Maintainer to throw an interlocked point using a hand crank you must ensure that it is safe to do so.
Operational railway

The operational railway is where normal train and vehicle movements are performed and it includes interlocked areas and permanent shunting areas.

Tunnel protection system

Tunnel protection system is the collective term used for hot axle box detection, and derailment detection placed at the approach to specific tunnels.

Trains passing the tunnel protection system will be checked against a predefined set of tunnel values. If a train exceeds the values, an alarm is indicated to the Signaller on the signalling control display. The alarm triggers an automatic response by the signalling system. The automated response is described in the location specific descriptions.

Locations of tunnel protection systems can be found in the Route Book.

Infrastructure Conditions

Low adhesion

Reduced friction between rails and wheels, caused by e.g. leaf fall. This may lead to the braking distance of trains and vehicles being extended due to slide, or slip being experienced when accelerating.
Unannounced data radio hole

An unannounced data radio hole is an area of poor data radio coverage. When a train encounters an unannounced data radio hole, a timer will be triggered in the onboard. After 45 seconds, the symbol for data radio communication failure will be displayed to the Driver in the DMI. Following another 5 seconds (total of 50 seconds), the onboard will automatically perform a brake intervention until the train is at a standstill, or data radio communication has been restored. A text message will be displayed to the Driver on the DMI when the brake intervention occurs.

Responsibilities

Driver
When at a standstill with the text message "Communication error", and/or the data radio communication failure symbol, displayed on the DMI, you must contact the Signaller.

Driver
In case the text message "Communication error", and/or the data radio communication failure symbol disappears from the DMI, and a movement authority is available, you may continue driving.

In case the text message "Communication error", and/or the data radio communication failure symbol disappears from the DMI, and no movement authority is available, you must contact the Signaller.

Unplanned speed restriction

For supervised trains an unplanned speed restriction is a speed restriction not yet supervised by the signalling system. Supervised trains inside or entering an area with an unplanned speed restriction are brought to a standstill until such time that the speed restriction is updated in the signalling system.

For unsupervised trains an unplanned speed restriction is an immediate speed restriction lower than 40 km/h not contained on a written order. The trains are brought to a standstill, and the Drivers are informed about the unplanned speed restriction by the Signaller issuing a new written order.

An unplanned speed restriction becomes a temporary speed restriction when it is updated in the signalling system.

Responsibilities

Signaller
You must only allow a supervised train to pass an unplanned speed restriction if a temporary speed restriction cannot be created due to operational restrictions.
**Location specific description**

The location specific description is a supplement to the operational rules.

Location specific descriptions contain the additional instructions necessary for day to day operation at specific and defined geographical locations. The location specific descriptions will only be necessary for persons operating within the defined geographical locations.

**Undetected point**

A point is undetected if the signalling control display does not indicate the point in the left or the right position.

An undetected point is not safe to pass by any train or vehicle unless precautions are taken.

**Temporary speed restriction**

A temporary speed restriction is a speed restriction implemented in the signalling system used to reduce the speed of trains. Temporary speed restrictions can be used to protect people, trains or infrastructure.

A temporary speed restriction is planned and supervised by the signalling system.

A temporary speed restriction that is active is indicated on the signalling control display and on the onboard DMI.

Information about temporary speed restrictions relevant to unsupervised movements are provided to the Driver by the Signaller or Shunter.

**Responsibilities**

**Signaller**

You must provide the Driver of an unsupervised movement with information of temporary speed restrictions below 40 km/h for the location where movements are authorised.

**Signaller**

You must inform the Shunter of temporary speed restrictions below 25 km/h inside a temporary shunting area or as a part of a route for shunting.

**Shunter**

You must provide the Driver of a shunting movement with information of temporary speed restrictions below 25 km/h for the location where movements are authorised.
**Trailed point**

**DEFINITION**

When a train or vehicle is travelling through a point not in the correct lie in the trailing direction, the point is forced out of position and called trailed. When a point is trailed it is considered as damaged and no trains or vehicles are permitted to pass before the point has been inspected by a person competent to assess points.

A record of trailed points is kept in the Signaller log.

**Change per 2019-05-15:**

When a train or vehicle is travelling through a point not in the correct lie in the trailing direction, the point is forced out of position and called trailed. When a point is trailed it is considered as damaged and no trains or vehicles are permitted to pass before the point has been inspected by a railway person competent to assess points.

A record of trailed points is kept in the Signaller log.

**Responsibilities**

**OR.DEF.373**  
**Driver**

If you trail a point you must bring the train or vehicle to a standstill and inform the Signaller.

**OR.DEF.374**  
**Signaller**

You must ensure that no train or vehicle has authority to pass a reported trailed point until it has been inspected and released for driving by a railway competent person.

**OR.DEF.671**

**Sanding**

**DEFINITION**

Sanding is the process of applying sand directly to the rail using train borne equipment with the purpose of increasing the friction between the wheel and rail in situations of low adhesion.

Sanding should be performed to reduce the risk of an incident or accident from occurring.

**Responsibilities**

**OR.DEF.673**  
**Driver**

You must as far as possible avoid sanding:

- In points or crossings
- While braking at speeds below 20 km/h
- When at a standstill.
**Snow clearing**

Snow clearing is when a train is scheduled to remove snow from the tracks with special equipment coupled to it. Snow clearing is performed as supervised movement in FS-mode or OS-mode. Running supervised trains, without special equipment coupled, for the purpose of keeping the tracks open for operations is not considered snow clearing.

The snow clearing is the operation of actually clearing snow. When moving into position it is as ordinary train driving. The Signaller will ensure that automatic route setting is deactivated behind the snow clearing train, in order to allow setting a route to move the train backwards, if so requested by the Driver.

**Clamped point**

Mechanically securing the point against throwing in a preferred lie using one or more clamps.

Clamping points is a temporary arrangement used in operations for undetected or trailed points. The clamp is secured by a locking pin to prevent unintended removal.

All interlocked points have fixed clamps fitted, usually found at the second sleeper from the blade tip.

Drivers will only apply a clamp to the closed switch rail of an undetected point that has not been damaged and has to be passed in a facing direction. Damaged points will be clamped only by competent staff after inspection.

The clamp is also used by a maintainer in case of limitations in the use of the point. When a point is clamped by a maintainer, the point is secured by a padlock.

Clamped points are indicated on the signalling control display once information has been updated into the signalling system.

**Responsibilities**

**Driver**

When you are instructed by the Signaller to clamp the closed switch rail of a facing point you must apply the fixed clamp to the appropriate point.

**Maintainer**

You must only clamp a point once this is agreed with the Signaller.
Wind restrictions

A wind restriction is applied to specific trains at specific locations, in the event of high wind speed.

Wind restrictions can be applied at areas described in location specific descriptions.

The wind restriction in the form of temporary speed restriction or line closure is implemented to mitigate risks caused by incidents such as swinging overhead wires or the instability of wind sensitive freight wagons.

Catenary

Earthing

Earthing is the operation of placing a conductive connection between a metallic surface (in particular: the overhead wire) and an earthing point. This ensures that any voltage present in the protected catenary section, is limited to a safe level.

Earthing is used to protect people working in an area (e.g. a worksite) from traction voltage applied by mistake.

Catenary isolation

A catenary isolation is shutting off power to one or more catenary sections.

A catenary isolation does not necessarily require a possession. A catenary isolation only affects electric traction units, diesel powered trains may continue running.

A catenary isolation is communicated between the catenary management system and the signalling system. The signalling system automatically avoids routing electric traction units into catenary isolations as far as possible.

Responsibilities

Signaller

You must as far as possible ensure that electrically powered trains are not authorised to move into an isolated area.

Catenary management system

The catenary management system is an independent system for controlling and monitoring the catenary system on the Banedanmark network.

The catenary management system makes catenary power status information available to the signalling system.
Broken or hanging overhead wires

A broken or hanging overhead wire is when the wire has been completely or partially torn down.

It is extremely dangerous to:

- Come closer than 5 metres to broken or hanging overhead wires
- Touch any items or tools in contact with the wire
- Leave a train at standstill close to broken or hanging overhead wires.

Whenever a broken or hanging overhead wire is observed it is reported to the Signaller immediately. The report contains information about:

- Affected track(s) and area(s)
- What has happened
- Potential danger to passing trains
- Any precautions made to prevent accidents and damages.

Responsibilities

All

You must never come closer than 5 metres to a broken or hanging overhead wire.

You must never touch any item or tool in contact with a broken or hanging overhead wire.

Driver

You must as far as possible ensure that passengers only leaves a train close to broken or hanging overhead wires when it is safe to do so.

All

You must report broken or hanging overhead wires to the Signaller immediately.

Emergency catenary isolation

An emergency catenary isolation is implemented immediately to reduce danger to people and damages on infrastructure or environment. An emergency isolation may be automatically invoked by the catenary system or manually by the Catenary manager.

Planned catenary isolation

A planned catenary isolation is produced in advance by the Banedanmark Catenary planning department.

Details of planned catenary isolations are available as individual catenary isolation documents and are available through the signalling system identified by an ID number.
Driving

Working unit

A working unit is a single traction unit used by track workers for maintenance or renewal of the railway network. Working units are equipped with an onboard system and run according to the rules of a train.

Balise read error

A balise read error occurs when the onboard is not able to use the messages contained in a balise or the balise is not read in the expected location.

A balise read error may trigger a brake intervention, and will automatically report the balise read error to the signalling system.

Responsibilities

Driver

When the text “Balise read error” is displayed on the DMI and the onboard automatically performs a brake intervention, you must contact the Signaller when the train has reached a standstill.

If the brake intervention is released before the train has reached a standstill you may proceed on any valid movement authority displayed on the DMI.

Splitting

Splitting is when a train is physically separated into two or more trains.

Splitting can be performed anywhere on the network.

Splitting one train into two trains on the move is permitted when trains are equipped with a technical system ensuring that the rear part is emergency braked to a standstill immediately after splitting. Railway Undertaking procedures prevent collision between rear and forward part.
DMI

The DMI is a screen that is a part of the onboard train control system. The DMI is installed in the Driver's desk to enable communication between the train control system and the driver.

The DMI indicates to the Driver the necessary signalling information to allow for supervised train movements.

For fully supervised movements the DMI will display an authority to move. For all other movements the DMI will display the driving mode indicating to the Driver under which conditions the train must be driven.

Change per 2019-05-15:

The DMI is a screen that is a part of the onboard train control system. The DMI is installed in the Driver's desk to enable communication between the train control system and the driver.

The DMI indicates to the Driver the necessary signalling information to allow for supervised train movements.

For fully supervised movements the DMI will display an authority to move. For all other movements the DMI will display the driving mode indicating to the Driver under which conditions the train must be driven.

Responsibilities

Driver

You must observe information displayed on the DMI and react as instructed in the operational rules. You must control the speed of the train to the lowest permissible speed, taking into consideration the information provided on the DMI and any other restrictions from persons authorising the movement or from location specific restrictions.

You must consider a failed DMI or an unreadable DMI as a failure in the onboard train control system.

If you have reason to believe that the information displayed on the DMI is faulty or not intended for your train, you must bring the train to a standstill and contact the Signaller.
Unsupervised movements

Unsupervised movements can be performed by trains in SR-, SH-, and IS-mode or vehicles performing shunting movements inside a possession, permanent shunting area or temporary shunting area.

There is no technical supervision preventing the train from overrunning the end of authority, or a vehicle overrunning the limits of the shunting movement. Furthermore, there is no technical supervision preventing the train or vehicle from exceeding temporary speed restrictions.

Responsibilities

Driver

You are responsible for ensuring that your train or vehicle does not enter into an area where you are not authorised.

Driver

You are responsible for ensuring that your train or vehicle does not exceed the maximum permitted speed.

Unplanned joining

Unplanned joining is when the Drivers concerned have not been pre-informed about the joining through the timetable.

Responsibilities

Signaller

You must inform the Drivers concerned if an unplanned joining is necessary before setting the route into the occupied track section.

Vehicle

A vehicle can be driven and consists of one or more units of rolling stock not fitted with an onboard. Vehicles are only moved inside a possession or shunting area. If the vehicle is a road railer, the vehicle may only be set on the tracks inside a possession or shunting area.

Driver ID

A Driver ID is a unique identifier for every Driver.

The Driver enters Driver ID into the onboard before each mission. This is used to identify the Driver responsible for operating the train.

Responsibilities

Driver

You must enter the Driver ID assigned to you when requested by the onboard.

You must ensure that the Driver ID is always updated on the onboard when you assume responsibility of a train.
**Sound signal "Warning"**

**DEFINITION**

Sound signal "Warning" is an acoustic signal performed by the Driver using the train horn.

"Warning" consists of a single long blast of the train horn.

**Responsibilities**

**Driver**

You must use sound signal "Warning" if:

- You want to warn persons walking about in or near the tracks,
- persons are crossing the track on a passenger crossing in front of a moving train or vehicle.

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**Release speed**

**DEFINITION**

Release speed is the speed where the onboard releases the train from the braking curve to allow the train to approach the ETCS stop marker at the end of authority.

When the DMI indicates a release speed the Driver is responsible for ensuring that the train does not pass the ETCS stop marker indicating the end of authority.

Release speed is indicated in the DMI by a grey marking on the speedometer and a specification of the release speed.

**Responsibilities**

**Driver**

When release speed is indicated on the DMI, you must ensure that the train does not pass the ETCS stop marker at the end of authority.

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**Onboard**

**DEFINITION**

Onboard is the collective term used when referring to the parts of the ETCS train control system that are fitted onto the train.

The parts of the ETCS train control system fitted on to the train are the:

- DMI
- european vital computer
- balise reader
- antenna
- train interface unit
- juridical recorder
- odometry.
Supervised movements

A supervised movement is a train running in FS- or OS-mode with the Driver controlling the train from the cab in the front end of the train.

A supervised movement provides the onboard with information used to control the speed and distance to an end of authority.

Responsibilities

Driver
You must only perform supervised movements in FS and OS-mode from the cab in the front end of the train.

Parking

Parked rolling stock is secured in a safe way to avoid unintentional movements.

In interlocked area parking is only permitted when pre-planned or agreed with the Signaller.

Responsibilities

Driver
Before leaving rolling stock unattended you must ensure the rolling stock is secured according to procedures from the Railway Undertaking to prevent unintentional movements.

Driver
You must ensure that the rolling stock is parked within the area of the fouling point(s) concerned.

Passenger train

A train is a passenger train for the part of a mission for which the train is scheduled to carry passengers.

Planned splitting

A planned splitting is when the splitting is done according to the timetable.

Planned joining

A planned joining is when joining is performed according to the timetable.

For planned joining, normal route setting is used for the approaching train up to the limit of the track section occupied by the stationary train. OS-mode is used to authorise the approaching train into the track section occupied by the stationary train.
Scheduled stopping location

A scheduled stopping location is a location where the train has to stop according to the timetable.

Scheduled stopping locations are divided into non-technical and technical stops.

Non-technical stops are as follows:

- Passenger exchange
- freight preparation/wagon exchange
- Driver relief.

Technical stops are as follows:

- Meet and cross
- overtaking
- capacity issues.

On sight

On sight is restricted running with a maximum permissible speed of 40 km/h.

The track ahead could be occupied by another train or any other obstacle.

The Driver observes the conditions of on sight when instructed by the driving mode or when instructed by the Signaller.

Responsibilities

Driver

You must check track occupancy when moving your train and be prepared to stop short of any train or other obstacle.

You must drive your train according to the conditions observed and not exceed 40 km/h.

You must report any unexpected observations to the Signaller.

Joining

Joining is bringing two trains into the same track section for the purpose of coupling them into one train.

Joining is performed with only one train moving and the other train at a standstill.

Responsibilities

Driver

When joining you must control the movement of your train to avoid causing damage to either trains.
**Start button**

The Start button is available to the Driver on the DMI. Selecting the Start button will request a movement authority from the signalling system.

**Test train**

A test train is used to test infrastructure or rolling stock.

A test train does not carry passengers.

The train radio or Driver's mobile phone is functioning and active.

Prior to running a test train, Banedanmark will issue a plan for performing the test and produce necessary instruction to all staff involved. The plan is produced in close cooperation with relevant Railway Undertakings. This planning includes e.g.:

- Relevant permissions
- Relevant dispensations
- Necessary safety precautions to ensure the safety of the test train and the infrastructure
- If the test train is driving without an active onboard
- Person responsible for executing the test.

Before starting the test train mission, all involved staff is thoroughly instructed about the test.

Location specific descriptions may contain supplementary requirements for the railway line concerned. Location specific descriptions may contain predefined permissions and/or dispensations.

**Responsibilities**

**Signaller**

You must ensure that the Driver is informed of relevant temporary speed restrictions if the test train is running without an active onboard.

**Driver**

You must ensure that all staff involved in test train mission is thoroughly instructed about the test before starting the mission.

You must ensure that the Signaller is informed about your mobile telephone number in case the test train does not have a functioning and active train radio.

You must respect all speed restrictions during the test run.

During the test run, you must only perform tasks related to driving the test train and the communication associated with driving the test train.
Backwards movement

A backwards movement is to intentionally move the train in the opposite direction to the active cab. Backwards movements are used in case a train has overrun a stopping location, or has mistakenly been routed in the wrong direction.

Backwards movements are only used when it is not possible to drive the train from the forward facing cab of the movement.

Passenger trains do not perform backwards movements.

Backwards movements are normally performed in SH-mode, but may in special cases be performed in IS-mode if the Driver has been forced to isolate the onboard.

A backwards movement is performed when the Driver remains in the lead cab and receives authority from the Signaller by the use of the Backwards movement authorisation form.

See Book of forms, Backwards movement authorisation, for layout.

Coupling

Coupling is physically connecting trains or vehicles together. Wagons are also coupled to form part of a train or vehicle consist.

Train

A train is rolling stock formed into a train consist. To qualify as a train, the train consist must be fitted with an onboard.

Trains can be supervised to move by the signalling system, or move unsupervised according to procedures.

Train horn

Train horn is an audible warning device to be used by the Driver to warn persons in or near the tracks.

All trains have functioning train horn. In case a train horn fails during a mission, the maximum permitted speed is 40 km/h.

Responsibilities

If the train horn fails during a mission, you must ensure the speed of the train does not exceed 40 km/h and the Signaller is informed.
**Train running number**

**OR.DEF.185**

**DEFINITION**
The train running number is a number used to identify a train on a specific mission.

A Driver attempt to duplicate a train running number already in use will trigger a warning on the signalling control display to the Signaller, and a text message in the DMI to the Driver.

The train running number is defined by the timetable.

**Responsibilities**

**OR.DEF.642**

**Driver**

You must keep the train running number updated in the onboard and train radio according to the timetable.

**Level Transition**

**OR.DEF.427**

**Level 0**

**OR.DEF.428**

**DEFINITION**
Level 0 is the name given to an area of track that is not controlled by ETCS or ATC trackside equipment. The rules for driving in a level 0 area are not contained in these Operational Rules.

**OR.DEF.841**

**Level 1**

**OR.DEF.844**

**DEFINITION**
Level 1 is the name given to areas of track where ETCS is an overlay to the existing signalling systems, and signalling aspects are indicated to the Driver via the DMI in combination with lineside signals.

Level 1 is not used on the infrastructure managed by Banedanmark.

**OR.DEF.429**

**Level 2**

**OR.DEF.430**

**DEFINITION**
Level 2 is the name given to an area of track that is fitted with ETCS trackside equipment and signalling information is transmitted to trains via a radio link and displayed to the Driver on the DMI.

**OR.DEF.155**

**Level ATC**

**OR.DEF.156**

**DEFINITION**
Level ATC is the level where the Danish transmission module is translating information from train control systems other than ETCS. This will enable an ETCS equipped train to use this information to perform the train supervision functions of the Danish legacy train control system.
Level transition

Level transition is the means by which a train can be controlled between areas of different train control systems and associated operational rules.

The locations of level transitions are indicated in the route book, defined in the signalling system and are indicated by markers at the trackside.

Transition area

The transition area is a collective term used for the area of infrastructure where signalling responsibility is shared between two different infrastructure systems, e.g. cab-signalling and lineside signalling.

The transition point is found within the transition area.

The transition area extends from the last ETCS stop marker and to the first lineside signal, or vice versa.

Transition point

The transition point is the location in the infrastructure marking the changeover in responsibility between the two neighbouring infrastructure areas with different signalling systems and operational rules.

The transition point is marked in the infrastructure by a Start of ETCS-signalling marker, an End of ETCS-signalling marker, a Start of ATC-signalling marker or a Start of ATC-togstop-signalling marker.

The location of transition points can be found in the Route Book.
Emergency/incident

Hazardous area

A hazardous area is a dynamically assessed area of the infrastructure that based on any available information is identified as not safe, or potentially not safe, for railway movements.

Entering or moving within a hazardous area increases the risk of harm to people, environment, infrastructure or rolling stock.

It can be necessary to authorise a train or a vehicle to leave the hazardous area, if staying inside the hazardous area, is considered to pose a threat larger than the risk of leaving.

Responsibilities

Signaller

You must as far as possible control train and vehicle movements to avoid entry into a hazardous area.

Signaller

You must determine if it is safe for trains or vehicles inside the hazardous area to remain inside the area.

If you determine that it is not safe to stay inside the area, you must use all available means to ensure, that all trains or vehicles to leave the area.

Incident

An incident is a sudden and unplanned event causing, or threatening to cause, an interruption to the service and/or may pose a danger to the safety of the railway, people, property or the environment.
Incident investigation

Incident investigation is when it has been decided that the Accident Investigation Board or the Banedanmark Incident investigator will do an investigation of the circumstances related to an incident.

Part of the incident investigation is to record the state of all systems and infrastructure elements prior to, and at, the time of the incident in order to establish the cause of the incident.

When it is decided to perform an incident investigation the equipment, systems and infrastructure elements involved are not to be operated, and related items are not be changed or removed.

Responsibilities

Signaller

When an incident has called for an investigation, you must only operate the signalling system in the area concerned for the purpose of preventing further harm to persons, rolling stock or infrastructure, or if authorised by the Banedanmark Incident investigator.

Driver

When an incident has called for an investigation, you must only operate the train or vehicle for the purpose of preventing further harm to persons, rolling stock or infrastructure, or if authorised by the Banedanmark Incident investigator.

Emergency brake

Emergency brakes are the elements of the braking system that provide maximum braking force, and can be initiated by the Driver or automatically by the onboard. The emergency brake cannot guarantee that the train will always stop within a safe distance.

Emergency situation

An emergency situation is an incident that poses an immediate risk to health, life, property or environment.

The fundamental reaction to an emergency situation is:

1. Stop the incident (from evolving), without jeopardizing oneself as a secondary victim,
2. call for appropriate assistance
3. provide life saving first aid.

Emergency services

Emergency services are a collective term for the emergency response services including Police, Fire Fighting and Ambulance services.
Preparing a mission

Brake class

The air pressure braking system is divided into three brake classes:

- R-brake (powerful and quick-acting)
- P-brake (quick-acting)
- G-brake (slow-acting).

Hazardous goods

Hazardous goods are goods classified in the RID register. All hazardous goods are identified by a UN-number and a RID-classification.

Hazardous goods are carried in trains that does not carry passengers.

Any additional provisions for the transport of Hazardous goods through tunnels are found in local instructions.

RID regulations as further rules on loading, handling and transporting RID cargo is not to be found in these rules but in the source rules on RID.

Change per 2019-05-15:

Hazardous goods are goods classified in the RID register. All hazardous goods are identified by a UN-number and a RID-classification.

Hazardous goods are carried in trains that does not carry passengers.

Any additional provisions for the transport of Hazardous goods through tunnels are found in local instructions.

RID regulations as further rules on loading, handling and transporting RID cargo is not to be found in these rules but in the source rules on RID.
**G-brake**

Trains which are braked only by the G-brake, or a combination of the P-brake and G-brake where the G-brake weight is more than 10% of the total brake weight of the train, are defined as G-braked.

For trains where the G-brake weight is more than 10% of the train’s total brake weight, all wagons and traction units are as far as possible set to G-brake.

The brake on working traction units are set to G-brake if the train length is more than 600 metres and/or the hauled weight is more than 800 tonnes.

**Responsibilities**

**Driver**

You must ensure that the all wagons and traction units are as far as possible set to G-brake when the G-brake weight is more than 10% of the total brake weight of the train.

You must ensure that the brake of working traction units are set to G-brake when the train length is more than 600 metres and/or the hauled weight is more than 800 tonnes.

**Valid position**

A valid position is when the position stored by the onboard can be validated by the signalling system.

Without a valid position a train cannot enter FS- or OS-mode.
**Railway undertaking train data**

Railway Undertaking train data supplements onboard train data and consists of mandatory and optional elements. Railway Undertaking train data is sent to the traffic management system by the Railway Undertaking responsible for the specific train.

Mandatory Railway Undertaking train data is:

- Hazardous goods information
- Train consists (for freight trains).

Mandatory Railway Undertaking train data is always required by the traffic management system - even if the report is empty, as this confirms that no special conditions apply. The traffic management system uses mandatory Railway Undertaking train data to evaluate compatibility between train and route.

Optional Railway Undertaking train data is:

- Driver mobile phone number
- Train consists (for passenger trains).

**Responsibilities**

**Driver**

You must only start running when you have confirmation that updated mandatory Railway Undertaking data has been supplied to the Infrastructure Manager at start of mission. And you must only restart running from a location where any of the previously supplied mandatory Railway Undertaking train data has changed when you have confirmation that the updated data has been supplied to the Infrastructure Manager.
Front end indication

The front end of a train or vehicle is indicated with three white lights in an isosceles triangle. These lights are always lit when the train is being driven from that end.

For trains and vehicles without three working headlights, the front end of the train or vehicle can be indicated by two white lights.

For propelling locomotives the front end indication can be indicated on the rear end of the locomotive.

Responsibilities

Driver

You must ensure that correct front end indication of your train or vehicle is always applied during any movements.

Driver

If the front end indication of the train fails during a mission, such that a minimum of two white lights cannot be shown, you must inform the Signaller and ensure that the speed of the train does not exceed 40 km/h.

Incompatibility between train and route

Incompatibility between train and route is when the traction power requirements and/or the gauge of a route cannot accommodate a train.

Electric traction units are reported via the onboard train data and out of gauge information is reported via Railway Undertaking train data.

The Signaller must detect incompatibility between train and route and prevents the route from being set.

Responsibilities

Signaller

When a route is blocked from setting due to incompatibility between train and route you may only use the Signaller override function to override the incompatibility, or authorise the train to proceed using a written order, when the incompatibility can be resolved with the Driver.
**Missing rear end indication**

**DEFINITION**

Missing rear end indications is an exception to allow a train to run without rear indications.

By request from the Railway Undertaking, the Network manager can allow a single train to run with missing rear end indications after all Signallers concerned have been informed.

**Responsibilities**

**Signaller**

You must ensure that information about a train with missing rear end indications is entered into the Signaller log.

**Signaller**

To authorise a train into a track section which is indicated as occupied, following a train with missing rear end indications, you must verify that the train has completely vacated the area before allowing an OS MA or written order into the track section indicated as occupied.

**Train awakening**

**DEFINITION**

Train awakening is to prepare the train control system for start of mission by switching it on and entering necessary train data. If the train is within a level 2 area train awakening includes connecting to the data radio network.

**P-brake**

**DEFINITION**

Trains which are brake only by the P-brake, or a combination of the P-brake and G-brake, are defined as P-braked.

When the P-brake is used in combination with the G-brake, the G-brake weight is at most 10 % of the train’s total brake weight.

For freight trains with a hauled weight between 1200 and 1600 tonnes (regardless of train length and weight), the traction unit(s) and the first five wagons may be set to G-brake even though this causes the total G-brake weight of the train to be more than 10 %.

Permanently coupled wagons are regarded as one wagon.

**Responsibilities**

**Driver**

You must ensure that the total G-brake weight does not exceed 10 % of the total brake weight of the train, when the P-brake is used in combination with the G-brake.

**Driver**

For freight trains with a hauled weight between 1200 and 1600 tonnes (regardless of train length and weight), you may allow the traction units and the first five wagons to be set to G-brake even though this causes the total G-brake weight of the train to be more than 10 %.
R-brake

Trains which are braked only by the R-brake, or a combination of the R-brake and P-brake, are defined as R-braked.

When the R-brake is used in combination with the P-brake, a maximum of 1/3 of the train’s braking unit are set to P-brake.

Responsibilities

Driver

You must ensure that no more than 1/3 of the units in the train are set to P-brake, when the R-brake is used in combination with the P-brake.

Onboard self test

When the onboard is switched on, an onboard self test will ensure elements of the onboard, which may affect safety are tested.

The onboard self test is only possible while the train is at a standstill.

The result of the onboard self test will be displayed on the DMI.

Responsibilities

Driver

If the DMI displays information about a failed onboard self test, you must switch off the onboard and then switch it on again to trigger a second self test. If the second self test fails, you must not consider the train safe and fit for service.
Safe and fit for service

Safe and fit for service determines if the rolling stock is qualified to be included in a train performing supervised movements.

Safe and fit for service centres around two states:

1. Safe - the rolling stock does not pose a threat to other trains and/or the infrastructure
2. fit - the rolling stock is able to comply with the planned mission.

The minimum requirements for a train to classify as safe and fit for service are:

Safe:
- Conditions for specific rolling stock use permit are met. This includes checking that the following is functioning:
  a) Onboard
  b) train radio
  c) front end indication
  d) rear end indication
  e) audible warning device (checked according to internal Railway Undertaking procedures)
- freight cargo securely loaded (if applicable)
- brakes tested and in working order
- all units in the train are connected to the continuous braking system
- the brake percentage of the train is at least 50 (exempting snow ploughs)
- the front and rear units have automatic brakes (exempting snow ploughs).

Fit:
- Tunnel checks performed (if applicable)
- brake performance is compatible with the scheduled mission
- trained personnel needed for the scheduled mission is available
- train consist is compatible with the scheduled mission
- train speed compatible with the scheduled mission
- train length compatible with the scheduled mission.

Documentation available in the lead cab:
- Rule book
- route book
- book of forms
- timetable.

In order to be safe and fit for service a train must fulfill both the requirements of these Operational rules as well as any other requirements resulting from other sets of rules that may apply to the scheduled journey of the train.
**Rear end indication**

The rear end indications are indicated by two steady red lights on the rear unit of the train. These lights are horizontally aligned.

For freight trains, the rear indications can be indicated by 2 reflective plates with white side triangles and red top and bottom triangles.

For propelling movements the rear end indications can be indicated on the front end of the train.

Driving with missing rear indications can be authorised by the Network manager.

### Responsibilities

**Driver**

You must ensure that correct rear end indication of your train or vehicle is always applied during any movements.
**Onboard train data**

Onboard train data is information stored in the onboard to describe the characteristics of a train.

Onboard train data is:

- ETCS operational train category
- train length
- deceleration data
- maximum train speed
- axle load
- power supply accepted by the train
- train fitted with airtight system
- additional data for the available STMs
- train running number.

All supervised trains are controlled by the interaction between assigned movement authorities from the signalling system and the stored onboard train data and the safety of the system is dependant of the data being correct.

Some train data can be fixed by rolling stock specific configuration. Fixed data are not available for the Driver to edit.

Other train data is entered by the Driver and can be available as predefined values. For these data entries, the Driver only needs to acknowledge the data, or modify the data by entering or selecting the correct value.

**Responsibilities**

**Driver**

You must ensure that the onboard train data is updated to be consistent with the train whenever the consist or performance of the train changes.

**Train length**

The train length is measured in metres and is it the full length of the train including working traction units.

The maximum permitted train length for R-braked trains is 400 metres.

The maximum permitted train length for P-braked trains is:

- 400 metres, when the speed is above 120 km/h
- 600 metres, when the maximum speed is 120 km/t
- 835 metres, when the maximum speed is 100 km/t.

**Train consist**

The train consist is a specification of the different rolling stock forming a train.
Train and hauled weight

Train and hauled weight is measured in tonnes.

When calculating the train weight, all units in the train are included (including working traction units).

When calculating the hauled weight, working traction units are not included.

The maximum permitted hauled weight is 2500 tonnes.

The maximum permitted train weight, for trains driving faster than 120 km/h, is 1200 tonnes.

Invalid or unknown position

Invalid or unknown position is when the status of the train position held by the onboard cannot be validated by the signalling system.

When the Driver of a train with an invalid or otherwise unknown location has updated the onboard with a train running number and requests a mode change this will be indicated on the signalling control display.

Inconsistent train running number

When a train running number is unknown by the signalling system, or is already in use, the signalling system will trigger a warning on the signalling control display to the Signaller. A text message is displayed to the Driver in the DMI.

Responsibilities

Driver

When the text message "Inconsistent train running number" is displayed on your DMI, you must check that the train running number entered is correct and update if required. If the text message Inconsistent train running number is received again, you must inform the Signaller.
**Unusual transport**

Unusual transport (UT) is railway transports exceeding weight, dimensions, usage of wagons, loading method etc. that must only be transported according to a special permission. This permission is called a "transport permission". Restrictions applying to the transport are stated in the transport permission.

The restrictions will ensure that infrastructure is not damaged by limiting the use of specific tracks or placing restrictions on speed. Restrictions will be handled in co-operation between the Signaller and the Driver.

**Responsibilities**

**Driver**
You must ensure that all restrictions applying to your train which are stated in the UT transport permission are met.

**Signaller**
You must ensure that route setting for trains transporting UT is in line with the restrictions stated in the UT transport permission.

**Shunting**

**Safe for shunting movement**

Safe for shunting movement is ensuring that the traction unit and/or wagons are in a safe condition to perform an unsupervised movement.

Preparation of the traction units testing that the following works:

- Brakes
- radio connection (including control tone, if relevant) between the Driver and Shunter
- audible warning device (checked according to internal Railway Undertaking procedures).

Preparation of wagons is:

- All wagons included in the consist are connected to the continuous braking system
- the movement can be performed without causing damage to infrastructure or rolling stock.
Temporary shunting area

DEFINITION
A temporary shunting area is an interlocked area temporarily set up to allow shunting operations. The boundary of a temporary shunting area is marked by two or more facing ETCS stop markers. The time period allowed for the temporary shunting area is agreed between the Signaller and Shunting area manager before the temporary shunting area is established.

A temporary shunting area is always under the responsibility of a Shunting area manager.

Points in the temporary shunting area are released for the Shunting area manager to control via the handheld terminal, if not locked for safety reasons. If the handheld terminal is not available, the Shunting area manager requests the Signaller to throw the points inside the area.

Responsibilities

Signaller
You must agree the boundaries and timing of the temporary shunting area with the Shunting area manager.

All movements in and out of the temporary shunting area must be coordinated between you and the Shunting area manager.

Shunting area manager
You must agree the boundaries and timing of the temporary shunting area with the Signaller. When the temporary shunting area is established you are in charge of that particular area of infrastructure.

All movements in and out of the temporary shunting area must be coordinated between you and the Signaller.

You must regulate shunting movements within the temporary shunting area to be conducted safely.
**Permanent shunting area**

**DEFINITION**
A permanent shunting area is a non-interlocked area which is bounded by an ETCS stop marker at the exit. No ETCS stop markers are located within a permanent shunting area.

At the exit from the permanent shunting area, there are balises placed to ensure update of a valid position. A further balise may be installed which will protect against an active cab exiting the permanent shunting area without authority unless a movable element at the exit already provides this protection.

Location specific descriptions contains special provisions and regulations applying to the movement of trains and vehicles in permanent shunting areas. If there is always a Shunting area manager present information about this can be found in the location specific descriptions. Including information about contact options.

Movements performed inside a permanent shunting area are the responsibility of the Shunter. Several movements can take place in the area at the same time.

**Responsibilities**

**Signaller**
For areas where there is a local Shunting area manager present, you must coordinate all movements in and out of the permanent shunting area with the Shunting area manager.

**Shunting area manager**
All movements in and out of the permanent shunting area must be coordinated between you and the Signaller.

You must regulate shunting movements within the permanent shunting area to be conducted safely.

**Shunter**
In permanent shunting areas you must be aware of other movements.

In permanent shunting areas where no Shunting area manager is available, you must coordinate movements out of the permanent shunting area with the Signaller.
**Shunting movement**

DEFINITION A shunting movement is a movement on a route for shunting or within a possession, a permanent or a temporary shunting area.

Passenger trains do not perform shunting movements.

All shunting movements are controlled by a Shunter.

The maximum permitted speed for shunting movements is 25 km/h.

**Responsibilities**

**Driver**

When you are driving on a route for shunting, or inside a possession, permanent or temporary shunting area you must only carry out movements agreed with the Shunter.

**Shunting area manager**

You are responsible for the safe regulation of all shunting movements inside your area of control and for the communication with all other participants.

**Shunting area**

DEFINITION A shunting area is a collective term used for permanent and temporary shunting areas.

**Shunting area manager ID**

DEFINITION A Shunting area manager ID is a unique identifier for every Shunting area manager when using a handheld terminal. The ID is used to identify the responsible Shunting area manager to the signalling system.

The ID is assigned by Banedanmark.

**Route for shunting**

DEFINITION A route for shunting is a route locked for a specific shunting movement.

A route for shunting is released as the train travels through the route.

**Shunting path**

DEFINITION A shunting path is the sections of track from the front end of the shunting consist to the agreed end location for the shunting movement.
Signalling System

Signalling control display

Definitions

The signalling control display indicates the current status of the objects controlled by the signalling system to the Signaller. It provides an interface that the Signaller can use to operate the signalling system e.g. set routes, throw points and update train running numbers.

The validity status of the information presented on the signalling control display can be evaluated by a special indicator.

Responsibilities

Signaller

You must not rely on the information displayed on the signalling control display if you have reason to believe that the information is incorrect, or if the status of the special indicator shows that the information is not up to date.

Moveable elements

Definitions

Moveable elements are the elements of the track that can serve more than one purpose by changing between different states.

A moveable element that is interlocked has to be reported in the correct and locked state to allow supervised movements.

Moveable elements are:

- Points
- derailers
- bascule bridges.
**Brake intervention**

A brake intervention is an automatic application of the brakes commanded by the onboard. The brake intervention can be caused by over speeding, failing to acknowledge a mode change or by failing to acknowledge a level transition.

The onboard will supervise the train speed within pre-defined tolerances according to the actual speed of the train. Depending on how high the overspeed is, the Driver may experience either an audible warning or a brake intervention.

When the Driver fails to acknowledge a mode change or level transition, the onboard will automatically perform a brake intervention.

When the TR-mode or SF-mode is entered the brakes will automatically be applied.

The brake intervention is released when the speed goes below the permitted speed or the Driver acknowledges the mode change or level transition causing the brake intervention.
End of authority

The end of authority is the location to which a train running on a movement authority will be supervised to a standstill, or the location to which a train running on a written order is authorised to proceed.

The end of authority is indicated to the Driver on the DMI, or on the written order form.

For supervised trains, the signalling system will supervise the train to a standstill at the end of authority. If the Driver fails to react to an intervention warning the onboard will automatically command a brake intervention. When a movement authority is extended the end of authority is updated according to the new information.

For unsupervised trains, the Driver is responsible to bring the train to a standstill at the end of authority indicated on of the written order form unless a movement authority is displayed on the DMI which allows the continued driving passed the end of authority.

Responsibilities

Driver

You must control the train to a standstill at the end of authority.

You must never pass the end of authority, unless instructed to do so by the Signaller on Written Order 01 or 07.

When approaching the end of authority at an ETCS stop marker, you must control your train to a standstill at a distance from where the identity of the ETCS stop marker can be clearly read.

Driver

When approaching the end of authority at a buffer stop you must control your train to a standstill at a safe distance to the ETCS stop marker fitted on the buffer stop.

FS MA

An FS MA is a fully supervised movement authority performed in FS-mode.

The FS MA provides full route protection and track covered by the MA unoccupied.

The FS MA is used for normal running.
Ceiling speed supervision

Ceiling speed supervision is the control of the maximum speed permitted by the onboard. The ceiling speed is determined by the onboard using the most restrictive speed provided by the signalling system, the driving mode, the onboard national values or the maximum permitted speed of the rolling stock. The driver will receive a warning if the ceiling speed is exceeded and above a limiting value a brake application will occur.

The ceiling speed is indicated to the Driver on the DMI.

Detected point

A point is detected when the signalling control display indicates a lie of the point.

Movement authority

A movement authority is the permission from the signalling system that defines the conditions under which the train is authorised to move forward on the track ahead.

Movement authorities are controlled by the signalling system.

Responsibilities

Driver

If no movement authority is obtained when expected, you must inform the Signaller.

Standstill report

A standstill report is an automatically generated message from the onboard to the signalling system whenever a train with active communication session reaches a standstill. The train has not necessarily reached the end of authority, or is intending to remain at a standstill.
Emergency shortening of movement authority

OR.DEF.121  DEFINITION  An emergency shortening of a movement authority is when the movement authority is automatically shortened by the signalling system for safety purposes or by a deliberate action from the Signaller.

An emergency shortening of a movement authority may cause a brake application and it may result in a change to TR-mode.

Responsibilities

OR.DEF.122  Signaller  You must only use an emergency shortening of a movement authority in case of an emergency.

OR.DEF.259  Driver  If the text “Emergency stop” is displayed on the DMI you must assume that there is a dangerous situation and you must perform all actions necessary to avoid or reduce the effect of this situation.
**Emergency stop**

An emergency stop is an order the Signaller can use to stop one specific train, trains within an area defined by the Signaller or all trains in the area of control of the Signaller. The emergency stop order is only used in case of an emergency.

The emergency stop will cause affected train(s) to enter TR-mode immediately. For as long as the emergency stop is activated the train(s) cannot receive new movement authorities.

**Change per 2019-05-15:**

An emergency stop is an order the Signaller can use to stop one specific train, trains within an area defined by the Signaller or all trains in the area of control of the Signaller. The emergency stop order is only used in case of an emergency.

The emergency stop will cause affected train(s) to enter TR-mode immediately. For as long as the emergency stop is activated the train(s) cannot receive new movement authorities.

Before train(s) can continue the Signaller must revoke the emergency stop.

**Responsibilities**

**OR.DEF.11** Driver

When the text “Emergency stop” is displayed on the DMI you must assume that there is a dangerous situation and you must perform all actions necessary to avoid or reduce the effect of this situation.

**OR.DEF.12** Signaller

When an emergency situation occurs you may use the emergency stop order to bring trains to a standstill if this can in any way help to avoid or reduce the effect of this situation.

**OR.DEF.13** Signaller

Deleted

**Change per 2019-05-15:**

After activating the emergency stop you may only revoke the emergency stop when it is safe to resume traffic.

Deleted
Operational shortening of movement authority

An operational shortening of a movement authority is when the Signaller requests that a movement authority held by a train, is shortened for operational purposes. The onboard will reject the shortening request if it could cause a brake application immediately or within a few seconds.

The Driver may notice that the distance covered by the movement authority is shortened and a speed reduction may be necessary soon after.

OS MA

An OS MA is a restricted movement authority performed in OS-mode and under the conditions of on sight.

An OS MA offers only limited route protection, and the track could be occupied by another train, vehicle or other obstacle.

The OS MA is used for joining, section sharing, after start of mission and for authorising a train into an area where the signalling system cannot determine if the track section is occupied. For planned joining, section sharing and start of mission, the Signaller is not required to acknowledge the issuing of an OS MA.

Responsibilities

Signaller

You must ensure that the track section is, or is presumed to be, unoccupied before you acknowledge the issuing of an OS MA, unless you wish to authorise the train to enter an occupied track section.

Production plan

The production plan is an online tool which contains the information enabling the signalling system to decide the sequence and paths of trains for routes to be called automatically in order to facilitate automatic route setting.

All changes to the production plan are communicated and coordinated through the production plan.

Responsibilities

Signaller

You must update the production plan with identified changes as soon as practicable.

Route

A route is a path secured for one train through the track infrastructure that allows a safe movement.

A route is set and locked by the signalling system before it can be used and automatically released after use, or by manual release requested by the Signaller.
Route setting

The signalling system requests route setting automatically according to the production plan, but it can be performed manually by the Signaller.

Manually routing a train with a train running number known by the signalling system will automatically update the production plan with the set route.

Manual route setting is supervised by the signalling system to avoid unintentional Signaller override of routing restriction.

Signalling system

The signalling system is a collective term used when referring to the equipment not on board the train used to control the safe and efficient operation of train movements.

Route protection

Route protection consists of the technical conditions ensuring that the route can be travelled safely by the train. The requirements for technical protection are not the same for an FS MA as for an OS MA or route for shunting.

The technical conditions required for an FS MA are:

- All points in the route (including the overlap) are in the correct lie and locked against throwing
- Points required for flank protection are in the correct lie and locked against throwing
- Track sections in the route, and specific adjacent track sections, are unoccupied.

The technical conditions required for an OS MA and a route for shunting are:

- All points in the route are in the correct lie and locked against throwing.
**Runaway movement protection**

Runaway movement protection is a set of onboard train functions used to apply the brakes if a train moves unintentionally:

- Roll away protection against movements opposite to the direction of the direction controller and either direction when the direction controller is in a neutral position.
- Backwards movement protection against movements in the opposite direction of a valid MA.
- Standstill supervision against movement in either direction when in SB-mode.

The brakes will be applied if the train travels more than 2m.

**Responsibilities**

**OR.DEF.112** Driver

When the text message "Runaway movement" is displayed on your DMI you must immediately secure the train from any further unintentional movements.

**OR.DEF.631**

**Point machine**

**OR.DEF.632**

A point machine is used to electrically throw a point from one position to the other.

**OR.DEF.591**

**Interlocked area**

**OR.DEF.592**

An interlocked area is infrastructure under the control and supervision of the signalling system.

**OR.DEF.520**

**Occupancy detection**

**OR.DEF.521**

Occupancy detection is performed by use of axle counters to establish if rolling stock is present in an axle counter section.

The status of axle counter sections in interlocked areas are continually supervised by the signalling system and occupancy status indicated on the signalling control display.

**OR.DEF.522**

**Signaller override**

**OR.DEF.523**

Signaller override is when system imposed restrictions or functionality is deliberately disabled by the Signaller.

Signaller override requires an acknowledgement from the Signaller.

**Responsibilities**

**OR.DEF.525** Signaller

You must only use the Signaller override function when it has been verified that it is safe to do so.
Signaller log

**DEFINITION**
The Signaller log is a record of safety related messages for the area being controlled by a Signaller from the Traffic Control Centre. The Signaller log can contain information automatically generated and manually entered information.

This includes:

- Point management
- possession management
- infrastructure restrictions
- catenary isolations
- Signaller responsible for area
- any other information of importance to safety.

**Responsibilities**

**Signaller**
You must ensure that the Signaller log is updated with all safety related information concerning your area of responsibility.

Possession

**ID card**

**DEFINITION**
The ID card is issued to all personnel that have a proven railway competence, except Drivers. The ID card indicates which railway competencies the holder possesses.

The ID card is personal and holds the name, ID number, photograph of the person to whom it is issued to, company name and an expiration date.

**Responsibilities**

**All**
You must carry your ID card with you at all times while performing railway related tasks.
Corrective maintenance

Corrective maintenance is a process of repairing a system or component of the railway infrastructure system.

Corrective maintenance can only be performed by authorised maintainers, and can be performed with or without a possession. Authorisation from the O&M coordinator is required in each instance.

Corrective maintenance requiring a possession, or in other ways affecting the safety of the operational railway, is an impromptu agreement between the Signaller and the authorised maintainer.

Corrective maintenance taking place in a possession is coordinated between the PICOP and the authorised maintainer.

Responsibilities

PICOP

Before you request a possession for corrective maintenance you must assess safety at the location to be under possession.

Impromptu Possession

An impromptu possession is a possession planned in a special way. It is a last minute possession with the railway safety plan being prepared on-site. An impromptu possession can only be used for corrective maintenance and only if the maintainer is called for by the O&M coordinator.

Planning information is communicated directly to the Signaller.

Handheld terminal

A handheld terminal is a portable device used to assist trackside operations. The device communicates with the signalling system and enables an authorised user to manage:

- Possessions
- temporary shunting areas
- shunting movements
- points control.

The user logs on to the handheld terminal to access functions specific to their role.
**Railway safety plan**

The railway safety plan describes the railway related safety specific issues concerning the work on or near an operational track.

Before commencing any planned work on or near an operational line an approved railway safety plan is produced.

Before commencing any planned work at the platforms where public access is allowed an approved railway safety plan is produced.

Before commencing any planned work outside the personal safety distance but closer than 4 meters to the nearest rail a railway safety plan is produced.

The railway safety plan describes the specific safety arrangements necessary to mitigate any hazard regarding the work in question.

The railway safety plan is to be approved by the TWSC.

For complicated infrastructure works involving several worksites an overarching coordinating railway safety plan can be required.

**Responsibilities**

**Contractor**

You must ensure that an approved railway safety plan is available for all work on or near an operational track.
Worksite protection

Worksite protection is placing dual faced stop markers in between the rails to indicate to track workers the boundary of the worksite inside a possession. The Rules for working in infrastructure describe the requirements for the placing of dual faced stop markers.

Worksite protection is used to protect staff and infrastructure against all train movements into the worksite, and prevent all movements from leaving the worksite without authorisation.

Worksite protection is the last barrier of protection when working inside a possession.

Responsibilities

Before permitting work to commence, you must ensure that dual faced stop markers are placed within the possession in the middle of all tracks leading into the worksite.

You may authorise the dual faced stop marker to be removed for the purpose of moving trains or vehicles across the worksite boundary.

You must ensure that the dual faced stop marker is replaced immediately after the train or vehicle has passed the worksite boundary.

Area with public access

An area with public access is a part of the railway system where the public is permitted to reside or transverse without possessing any railway competencies, e.g. a platform or passenger crossing.

Track crossing

A track crossing is a temporary arrangement used to transport materials or machinery over the tracks to get to and from a worksite.

Responsibilities

Before transporting materials or machinery across a temporary track crossing you must contact the Signaller for approval in every single case, unless other instructions have been given by the Person responsible for traffic operation.

Before authorising the passage of a track crossing with materials or machinery you must ensure that no train or vehicle will approach the track crossing until the PICOSS has reported that the track is cleared.
**Planned Possession**

A planned possession is prepared by the planning department to fit the timetable or the timetable is adjusted to contain the possession. A planned possession is announced in a possession report with a unique identifier.

The railway safety plan is always prepared in connection with the possession planning.

Planned possessions are viewable in the signalling system.

**Personal safety distance**

The personal safety distance is the closest distance to an operational railway that it is safe for persons to approach outside areas with public access. The personal safety distance to operational tracks measured from the nearest rail are:

- 1.75 m for speeds of 120 km/h or below
- 2.25 m for speeds above 120 km/h.

**Responsibilities**

When walking on or near an operational railway you must stay outside the personal safety distance when trains or vehicles are passing.
Possession

A possession is when a section of track is taken out of normal operation for e.g. fault correction or maintenance. The section of track under possession is under the authority of a PICOP, and all movements within the possession are controlled by the PICOP as shunting with the PICOP acting as Shunting area manager.

A possession is established between two or more facing ETCS stop markers. Possessions in transition areas are established between the transition point and an ETCS stop marker. A possession may contain one or more worksites.

All possessions are as far as possible ended at the agreed time. In case a possession cannot be ended at the agreed time, the PICOP informs the Signaller.

Points in the possession are released for the PICOP to control via the handheld terminal, if not locked for safety reasons. If the handheld terminal is not available, the PICOP requests the Signaller to throw the points inside the possession.

Responsibilities

Signaller

You must coordinate all movements going in to or out of the possession with the PICOP.

PICOP

You are responsible for the safe regulation of all shunting movements, for communication with other participants and for the safety of work taking place in your area of control.

PICOP

You must coordinate all movements going in to or out of the possession with the Signaller.

PICOP

In case your possession cannot be ended at the agreed time, you must inform the Signaller about the expected delay as soon possible.

Possession ID number

A possession ID number is a unique number identifying individual possessions. It is used to identify the individual possession to the signalling system, the Signaller and the PICOP when establishing, ending and handing over of possessions.

The possession ID number is assigned during the planning process when possession information is updated into the signalling system.

PICOP ID

The PICOP ID is a unique ID number identifying the PICOP and is assigned by Banedanmark once the PICOP has obtained railway competences to act as a PICOP.
Possession protection requirements

Possession protection requirements are technical precautions set up by the signalling system to prevent unintentional route setting into a possession, or unintentional movements out of the possession. Route setting is prevented by disabling automatic route setting, blocking all signalling within the area and blocking moveable elements in connection to the area.

Possession protection requirements are defined during the planning of the possession and can be viewed on request on the signalling control display.

Responsibilities

Signaller

You must ensure that possession protection requirements are defined during planning of impromptu possessions.

Position of safety

The term position of safety is used in relation to vacating the track when a train or a vehicle is approaching. Position of safety refers to:

- A position outside the personal safety distance to an operational railway ...
or
- a defined position within a possession stipulated by the railway safety plan.

Terms

Request working unit movement form

The request working unit movement form is used for impromptu planning of movements with working units.

Part A contains the working unit data and is prepared by the Driver prior to contacting the Signaller. Part B is used to plan the schedule for the mission and is prepared by the Signaller based on the information provided by the Driver on part A.

See Book of forms, Request working unit movement, for layout.

Book of Forms

All written order forms and other forms referenced in the Operational Rules are collected in a Book of Forms contained in Appendix A of the Operational Rules.

All the forms contained in the Book of Forms can be identified by a written order number or a name.
**Data radio hole**

Data radio hole refers to an area where there is an insufficient level of radio coverage to achieve the minimum data rate necessary for communication between onboard and signalling system.

**ETCS**

ETCS is the abbreviation for European Train Control System and is the system used on the Fjernbane to protect trains against overspeed and overrunning of the end of authority.

**Railway competent person**

A railway competent person is certified to assume the responsibility of the duties within their area of competence.

**Rolling stock**

Rolling stock is the collective name for the wheeled railway equipment that moves on the rails and meets the minimum requirements for railway operation.

**Route Book**

A description of the railway lines and the associated trackside equipment for the operated lines which have relevance to the driving task.

The Route Book is issued and managed by the Railway Undertaking based on information provided by Banedanmark.

**Authority to move**

An authority to move is a collective term used for the permission given to a Driver to move a train or vehicle.

An authority to move can be given by:

- Movement authority on the DMI
- Written Order 01, 02 or 07 from the Signaller to the Driver
- shunting instructions from the Shunter to the Driver.

**Responsibilities**

You may only begin procedures to move your train or vehicle when an authority to move has been received.
Signaller protected area

A Signaller protected area is an area of the infrastructure for which the Signaller uses available signalling controls to provide safe conditions for unplanned short term access to the tracks.

The Signaller protected area is applied in a situation where this is immediately necessary outside of a possession. Signaller protected areas can be used in situations requiring e.g. Emergency services access to tracks, for Drivers to clamp points or for Drivers to inspect trains etc. A Signaller protected area is not used for maintenance or infrastructure work.

Traffic control centre

Traffic control centre is the building from which railway traffic is supervised and controlled.

Telephone numbers for the traffic control centres can be found in the Route Book.

Traction unit

Traction unit is the collective term used for self-propelled rolling stock and covers locomotives, train sets, rail tractors and working units.

Train Radio

No network

No network indicates that the train radio has lost communication to the train radio network.

Responsibilities

Driver

When the text message "No network" is displayed on the train radio you must inform the Signaller, using any means available.
Railway emergency call

A railway emergency call is a high priority call that supersedes normal train radio calls. When the red railway emergency call button is pressed on the train radio, it automatically connects the Driver and the controlling Signaller. All other train radio users in the group will be included in the call to listen in.

Responsibilities

You must use the railway emergency call if observing or involved in an emergency situation.

To initiate an emergency call, you must use the red railway emergency call button on the train radio handset.

When you hear that a railway emergency call is in progress, you must immediately reduce the speed of the train to maximum 40 km/h and proceed driving on sight until the Signaller informs you that it is no longer required to do so.

You must bring the train to a standstill if the emergency situation affects your journey, or if you do not understand the content of the railway emergency call. You may continue driving when authorised by the Signaller.

Change per 2019-05-15:

When you hear that a railway emergency call is in progress, you must immediately reduce the speed of the train to maximum 40 km/h and proceed driving on sight unless the Signaller has authorised you not that it is no longer required to do so.

You must bring the train to a standstill if the emergency situation affects your journey, or if you do not understand the content of the railway emergency call. You may continue driving when authorised by the Signaller.

When you receive a railway emergency call, you must postpone non-emergency tasks and immediately handle the emergency call.

Radio ID

The radio ID is the number entered into the radio to enable individual identification of all radio users.

For trains, the radio ID is always the train running number if available. If a train running number is not available the fixed rolling stock ID number is used as radio ID.

For portable radio units the radio ID is always the personal ID of the user.
**Train Radio**

**DEFINITION**

The train radio is the primary tool for voice communication between the Driver and the Signaller, or between the Driver and the Shunter.

The Driver can select between two states in the train radio, either “Train” or “Shunting”.

A number is entered into the radio, or automatically transmitted from the onboard, to identify the train radio to the radio system. For movements according to and in connection to the timetable the number will be the train running number, for other movements it will be a fixed number assigned to the traction unit.

Information on the radio network is available in the Route Book.

**Responsibilities**

**Driver**

You must ensure the train radio is updated to the correct network following the crossing of a country border. If you are engaged in an emergency call you must postpone updating the network until the emergency call is concluded.

You must ensure that the number entered, or automatically transmitted from the onboard, in the radio is consistent with the timetable. If you are not running a scheduled movement you must enter the fixed number assigned to the traction unit.

If it is not possible to update the radio with the correct number you must inform the Signaller, using any means available.

**Train radio self test**

**DEFINITION**

When the train radio is switched on, the train radio will start a self test, this will test the parts of the train radio functionality required to establish communication.

A failed train radio self test will be displayed on the train radio.

**Responsibilities**

**Driver**

If the train radio displays “Self test failed”, you must not consider the train safe and fit for service.

**Tunnels**

**Tunnel distance**

**DEFINITION**

Tunnel distance is a restriction applied by the signalling system or the Signaller to ensure correct separation of trains in the tunnel when required. The tunnel separation requirements are described in the locations specific descriptions.
**Tunnel approach location**

The tunnel approach location is the last location in the infrastructure from where a train can be routed into e.g. an inspection track instead of into the tunnel.

The tunnel approach location can be found in the relevant location specific description.

**Tunnel restrictions**

Tunnel restrictions are safety precautions applied at specific tunnels to reduce the risk of a hazardous situation developing in a tunnel. Tunnel restriction is e.g. tunnel distance, or restricting the use of the neighbouring tunnel while a train transporting explosives runs through the tunnel.

Tunnel restrictions can be found in the relevant location specific descriptions.

**Degraded operation**

**Electric traction unit restriction**

Electric traction unit restriction is a restriction to ensure that electric traction units are not routed into tracks without a catenary system or where the catenary system is reported as isolated.

For supervised movements the electric traction unit restriction is managed by the signalling system. Route setting for trains identified as electric traction unit(s) into tracks without a catenary system or with a catenary system reported as isolated will require a specific Signaller override.

For unsupervised movements the electric traction unit restriction is managed by the Signaller.

Tracks not equipped with a catenary system are indicated in the route book and marked by electrical unit stop markers and point position indicators.

**Written order**
A written order is an instruction issued by the Signaller to the Driver to ensure safe operation when this cannot be provided by the signalling system.

A written order must only be issued when the train is at a standstill and never past more than one ETCS stop marker at a time.

A written order may be transmitted physically on paper or as verbal instructions for the driver to write down.

A written order must not be transferred from one Driver to another Driver.

When a written order has been issued it is valid until the movement is completed and the train has reached the end of authority or until it is revoked by a new written order explicitly referring to the authorisation number of the previous written order using the “additional instructions” option on the written order form (not applicable to Written Order 04).

A written order will state:

- Who issued it
- from where it was issued
- the time and date it was issued
- the intended train
- the location it applies to
- a clear, precise, unambiguous instruction
- a unique authorisation number.
Change per 2019-05-15:

A written order is an instruction issued by the Signaller to the Driver to ensure safe operation when this cannot be provided by the signalling system.

A written order must only be issued when the train is at a standstill and never past more than one ETCS stop marker at a time.

A written order may be transmitted physically on paper or as verbal instructions for the driver to write down.

A written order must not be transferred from one Driver to another Driver.

When a written order has been issued it is valid until the movement is completed and the train has reached the end of authority or until it is revoked by a new written order explicitly referring to the authorisation number of the previous one written order using the "additional instructions" option on the written order form (not applicable to Written Order 04).

A written order will state:

- Who issued it
- from where it was issued
- the time and date it was issued
- the intended train
- the location it applies to
- a clear, precise, unambiguous instruction
- a unique authorisation number.

Responsibilities

OR.DEF.235  Driver  When you receive a written order you must check that the written order refers to your train and your current location.

OR.DEF.236  Driver  When you receive a written order it takes precedence over other indications presented on the DMI except when a lower permitted speed or a lower release speed is displayed.

OR.DEF.237  Signaller  You must issue the written order to be executed as close as sensible to the affected area and only when the necessary conditions are met.
Written Order 01

Written Order 01 is a permission to pass an end of authority using either SR-mode or IS-mode. It is used when the signalling system cannot issue a movement authority. In addition to the general information contained in a written order, the Written Order 01 specifies:

- Exact location/identity of the end of authority
- Relevant speed restrictions below 40 km/h
- Additional relevant instructions.

Additional relevant instruction is e.g. on a failed level crossing.

See Book of forms, Written Order 01, for layout.

Written Order 02

Written Order 02 is a permission to proceed after entering TR-mode. It is used when a train has entered TR-mode and necessary conditions for train movement to resume have been established.

If a train cannot resume driving on a movement authority after entering TR-mode, the Written Order 02 will specify:

- Permission to start in SR- or SH-mode
- Relevant speed restrictions below 40 km/h
- Instruction on specific observations to be made
- Additional relevant instructions.

See Book of forms, Written Order 02, for layout.

Written Order 03

Written Order 03 is an instruction to remain at a standstill. When a Written Order 03 is issued the train is under obligation to remain at standstill until a Written Order 04 is issued.

See Book of forms, Written Order 03, for layout.

Written Order 04

The Written Order 04 is a revocation of the Written Order 03.

See Book of forms, Written Order 04, for layout.
**Written Order 05**

Written Order 05 is an instruction to run under restrictions. The Written Order 05 can instruct on:

- Obligation to run on the conditions of on sight
- Speed restriction not supervised by the signalling system
- Specific observations to be made
- Additional relevant instructions.

See Book of Forms, Written Order 05, for layout.

**Written Order 07**

Written Order 07 is a permission to start a mission in SR-mode. It is used when the signalling system cannot issue a movement authority because the location status stored by the onboard is reported invalid or unknown.

In addition to the general information contained in a written order, the Written Order 07 specifies:

- Exact location/identity of the end of authority
- Permission to start in SR-mode
- Relevant speed restrictions below 40 km/h
- Additional relevant instructions.

See Book of forms, Written Order 07, for layout.
Procedures

1947

Normal operation

Announcement of extra train

The need for an extra train has been identified.

To inform the Signaller and Driver about the timetable change.

PROCEDURE

1948

Forudsætning

The need for an extra train has been identified.

Formål

To inform the Signaller and Driver about the timetable change.

1949

Infrastruktur

Banedanmark has procedures to ensure that a train running number and schedule is planned and added to the timetable. Banedanmark must inform the Railway Undertaking of the updated timetable.

1950

Railway Undertaking

The Railway Undertaking must have procedures to ensure that Drivers are always informed of timetable changes.

1951

Driver

If the Driver is unable to obtain the updated timetable from the Railway Undertaking the Driver must inform the Signaller.

1952

Signaller

If the Signaller is informed by a Driver that an updated timetable cannot be obtained from the Railway Undertaking, the Signaller must manually transfer the relevant parts of the timetable to the Driver.
Normal operation

Safe and fit for service

A valid timetable is available for the train.

The train is prepared for service.

PROCEDURE

The Railway Undertaking must provide procedures to ensure trains are safe and fit for service.

The Driver must ensure that the train has been correctly prepared for operation. This includes ensuring that all units in the train consist are set to the correct brake class and that all requirements for the train length, train weight and hauled weight are fulfilled.

The Driver must ensure that the onboard self test is always performed and the result indicated on the DMI prior to starting the enter data procedure. Without a successful self test the onboard cannot be considered safe and fit for service.

The Driver must confirm that the train is safe and fit for service prior to performing any movement with the train.

If the train cannot be made safe and fit for service, but must be moved, the Driver must apply the procedure Train failure - Moving defective rolling stock.
Normal operation

Enter onboard train data

The Driver is ready to bring the train into service and is ready to enter onboard train data.

To ensure the configurable data used to perform safety critical protection functions is consistent with the Train.

PROCEDURE

Driver

The Driver must enter Driver ID and select the level that corresponds to the infrastructure where the train performs the start of mission.

The Driver must then select “Train data” on the DMI.

Railway Undertaking

The Railway Undertaking must have a procedure that ensures that valid onboard train data are made available to the Driver.

Driver

The Driver must ensure that updated onboard train data is available in the onboard or enter updated onboard train data. The Driver must verify that the train data held by the onboard is correct.
Normal operation

Railway Undertaking train data

Train data entry completed, the train is ready to initiate mission and the signalling system checks for Railway Undertaking train data.

Ensuring that mandatory Railway Undertaking train data is available before permitting the train to begin its mission.

PROCEDURE

The Railway Undertaking must have procedures to provide up-to-date Railway Undertaking train data to Banedanmark before any train is authorised to begin its mission.

The Railway Undertaking must ensure that all changes to mandatory Railway Undertaking train data are updated and acknowledged as received by Banedanmark prior to a train departing the location of the consist change.

The Signaller must ensure that the mandatory train data is available in the signalling system before requesting a route for a train. The Signaller may contact the Railway Undertaking to obtain the mandatory train data.

The Driver must ensure that all mandatory Railway Undertaking train data has been provided by the Railway Undertaking, and that the data has been sent and received by the signaling system, before requesting a movement authority.

The Driver must ensure that the Railway Undertaking train data is up-to-date during the entire mission of the train.

The Railway Undertaking must ensure that the Driver is informed when changes to mandatory Railway Undertaking train data are updated and acknowledged as received by Banedanmark prior to a train departing.
Normal operation

Awakening with invalid or unknown position

The Driver of a train outside a possession or shunting area has pressed the Start button. The position stored by the onboard cannot be validated by the signalling system.

To authorise the Driver to begin a mission using SR-mode and written order 07.

PROCEDURE

When the position stored by the onboard cannot be validated by the signalling system it is not possible to issue an FS MA or OS MA to the train. A press of the start button will cause the signalling system to automatically offer the Driver to acknowledge a change to SR-mode.

The Signaller is informed via the signalling control display about train's whose position cannot be validated by the signalling system.

The position status of the train is checked when the train passes over a balise and receives a position update from the signalling system.

If the symbol “Acknowledge SR-mode” is indicated on the DMI after pressing the start button, the Driver must inform the Signaller.

When the Driver informs that a movement authority was not provided to the train after pressing the start button, the Signaller must in cooperation the Driver establish the location of the train.

When the correct location of the train has been established the Signaller must:

1. Allocate the correct train running number to the indication of the train on the signalling control display
2. set a route in the track section where the authority to move on Written Order 07 will be valid
3. no other trains have authority to move within or into the track section which follows after the track section where authority to move on Written Order 07 will be valid, unless the Written Order 07 will apply to an occupied track section, a buffer stop, a possession or a shunting area
4. instruct the Driver to complete a Written Order 07.
Change per 2019-05-15:

When the correct location of the train has been established the Signaller must:

1. Allocate the correct train running number to the indication of the train on the signalling control display.
2. Set a route which protects in the continued track driving section of where the train authority to move on Written Order 07 and will be valid.
3. No other trains have authority to move within or into the track section following which follows after the endtrack of section where authority to move on Written Order 07 will be valid, unless the Written Order 07 will apply to an occupied track section, a buffer stop, a possession or a shunting area.
4. Instruct the Driver to complete a Written Order 07.

2023 Driver

The Driver must complete the written order 07 according to the Signaller’s instructions. The Driver is then permitted to acknowledge SR-mode and perform the movement as instructed.

2026 Driver

When the train reaches the next ETCS stop marker, or the location specified on the written order, and a movement authority is received, the Driver may continue according to the indications in the DMI.

If the train reaches the next ETCS stop marker, or the location specified on the written order, and no movement authority is received, the Driver must press the Start button to request a movement authority.

3787 Signaller

If the train has reached the next ETCS stop marker or the location specified on the written order, and it is still not possible to issue a movement authority to the train, the Signaller must apply the procedure Degraded operation - Authorised passing of the end of authority.
Normal operation

Handling of hazardous goods

A train has been prepared for service. The train will transport hazardous goods.

Change per 2019-05-15:

A train has been prepared for service. The train will transport hazardous goods.

Ensure that Banedanmark is informed of trains transporting hazardous goods. And that all affected Signallers are informed of this as necessary.

Change per 2019-05-15:

Ensure that Banedanmark is informed of trains transporting hazardous goods. And that all affected Signallers are informed of this as necessary.

PROCEDURE

The Railway Undertaking must ensure that the Network manager is informed about trains transporting hazardous goods by sending a copy of the train's wagon list. The report must include:

- Location of the wagons in the train
- wagon type if it cannot be deduced from the wagon number
- UN number, RID class and packing group for each wagon
- quantity of hazardous goods on each wagon specified in kg or liters, according to RID.

If the train contains wagons which carry trailers, then the notification must also state whether this is tank or mixed goods transport.

The Railway Undertaking must also ensure that the Driver, as a minimum, has been provided with the information required by RID before starting the mission. It must also be ensured that the train is not reported ready for departure to the Driver before the Network manager has confirmed that the hazardous goods transport report is received.

Lastly, the Railway Undertaking must ensure that its relevant shunters, are informed if the wagons are provided with label 1, 1.5 or 1.6 (see appendix B).
**Change per 2019-05-15:**

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If the train contains wagons that carry trailers, then the notification must also state whether this is tank- or mixed goods transport.

3813 Network manager

If the wagons contain hazardous goods marked with labels 1, 1.5 or 1.6 (see appendix B), the Network manager must ensure that all affected Signallers are informed before the Network manager confirms the receival of the hazardous goods transport report to the Railway Undertaking.

Change per 2019-05-15:

If the wagons contain hazardous goods marked with labels 1, 1.5 or 1.6 (see appendix B), the Network manager must ensure that all affected Signallers are informed before the Network manager confirms the receival of the hazardous goods transport report to the Railway Undertaking.

3814 Signaller

When the Signaller receives a report informing that a train is transporting hazardous goods with the labels 1, 1.5 or 1.6 (see appendix B), the Signaller must confirm the receival of the report to the Network manager and report it in the Signaller log.

The Signaller must then ensure that the train is NOT allowed to depart before the Network manager confirms that all affected Signallers have confirmed the receival of the hazardous goods transport report.
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The Signaller must then ensure that the train is NOT allowed to depart before the Network manager confirms that all affected Signallers have confirmed the receipt of the hazardous goods transport report.

When the Network manager has received a confirmation from all affected Signallers, the Network manager must report to the Signaller responsible for the starting location of the train that all affected Signallers have confirmed and that the train may depart.

This report must also be given to Signallers controlling locations where the train is planned to change consist.

When the Network manager reports that all affected Signallers have confirmed, the Signaller may allow the train to depart.

Change per 2019-05-15:
When the Network manager has received a confirmation from all affected Signallers, the Network manager must report to the Signaller responsible for the starting location of the train that all affected Signallers have confirmed and that the train may depart.

This report must also be given to Signallers controlling locations where the train is planned to change consist.

Change per 2019-05-15:
When the Network manager reports that all affected Signallers have confirmed, the Signaller may allow the train to depart.
Normal operation

Handling of UT

A train has been prepared for service. The train will run with UT.

Ensure that all involved parties are informed that the train transports UT and ensuring that all restrictions in the UT transport permission are met.

PROCEDURE

The Railway Undertaking must ensure that the Signaller is informed about:

- The Danish transport number of the UT transport permission
- Departure date and train running number
- Start and end location of the UT transport concerned.

The Railway Undertaking must ensure that all applicable UT transport permissions have been handed over to the Driver prior to the start of the UT transport.

In addition the Railway Undertaking must ensure that the train is not reported ready for departure to the Driver until the Signaller has confirmed that the UT report is received.

For cross-border traffic, it is the responsibility of the Railway Undertaking to inform all Infrastructure Managers about UT transports.

The Signaller in control of the area where the UT transport is scheduled to start must contact the Railway Undertaking and confirm that the UT report has been received.

The Signaller must ensure that all affected Signallers are informed about the UT transport. The UT report must include:

- The Danish number of the UT transport permission
- Departure date and train running number
- Start and end location of the UT transport.

The Signaller may omit sending out the UT report if it is stated on the UT transport permission that the report can be omitted.

When receiving a UT report, the Signaller must confirm that the report has been received to the Signaller that sent out the report.

The Signaller must ensure that the train is not given permission to start the mission until all affected Signallers has confirmed that the UT report has been received.
Normal operation

Beginning a mission

The train is in SB-mode. Onboard train data entry has been successfully completed and the Driver is ready to begin the mission.

To supply the Driver with an appropriate driving mode according to train location.

PROCEDURE

When the signalling system registers a Start button from a train not yet on a mission, the signalling system will if possible provide the train with an OS MA, if the train is located in or at the entrance to the interlocked area. The OS MA will be updated when the conditions for an FS MA are met.

To request a movement authority the Driver must press the Start button.

The Driver must NOT press the start button if there are other trains between the front end of the train and the first ETCS stop marker.

If a movement authority has not been received at the departure time indicated in the timetable, the Driver must contact the Signaller and request further instructions.

If the Signaller receives a request for a movement authority, the Signaller must as far as possible provide the train with the relevant authority to move.

If the Signaller receives an alternative train departure suggestion from the signalling system, the Signaller must:

- Acknowledge the suggestion ...
or
- produce and implement update of the production plan through manual route setting or use of production plan update functions.

If the expected train is indicated with an invalid or unknown position on the signalling control display, the Signaller must initiate the procedure Normal operation - Awakening with invalid or unknown position.
Normal operation

Train departure

A supervised train is at a standstill. A driving mode is displayed on the DMI.

Ensure that trains are issued with movement authorities according to the timetable, and inform the Signaller when a movement authority is not available as expected.

PROCEDURE

Driver

The Driver must check that a movement authority is displayed on the DMI and that it is consistent with the departure time of the train.

Driver

If the Driver does not have a movement authority displayed on the DMI where one is expected, and there is no obvious reason for it to be withheld, the Driver must contact the Signaller.

Signaller

If the Signaller receives a request for a movement authority, the Signaller must as far as possible provide the train with the relevant authority to move.

If the Signaller receives an alternative train departure suggestion from the signalling system, the Signaller must:

- Acknowledge the suggestion...or
- produce and implement an update to the production plan through manual route setting or use of production plan update functions.

Signaller

If a Driver reports that the train does not have a movement authority, the Signaller must investigate possible causes and set the conditions to allow a movement authority to be sent to the train.

If it is not possible to send a movement authority, the Signaller must apply the procedure Degraded operation - Authorised passing of the end of authority.

Railway Undertaking

The Railway Undertaking must have procedures to ensure safe train departure at the time specified in the time schedule.

Driver

When a movement authority is indicated on the DMI, the Driver must initiate Railway Undertaking procedures for train departure at the time specified by the Railway Undertaking.

Driver

Before the train departs, the Driver must check if there is a passenger crossing located between the front end of the train and the first ETCS stop marker.

If there is a passenger crossing located between the front end of the train and the first ETCS stop marker, the Driver must assume that the warning system is not activated and pass the crossing with caution.
Normal operation

Arrival at scheduled stop

The train is approaching a scheduled stopping location.

Stopping correctly at the stopping locations that are optimal for passenger loading at platforms, and at the end of authority for working units and freight trains.

Avoid obstructing moveable elements or track sections behind the train.

PROCEDURE

Driver

The Driver must control the train to a standstill at the scheduled stopping location as indicated in the timetable.

Railway Undertaking

The Railway Undertaking must have procedures enabling the Driver to always stop at the most optimal location according to the relevant type and length of rolling stock. The stopping procedures must ensure that track sections and moveable elements behind the train are not obstructed unnecessarily.

Driver

Where the scheduled stopping location is not at the end of authority indicated on the DMI, the Driver must control the train to a standstill at the correct location along the platform according to Railway Undertaking procedures.

Driver

Where the scheduled stopping location is at the end of authority indicated on the DMI, the Driver must control the train to a standstill at the end of authority according to Railway Undertaking procedures.

Driver

If the Scheduled stopping location is technical, the Driver must control the train to a standstill at the end of authority.

Driver

When the train reports to the signalling system that it is at a standstill, information contained in the production plan will determine the next operational step.

Driver

If the next operational step is to continue as a train the Driver must initiate the procedure Normal operation - Train departure...or Normal operation - Beginning a mission.

If the next operational step is not to continue as a train the Driver must initiate the procedure Normal operation - Rolling stock is not continuing as a train...or Shunting - Prepare shunting movement.

If the next operational step is unknown the Driver must apply the procedure Normal operation - Next operational step unknown.
Normal operation

Resume driving after stopping short of scheduled stopping location

The Driver has stopped the train short of the scheduled stopping location.

To enable the Driver to move the train from the actual stopping location to the scheduled stopping location.

**PROCEDURE**

The Railway Undertaking must have procedures to ensure safe departure from unusual stopping locations.

If the Driver has stopped the train short of the scheduled stopping location at a platform the Driver may resume driving according to Railway Undertaking procedures and move the train to the scheduled stopping location along the platform.

If the Driver has stopped the train short of the scheduled stopping location not at a platform, the Driver is permitted to move the train to a position from where the end of authority can be clearly identified.

Before the Driver resumes driving, the Driver must:

- Confirm that a valid movement authority is available ...
  - and
- ensure that any additional Railway Undertaking procedures have been followed.

If no movement authority is available, the Driver must initiate the procedure Normal operation - Train departure.
Normal operation

Next operational step unknown

The train is at a standstill but not in a depot or at a stabling track. The timetable does not contain any further operations for the train.

Update timetable to resume or end the mission of the train.

PROCEDURE

When the production plan contains no further operations for a train the signalling system will inform the Signaller. The signalling system may in some case also shorten the remaining movement authority and release any route associated with the train.

The Signaller must decide the next operational step required and inform the Driver if this deviates from any pre-agreed plan.

To resume or end the mission of the train the Signaller must:

- Update the production plan ...or
- use manual route setting.

The Driver must accept any valid changes to the pre-agreed plan as informed by the Signaller.
Normal operation

Planned joining

One train is stationary and the associated route is released. Another train is approaching for joining.

Joining of trains according to the timetable.

PROCEDURE

Railway Undertaking

The Railway Undertaking must ensure procedures are available describing safe joining and coupling of specific rolling stock.

Driver

The Driver must acknowledge OS-mode, and drive the train into the occupied track section. The Driver must control the train according to Railway Undertaking procedures to ensure safe joining and coupling of trains.

After coupling, the Driver of the approaching train must close the desk of the cab.

Driver

After joining the Driver shall prepare the new train according to procedure Normal operation - Update onboard train data.
Normal operation

Planned splitting

A train is approaching the location where the timetable indicates that planned splitting of the train is to be performed.

Change per 2019-05-15:
A train is approaching the location where the timetable indicates that planned splitting of the train is to be performed.

FORMÅL

Splitting of train according to the timetable.

PROCEDURE

Railway Undertaking

The Railway Undertaking must have procedures describing the safe splitting of rolling stock.

Driver

The Driver must perform train splitting at the location indicated by the timetable. The Driver must follow Railway Undertaking procedures describing splitting of rolling stock.

Driver

If the train is not at a standstill, when splitting is performed, the Driver must bring the train to a standstill immediately after the split.

Driver

The Driver is permitted to move the front part of the train forward or move the rear part of the train backwards to achieve the physical split of the train, provided the Driver can prevent the release of the train doors.

The Driver may move the train up to 1 metre. If the Driver requires the train to move a distance greater than 1 metre, the Driver must contact the Signaller for authorisation.

Change per 2019-05-15:

The Driver is permitted to move the front part of the train forward or move the rear part of the train backwards to achieve the physical split of the train, provided the Driver can prevent the release of the train doors.

The Driver must only may move the train up to 1 metre. If the Driver requires the train to move a distance greater than 1 metre, the Driver must contact the Signaller for authorisation.

Driver

If the lead cab prior to the splitting is still the lead cab on train departure after the splitting, the Driver of the front train must update train data according to procedure Normal operation - Update onboard train data.
Change per 2019-05-15:

If the lead cab on prior arrival to the splitting is still the lead cab on train departure after the splitting, the Driver of the front train must update train data according to procedure [Normal operation – Update onboard train data].

The Driver of all other cabs must follow the procedure Normal operation - Enter onboard train data after splitting.

Change per 2019-05-15:

The Driver of all other cabs than the lead cab on arrival must follow the procedure [Normal operation – Enter onboard train data] after splitting.
Normal operation

Update onboard train data

FORUDSÆTNING

Updates to the train data are necessary. The train is at a standstill.

FORMÅL

Ensuring that the onboard train data is always consistent with the characteristics and consist of the train.

PROCEDURE

Railway Undertaking

The Railway Undertaking must have a procedure that ensures that valid onboard train data are made available to the Driver.

Driver

The Driver must ensure that updated onboard train data is available or entered in the onboard. The Driver must verify that the onboard train data held by the onboard is correct.

Driver

The Driver must ensure that any changes in the Railway Undertaking train data are updated by initiating the procedure Normal operation - Railway Undertaking train data.

Driver

If the updated onboard train data is valid for train driving, but no movement authority is displayed on the DMI, the Driver must apply the procedure Normal operation - Train departure.

Driver

If the updated onboard train data is not valid for train driving, the Driver must:

1. Contact the Signaller and inform about the situation
2. apply relevant Railway Undertaking procedure to determine next step.

Signaller

If the Signaller is informed that the new train data does not allow the train to proceed, the Signaller must apply the procedure Train failure - Train and/or onboard failure during a mission.
Normal operation

Rolling stock is not continuing as a train

A train has reached the last scheduled stopping location in the timetable. The rolling stock is not going to continue as a train.

To end the mission by closing down the lead cab and parking the train, or entering SH-mode to perform shunting movements.

PROCEDURE

Driver

When the train has reached the last scheduled location in the timetable, the Driver must determine if the next operational step is to:

- Park the train at the current location ...
or
- prepare for shunting.

Railway Undertaking

The Railway Undertaking must have procedures describing how the Driver can perform a safe parking of rolling stock. This includes correct application of parking brakes for the rolling stock concerned to prevent any unintentional movement.

Driver

If the next operational step is to park the train at the current location, the Driver must close the desk and secure the parked rolling stock against any unintended movements according to Railway Undertaking procedures.

Driver

If the next operational step is to prepare for shunting, the Driver must apply the procedure Shunting - Prepare shunting movement.

Driver

If the Driver is not able to determine the next operational step from the timetable, the Driver must contact the Railway Undertaking for further instructions.

If the Driver cannot obtain information about the next operational step from the Railway Undertaking, the Driver must contact the Signaller for further instructions.

Signaller

If the Driver informs the Signaller that the next operational step cannot be determined, the Signaller must decide on the most convenient location to park the train and inform the Driver.
**Normal operation**

**User worked crossing**

A member of the public request to use a user worked crossing.

Prevent use of a user worked crossing endangering the safe passage of trains.

**PROCEDURE**

Banedanmark has procedures in place to instruct necessary members of the public on the safe working of a user worked crossing.

For all user worked crossings a predefined temporary speed restriction of 0 km/h is available extending 50 metres both sides of the crossing.

All user worked crossings are identified by a unique ID-number and the ID-numbers are available on the signalling control display.

When receiving a request from a member of the public to pass a user worked crossing the Signaller must obtain the location and identity of the crossing and verify that this corresponds to the user worked crossing.

The Signaller must make an entry in the Signaller log containing the ID-number of the user worked crossing, the name and phone number of the member of the public requesting to pass.

If a train is approaching the crossing the Signaller must instruct the member of public to wait and call back when the train has passed.

If no train is approaching the crossing the Signaller must activate a predefined speed restriction of 0 km/h at the crossing by applying the predefined speed restriction identified by the ID-number of the user worked crossing.

When the signalling system indicates that the temporary speed restriction of 0 km/h is active the Signaller must observe the signalling control display to verify that the temporary speed restriction is activated at the requested user worked crossing.

The Signaller must instruct the member of the public to report back when the user worked crossing has been cleared and the gates closed.

Then the Signaller may authorise the member of the public to cross at the user worked crossing.

When the Signaller is informed by the member of the public that the user worked crossing has been cleared the Signaller may remove the temporary speed restriction for the user worked crossing.
If the member of the public does not report back and the Signaller is unable to contact the member of the public, the Signaller may request assistance from the Driver of the next train approaching the crossing.

The Signaller must instruct the Driver to complete a Written Order 05. The Written Order 05 must include:
- An instruction to run on sight
- Location of the user worked crossing
- Additional instructions to bring the train to a standstill before reaching the user worked crossing and closing the gate
- Instruction to report back to the Signaller when the gate is closed.

When the Driver has completed the Written Order 05, the Signaller may deactivate the temporary speed restriction protecting the user worked crossing.

When the Written Order 05 is completed the Driver may proceed to the user worked crossing, using the information contained in the Written Order 05, and close the gate.

The Driver must report back to the Signaller when the crossing gates have been closed.

When the gate is closed and the Signaller has been informed, the Driver may continue driving according to the movement authority displayed on the DMI.
Normal operation

Observations while driving

A Driver has assumed command of a train or vehicle.

Ensure that relevant observations on the status of infrastructure and/or other trains and vehicles are passed on to Signaller and other Drivers.

PROCEDURE

Driver

The Driver must always during driving observe:

- The condition of the infrastructure ...and
- passing trains and vehicles ...and
- other conditions which may affect operations.

The Driver must inform the Signaller immediately in case anything is observed which may affect railway safety or operations.

Change per 2019-05-15:

The Driver must always during times driving observe:

- The condition of:
  - Infrastructure...and
  - passing trains and vehicles ...and
  - other conditions which may affect operations.

The Driver must inform the Signaller immediately in case anything is observed which may have an impact on railway safety or operations.

Signaller

The Signaller may instruct the Driver to be vigilant to specific irregularities related to the infrastructure, trains, vehicles and other conditions which may affect operations.

The Signaller must give clear instructions about the start and end location of the area where the Driver must be vigilant. If the speed must be reduced, the Signaller must use a Written Order 05 to inform the Driver about the extent of the area where the speed is reduced and what the applicable speed is.

The Signaller must instruct the Driver to report back when the train has passed the area.
The Signaller may instruct the Driver to be vigilant to specific irregularities related to the infrastructure, trains, vehicles and other conditions which may affect operations.

The Signaller must give clear instructions about the start and end location of the area where the Driver must be vigilant. If the speed must be reduced, the Signaller must use a Written Order 05 to inform the Driver about the extent of the area where the speed is reduced and what the applicable speed is.

The Signaller must instruct the Driver to report back when the train has passed the reported area.

When the Driver is instructed by the Signaller to be vigilant to specific irregularities related to the infrastructure, trains, vehicles and other conditions which may affect operations, the Driver must do so and subsequently report back to the Signaller.

If the Driver observes any potential danger to the train or vehicle the Driver must immediately reduce speed, or stop if necessary, and inform the Signaller.

If the Driver observes any potential danger to the train due to the condition of the catenary system, the Driver must immediately lower the pantograph(s), stop the train and then inform the Signaller.

If the Driver observes any potential danger to other train, vehicles, infrastructure or persons the Driver must immediately apply the procedure Emergency - Handling railway emergency call.

Deleted
Change per 2019-05-15:

If the Driver observes any unexpected condition or failure of the infrastructure, other trains or vehicles the Driver must inform the Signaller. **Deleted**
Normal operation

Handling of TR-mode

A train has entered TR-mode and the emergency brake is applied.

Resume driving after entering TR-mode.

PROCEDURE

When a train exceeds the authority supervised by the onboard, or an unsafe condition arises either in the signalling system or detected by the onboard, or an emergency stop is issued from the signaller the onboard will enter TR-mode. When the onboard enters TR-mode, the emergency brakes will be applied bringing the train to a standstill. When the train is at a standstill the onboard automatically changes into acknowledge TR-mode.

Trains entering into TR-mode are indicated to the Signaller on the signalling control display.

When a train has entered TR-mode due to exceeding its authority and poses a danger to other movement in the area, the Signaller must apply the procedure Emergency - Stop trains and vehicles from entering hazardous area.

When the train enters TR-mode, the Driver may acknowledge TR-mode once the train is at a standstill.

When the Driver acknowledges TR-mode the onboard changes from TR-mode to PT-mode and the symbol indicating PT-mode is displayed on the DMI.

Once in PT-mode, the emergency brake is released enabling the Driver to continue once a new movement authority is received.

When the Driver has acknowledged TR-mode the Driver must determine the reason for the entry into TR-mode and inform the Signaller.

If the entry into TR-mode is caused by an onboard failure the Driver must apply the procedure Train failure - Train and/or onboard failure during a mission.

If the train is required to be moved the Driver must request the Signaller for permission to proceed.
When the Signaller is informed of an entry into TR-mode, the Signaller must determine if the train has entered TR-mode as a result of exceeding its own authority or if it is caused by another reason.

If the train has exceeded its own authority, the Signaller must apply the procedure [Incidents - Reporting incident].

If the train has been stopped because an emergency stop was sent, the Signaller must only allow the train to continue driving when it has been verified that it is safe to do so.

If the train must continue driving, the Signaller must request the Driver to press the Start button.

**Change per 2019-05-15:**

When the Signaller is informed of an entry into TR-mode, the Signaller must determine if the train has entered TR-mode as a result of exceeding its own authority or if it is caused by another reason.

If the train has exceeded its own authority, the Signaller must apply the procedure [Incidents - Reporting incident].

If the train has been stopped because an emergency stop was sent, the Signaller must only allow the train to continue driving when it has been verified that it is safe to do so.

If the train must continue driving, the Signaller must request the Driver to press the Start button.

When requested by the Signaller, the Driver must press the Start button to request a movement authority from the signalling system. The Driver must report to the Signaller if a movement authority is received.

If the Driver reports that a movement authority is received, the Signaller may allow the Driver to continue driving according to the movement authority.

If the Driver reports that no movement authority is received, the Signaller must:

1. Check that a route is set in the track section where the authority to move on Written Order 02 will be valid
2. no other trains have authority to move within or into the track section which follows the track section where authority to move on Written Order 02 will be valid, unless the Written Order 02 will apply to an occupied track section, a buffer stop, a possession or a shunting area
3. instruct the Driver to complete a Written Order 02.
Change per 2019-05-15:

If the Signaller is informed that a movement authority is received, the Signaller may allow the Driver to continue driving according to the movement authority.

If the Driver reports that no movement authority is received, the Signaller must:

1. set Check that a route which is protected set in the continued track driving section of where the train authority to move on Written Order 02 and will be valid
2. no other trains have authority to move within or into the track section following which follows the end track of section where authority for to move on Written Order 02.

The Signaller will must be then valid, unless the Written Order 02 will apply to an occupied track section, a buffer stop, a possession or a shunting area
3. instruct the Driver to complete a Written Order 02.

3301  Driver

The Driver must complete the Written Order 02 form as instructed by the Signaller.

When the Written Order 02 is completed, the Driver may acknowledge SR-mode and proceed according to information contained in Written Order 02.

Change per 2019-05-15:

If no movement authority is received, the Driver must complete the Written Order 02 form as instructed by the Signaller.

When the Written Order 02 is completed, the Driver may acknowledge SR-mode and proceed according to information contained in Written Order 02.

3303  Signaller

If no further movements are required the Signaller must instruct the Driver to close the driving desk by means of Written Order 02 using the additional instructions section.
Normal operation

Driving into an occupied track section

One train is stationary and any associated routes are released. Another train is approaching the occupied track section. Joining is not intended.

Allowing two trains to share the same track section according to the timetable without having to join.

PROCEDURE

Routing a train into a track section already occupied, will result in the approaching train receiving an OS MA into the occupied track section.

Before routing a train into an occupied track section, the Signaller must:

1. Ensure the Driver of the approaching train is informed that the train will be routed into an occupied track section
2. use normal route setting for the approaching train up to the occupied track section
3. allow an OS MA to the approaching train into the occupied track section.
Normal operation

Parking in an interlocked area

FORUDSÆTNING

A need for an unplanned parking in an interlocked area has occurred.

FORMÅL

To ensure the parking does not affect the timetable and ensure the production plan is updated to reflect the changes.

PROCEDURE

Railway Undertaking

The Railway Undertaking must have procedures describing how the Driver can perform a safe parking of rolling stock in an interlocked area. This includes correct application of parking brakes for the concerned rolling stock to prevent any unintentional movement.

Driver

The Driver must request the Signaller for permission to park a train.

The request must contain:

- Train length,
- track number
- expected parking duration
- reason for parking.

Signaller

The Signaller must assess the request and test it using the production plan.

If the request is acceptable, the Signaller may update the production plan, inform the Driver and issue a movement authority to the parking track.

Signaller

If the request cannot be approved, the Signaller may produce an alternative parking suggestion.

If no other alternatives are possible the Signaller must reject the parking request.

Driver

When the train has arrived at the agreed parking track, the Driver must secure the parked rolling stock against any unintended movements according to Railway Undertaking procedures.
Normal operation

Supervised driving into a possession or shunting area

A supervised train has to enter a possession or shunting area.

Ensure that the Shunting area manager has accepted the train before it is routed into the possession or shunting area.

**PROCEDURE**

When a route is requested into a **possession** or **shunting area**, a request to accept or reject the train is sent to the **handheld terminal** of the Shunting area manager before the route is set.

If no handheld terminal is associated with the possession or shunting area a request to confirm that the train can enter the area is indicated to the Signaller on the **signalling control display**.

When the **handheld terminal** indicates that a train is to approach, or the Signaller contacts the **Shunting area** manager with a request to confirm that the train can be permitted to enter into the **possession** or shunting area, the Shunting area manager must only accept the train when it is safe to do so.

Prior to accepting the train into the possession or shunting area, the Shunting area manager must ensure that the Driver is instructed about the **shunting movements** to be performed inside the area. The Shunting area manager must ensure that the Driver is informed about any special restrictions or precautions which apply to shunting movements in the area.

If a request to accept or reject a train into a **possession** or **shunting area** is indicated on the **signalling control display**, the Signaller must only accept the train when permission from the Shunting area manager has been obtained.

When driving into a permanent shunting area not under the responsibility of a Shunting area manager the Signaller must accept the request without further agreement.

If the **Shunting area** manager receives a request to resume driving after a standstill, by the Driver of a train in SH-mode outside the **possession** or shunting area, the Shunting area manager must obtain authorisation from the Signaller before permitting the Driver to resume driving.
Normal operation

Signaller planning a working unit move

The Driver of a safe and fit working unit has identified the need for an impromptu move.

Planning the working unit move and updating the production plan in the signalling system.

**PROCEDURE**

3154 **Driver**

If the deadline for ordering a movement with the planning department has expired, the Driver may contact the Signaller and request a working unit move.

The Driver must complete the information required by part A of request Working unit movement form and use this to communicate the request to the Signaller.

3155 **Signaller**

When a Driver requests a working unit move the Signaller must complete part A of request Working unit movement form as instructed by the Driver.

3156 **Signaller**

If the requested move involves entering another Infrastructure manager’s network, the Signaller must contact the adjacent Signaller and arrange the timing of the move.

3157 **Signaller**

The train running number is assigned by the Signaller. When the Signaller approves the schedule, the production plan is automatically updated in the signalling system.

3158 **Signaller**

The Signaller must assign a train running number and then prepare a schedule in the production plan.

3159 **Signaller**

When the schedule has been prepared by the Signaller, the Signaller must complete the details of the movement using part B of "Request working unit movement" and instruct the Driver.

3160 **Driver**

When the Driver has completed part B of form Request working unit move the Driver may apply procedure Normal operation - Enter onboard train data.
Normal operation

Signaller handling changes to operation

The Signaller is aware of the need to perform a change to planned operations.

To ensure the change is either handled by the Signaller according to service agreements or by the Signaller requesting instructions from the Network manager.

PROCEDURE

Banedanmark has service agreements with Railway Undertakings defining standard responses to deviations in planned operations.

The service agreements are used as an input to the signalling system. Changes to the production plan proposed by the signalling system are aligned with the service agreements and no additional approval from the Railway Undertaking is required.

Manual route setting can be used for last-minute re-scheduling by requesting a route for the concerned train.

Any changes made by manual route setting will be automatically reflected in the production plan.

If the change can be handled according to the service agreements the Signaller must update the production plan.

If the change cannot be handled according to the service agreements the Signaller must inform the Network manager.

If the change in the production plan results in a change in the trains mission, or a change in the scheduled stopping locations, the Signaller must ensure that the Driver is informed about the changes.

If the change in the production plan results in an altered train sequence to adjacent Infrastructure Managers, the Signaller must inform the adjacent Signaller about the change in train sequence.

If the change in the production plan results in an altered train sequence for a train entering or exiting a depot, the Signaller must contact the person controlling the depot and coordinate necessary changes.

The Signaller must ensure that the Signallers affected by the change are informed.
Normal operation

Banedanmark handling changes to operations

The deadline for requesting changes to timetable has not expired. The change is to be handled by the planning department and not the Signaller.

To ensure the change is addressed by the appropriate department in Banedanmark, ensure Railway Undertaking involvement and updating the signalling system with the changes.

PROCEDURE

Banedanmark has procedures for ordering changes to planned operation.

The procedure contains e.g.:

- Deadline for ordering changes
- relevant contact information
- collaboration with Railway Undertakings
- description of signalling system interaction.

The changes are handled offline and then updated into the production plan.
Normal operation

 Handling of a low adhesion area

FORUDSÆTNING

Trains are running under normal conditions. An area of the infrastructure has low adhesion.

FORMÅL

To compensate for the low adhesion factor in order to reduce the risk of the train overrunning the end of authority.

PROCEDURE

Driver

The Driver must inform the Signaller when they experience an area with low adhesion, either unexpected for the time of year or in contrast with the general condition of the infrastructure at the location.

The Driver may use the low adhesion controls on the onboard equipment to modify the braking rate to the low adhesion setting.

Driver, Signaller

Activating a low adhesion area will automatically command the low adhesion setting of the onboard of trains passing the low adhesion area. When the low adhesion setting has been commanded by the signalling system, the Driver cannot cancel the setting.

Signaller

If informed about an area with low adhesion the Signaller must activate any associated low adhesion area in the signalling system.

Before an area with low adhesion can be de-activated, the Signaller must request the Driver of one train pr. track in the area to check whether they still experience low adhesion in the area.

When the Driver(s) has reported that they no longer experience low adhesion in the area, the Signaller must de-activate the low adhesion setting in the signalling system.

Driver

When the low adhesion setting on the train is activated by the Driver, the setting may be de-activated by the Driver once they assess that the setting is no longer required.
Normal operation

Signaller handover

Forudsætning
A relieving Signaller is ready to take over a part or the whole area from a responsible Signaller.

Formål
To ensure that the relevant information is given to the relieving Signaller and responsibility is transferred safely.

Procedure

Signaller

The signalling system will always require a Signaller to be responsible for each part of the interlocked infrastructure. Areas can be combined to cover a larger part of the infrastructure.

Change per 2019-05-15:
The signalling system will only allow one responsible Signaller for each area. Areas can be combined to cover a larger part of the infrastructure but only one Signaller can assume responsibility for control.

Signaller

The relieving Signaller must read relevant entries in the Signaller log and request relevant information not contained in the Signaller log from the responsible Signaller.

Change per 2019-05-15:
The relieving Signaller must:
- Log on to the relevant area in the signalling system,
- read relevant entries in the Signaller log,
- confirm information has been read — and
- request relevant information not available contained in the Signaller log from the responsible Signaller.

Signaller

When a Signaller is requested to give up responsibility of an area the Signaller must provide the relieving Signaller with any relevant information regarding operations.

The Signaller must ensure that it is recorded when the responsibility for an area is handed over.
When a Signaller is requested to give up responsibility of an area the Signaller must provide the relieving Signaller with any relevant information regarding operations. The Signaller can then accept the release offer from the signalling system and handover responsibility.

The Signaller must ensure an entry in their log when the responsibility for an area is handed over.

When the handover of responsibility for the area is performed and recorded, the Signaller may operate the signalling system.

Change per 2019-05-15:

When a Signaller is requested to give up responsibility of an area the Signaller must provide the relieving Signaller with any relevant information regarding operations. The Signaller can then accept the release offer from the signalling system and handover responsibility.

When the handover of responsibility for the area is performed and recorded, the Signaller may operate the signalling system.
Normal operation

Operating a bascule bridge

FORUDSÆTNING

The Bridge guard has identified the need to operate the bridge.

FORMÅL

Allowing the Bridge guard to operate the bridge without affecting operations.

PROCEDURE

3143 Bridge guard

The Bridge guard must request the release of the bridge and provide the Signaller with any necessary information.

3144 Signaller

When the release of a bascule bridge is requested the Signaller must decide on a convenient time to release the bridge.

3145 Signaller

When the Signaller has decided on a convenient timeslot, the Signaller may acknowledge the request.

When the agreed timing arrangements are met, the Signaller must acknowledge the release of the bridge, handing over responsibility for the bridge to the Bridge guard.

3146 Bridge guard

When the Signaller has released the bridge, the Bridge guard may open the bridge.

3147 Signaller, Bridge guard

Once the bridge guard has completed the operation and returned the bridge to its normal position, the bridge is locked and the release of the bridge is automatically revoked by the signalling system.

3148 Bridge guard

When the operation is completed the Bridge guard must return the bridge to its normal position.
Level transition

Unsupervised level transition into a level 2 area

FORUDSÆTNING

The technical conditions for issuing a movement authority are not available. A train is ready to perform an unsupervised level transition into a level 2 area.

FORMÅL

For the Signaller to ensure adequate protection for a route to permit the level 0 or level ATC Signaller to authorise the train to approach the transition point. Furthermore, for the Signaller to authorise the train to proceed to the first ETCS stop marker.

PROCEDURE

Signaller

When the level 0 or level ATC Signaller requests permission to verbally authorise a train to approach the transition point, the Signaller must protect the transition area.

The Signaller must protect the transition area by ensuring that no train or vehicle has authority to move within or into the track section between the transition point and the first ETCS stop marker.

Signaller

When the transition area is protected, the Signaller must inform the level 0 or level ATC Signaller, that the train can approach the transition point. The Signaller must ensure the transition point is included as the end of authority location for the verbal authorisation.

Driver

When the train is at a standstill at the transition point, the Driver must apply the procedure Degraded operation - Authorised passing of the end of authority.

Driver

If the train passes the transition point, without changing into level 2, the Driver must continue to the end of authority indicated on the Written Order 01, and inform the Signaller.
Level transition

Unsupervised level transition from a level 2 area

The technical conditions for issuing a movement authority are not available. A train is ready to perform an unsupervised transition from a level 2 area.

For the Signaller to ensure adequate protection for a route before issuing a Written Order 01 to approach the transition point.

PROCEDURE

Driver

When the train is at a standstill in front of the last ETCS stop marker protecting the transition area, the Driver must apply the procedure Degraded operation - Authorised passing of the end of authority.

Signaller

The Signaller must contact the level 0 or level ATC Signaller and request that the transition area is protected.

Signaller

When the level 0 or level ATC Signaller reports that the transition area is protected, the Signaller must apply the procedure Degraded operation - Authorised passing of the end of authority.

The Signaller must ensure that the transition point is included as the end of authority on the Written Order 01.

Driver

When the train is at a standstill at the transition point, the Driver must contact the level 0 or level ATC Signaller for instructions on how to proceed.
Crossover

Unsupervised crossover from Fjernbane to S-bane

FORUDSÆTNING

The technical conditions for issuing a movement authority are not available. A train is ready to perform an unsupervised crossover from Fjernbane to S-bane.

FORMÅL

For the Signaller to ensure adequate protection for a route and subsequently authorise the Driver to cross over to S-bane in cooperation with the S-bane Signaller.

PROCEDURE

Driver

The Driver must contact the Signaller and request authority to cross over to S-bane.

Driver, Signaller

Banedanmark has location specific descriptions defining the location used as end of authority in relation to unsupervised crossovers on written order. If relevant, the location specific description also defines the release of interlocked points protecting the crossover location between Fjernbane and S-bane.

Signaller

When the Signaller is requested by a Driver to cross over to S-bane, the Signaller must contact the S-bane Signaller controlling the area and:

- Arrange the timing of the crossover
- request movement protection
- request an end of authority location on the S-bane network.

Signaller

When the S-bane Signaller has confirmed that movement protection has been applied and an end of authority location is received, the Signaller must apply the procedure Degraded operation - Authorised passing of the end of authority.

The Signaller must ensure that the end of authority location agreed with the S-bane Signaller is stated on the written order.

Driver

When the Driver has completed the movement as instructed by the Signaller the Driver must observe the Operational Rules of S-bane.
Crossover

Unsupervised crossover from S-bane to Fjernbane

The technical conditions for issuing a movement authority are not available. A train is requested to perform an unsupervised crossover from S-bane to Fjernbane and the timing is agreed.

For the Signaller to ensure adequate protection for a route to enable the S-bane Signaller to authorise the train to cross over to the Fjernbane.

**PROCEDURE**

**Signaller**

Banedanmark has location specific descriptions defining the location used as end of authority in relation to unsupervised crossovers on written order. If relevant, the location specific description also defines the release of interlocked points protecting the crossover location between Fjernbane and S-bane.

When the S-bane Signaller requests that a train crosses over to the Fjernbane, the Signaller must:

1. Identify the end of authority stated in the location specific descriptions.
2. Protect the movement according to the procedure Degraded operation - Authorised passing of the end of authority.

The Signaller may then inform the S-bane Signaller about the end of authority for the movement.

**Driver**

When the Driver has completed the movement as instructed by the S-bane Signaller, the Driver must apply procedure Normal operation - Enter onboard train data.
Degraded operation

Authorised passing of the end of authority

The technical conditions for issuing a movement authority for a route are not met. Train is at a standstill and voice communication has been established between the Driver and the Signaller.

For the Signaller to ensure adequate protection to allow the train to continue driving and authorise the Driver to pass the end of authority by use of Written Order 01.

PROCEDURE

Driver

The Driver must report current location to the Signaller and request authority to proceed.

Signaller

When the Signaller has exhausted all possibilities for issuing a movement authority, the Signaller must protect the continued driving of the train and authorise the Driver to proceed past the end of authority and to the next ETCS stop marker, or other unambiguous location.

To allow the continued driving of the train, the Signaller must ensure that:

1. Moveable elements in the track section where authority to move on Written Order 01 will be valid are detected in the correct lie and prevented from further throwing …or any moveable elements in the track section where authority to move on Written Order 01 will be valid are safe to pass according to the procedure Infrastructure fault - Handling of an undetected point that is not trailed, Infrastructure fault - Handling of a trailed point or location specific description.
2. the track section where authority to move on Written Order 01 will be valid is unoccupied, unless the Signaller requires the train to enter an occupied track section, a possession or a shunting area.
3. no other trains have authority to move within or into the track section where authority to move on Written Order 01 will be valid.
4. no other trains have authority to move within or into the track section which follows the track section where authority to move on Written Order 01 will be valid, unless the Written Order 01 will apply to an occupied track section, a buffer stop, a possession or a shunting area.
Change per 2019-05-15:

When the Signaller has exhausted all possibilities for issuing a movement authority, the Signaller must protect the continued driving of the train and authorise the Driver to proceed past the end of authority and to the next ETCS stop marker, or other unambiguous location.

To allow the continued driving of the train, the Signaller must ensure that:

1. Moveable elements between the train and the track end section of where authority to move on Written Order 01 will be valid are detected in the correct lie and prevented from further throwing or any moveable elements between the train and the track end section of where authority to move on Written Order 01 will be valid are safe to pass according to the procedure [Infrastructure fault – Handling of an undetected point that is not trailed], [Infrastructure fault – Handling of a trailed point] or location specific description.

2. no other track sections have authority to move within or into the track sections between the location where the authority to move is unoccupied, unless the location requires the train to enter an occupied track section, a possession or a shunting area.

3. no other trains have authority to move within or into the track sections between the location where the authority to move is unoccupied, unless the Signaller requires the train to apply to enter an occupied track section, a buffer stop, a possession or a shunting area.

The Signaller must assess if any of the following restrictions apply to the continued driving of the train on Written Order 01:

- Unusual transport restrictions,
- electric traction unit restriction,
- restrictions specified in location specific descriptions.
Change per 2019-05-15:

The Signaller must take account of the following restrictions apply to the continued driving of the train on Written Order 01:

- Unusual transport restrictions,
- electric traction unit restriction,
- restrictions specified in location specific descriptions.

2738 Signaller

If a level crossing is located between the train and the end of authority of the Written Order 01, the Signaller must apply the procedure Degraded operation - Passing a level crossing without a movement authority.

2739 Signaller

If the Signaller requires the train to enter an occupied track and it is not according to the timetable, the Signaller must inform the Driver (if relevant) of the occupying train that another train is to approach.

3772 Signaller

If the Signaller wants to authorise the train into a possession or shunting area, the Signaller must first contact the PICOP or Shunting area manager (if relevant) and request permission for the movement.

2740 Signaller

When the continued driving of the train is protected, the Signaller must instruct the Driver to complete a Written Order 01. The Written Order 01 must include:

- Any speed restriction located in the route restricting speed below 40 km/h,
- any occupied track,
- any level crossing not protected,
- stopping location if before reaching the next ETCS stop marker
- information about possessions or shunting areas.

2743 Signaller

The Signaller must ensure that the continued driving of the train remains protected until:

- The train has reached the end of authority of Written Order 01 and has changed into supervised driving ...
or
- the issue of a Written Order 03 ...
or
- the Driver reporting that the train is at a standstill at the end of authority of Written Order 01 without a movement authority.

2744 Driver

When the Written Order 01 is completed, the Driver must check the location of the end of authority of the Written Order 01 either by using the Route Book or by local area knowledge.

The Driver is then authorised to press override to enter SR-mode and proceed to the next ETCS stop marker, or the location instructed, using the information contained in the Written Order 01.

If the movement ends in a possession or shunting area, the Driver may only start the movement on written order 01 when the movement inside the area has been agreed with the PICOP or Shunting area manager. The Driver must immediately after entering the area make sure that the onboard changes to SH-mode.
If Written Order 01 contains additional information of a level crossing not protected, the Driver must proceed on sight with a maximum of 10 km/h, while using sound signal "Warning", until the lead cab has passed the level crossing.
Degraded operation

Passing a level crossing without a movement authority

The Signaller needs to issue a Written Order 01. A train is at standstill at an ETCS stop marker protecting a level crossing. Communication between the Driver and Signaller has been established.

Setup conditions to allow the Signaller to authorise the Driver to pass a level crossing.

PROCEDURE

Signaller

All level crossings can be manually controlled by the Signaller and from a local control box.

Level crossings are automatically de-activated following train passage both when activated by an automatic and a manual activation unless specifically ordered to remain activated or activated due to other conditions.

The Signaller must activate the level crossing by:

- Setting a route through the level crossing ...or
- manually controlling the level crossing ...or
- requesting the Driver to activate the level crossing from the local control box.

Driver

If requested by the Signaller the Driver must attempt to activate the level crossing by using the local control box of the level crossing.

The Driver must observe the status of the level crossing from the indication in the local control box, and report to the Signaller.

Signaller

When the level crossing is activated, the Signaller must observe indications on the signalling control display to determine if the level crossing is protected correctly.

If the level crossing is not protected the Signaller must ensure that the information is contained in the "Additional instructions" part of Written Order 01.

Signaller

When the entire train has passed the level crossing, the Signaller must ensure the level crossing is deactivated.
Degraded operation

Supervised passing of failed level crossing

A supervised train is approaching a level crossing.

To pass a level crossing not automatically activated by the signalling system without causing any harm to infrastructure, rolling stock, passengers or road users.

PROCEDURE

Driver, Signaller

All level crossings are equipped with a local control box enabling on-site operation of the level crossing. The local control box is used in case of failures, fault correction or planned maintenance.

The location of the local control box can be found in the location specific description.

Driver

When the train is supervised to a speed restriction of 10 km/h, and the unprotected level crossing symbol is displayed on the DMI, the Driver must bring the train to a standstill at the ETCS stop marker protecting the level crossing and inform the Signaller.

The information must include the ID number of the level crossing and, if possible, the nature of the fault.

Signaller

When the Signaller is informed by a Driver that the train is at a standstill at an unprotected level crossing, the Signaller must try to operate the level crossing manually.

If the level crossing cannot be operated manually, the Signaller must instruct the Driver to operate the level crossing using the local control box.

If the level crossing cannot be operated using the local control box, the Signaller must instruct the Driver to pass the unprotected level crossing using a verbal safety message.

The verbal safety message must include:

- Train running number
- Level crossing ID(s).

Signaller

If the Signaller knows that the level crossing cannot be protected by using the manual controls or the local control box, the Signaller may omit the process for manual activation and instruct the Driver to pass the unprotected level crossing using a verbal safety message.

The verbal safety message must include:

- Train running number
- Level crossing ID(s).
The Driver may continue driving if the level crossing speed restriction of 10 km/h is lifted.

When instructed by the Signaller to operate the level crossing, the Driver must use the local control box.

If the level crossing cannot be protected, the Driver must inform the Signaller.

**Change per 2019-05-15:**

The Driver may continue normally driving if the level crossing restriction and speed level restriction crossing of unprotected 10 symbol km/h areas are revoked lifted.

When instructed by the Signaller to operate the level crossing, the Driver must use the local control box.

If the level crossing cannot be protected, the Driver must inform the Signaller.

When instructed by the Signaller to pass an unprotected level crossing by a verbal safety message, the Driver must pass the level crossing on sight using sound signal “Warning” until the lead cab has passed the level crossing.

The Driver may omit the use of sound signal "Warning", when staff present at the level crossing is applying the hand signal "road traffic, stop".

**Change per 2019-05-15:**

When instructed by the Signaller to pass an unprotected level crossing by a verbal safety message, the Driver must pass the level crossing on sight using sound signal “Warning” until the lead cab has passed the level crossing.

The Driver may omit the use of sound signal "Warning", when staff present at the level crossing is applying the hand signal "road traffic, stop".

If the level crossing cannot be protected automatically or manually, the Signaller must apply the procedure Infrastructure fault - Handling report of infrastructure fault.
**Degraded operation**

**Overrunning/routed in wrong direction**

A train has overrun its scheduled stopping location or is routed in a wrong direction and is at a standstill.

To assess if the train will remain at the current location, continue, or be moved to another location.

**PROCEDURE**

The Railway Undertaking must have procedures describing if backwards movements are permitted with trains not carrying passengers.

The procedures must describe how to inform passengers in the train in case of an overrun.

When a scheduled stopping location is overrun or a train is routed in the wrong direction the Driver must inform the Signaller, providing additional information regarding the actual location of the train and any expected delays to current operations.

When informed of an overrun, or a train routed in a wrong direction, the Signaller must in close cooperation with the Driver determine the appropriate response.

The Signaller must determine if:

- The passengers may be exchanged without moving the train ...
or
- the train must continue ...
or
- the Driver must be instructed to close the cab and open in the other end of the train ...
or
- the train must perform a backwards movement (provided that the train is not carrying passengers).

The Signaller must instruct the Driver about how to proceed.

If the train has to perform a backwards movement, and the train does not carry passengers, the Signaller must:

- Disable automatic route setting
- revoke any movement authority into the area behind the train
- ensure no train or vehicle has authority to move into the necessary track section(s) behind the train
- establish a temporary shunting area around the train, or set a route for shunting, to allow the backwards movement
- instruct the Driver to complete the form "Backwards movement authorisation".

When instructed by the Signaller, the Driver must complete the form "Backwards movement authorisation", provided that backwards movements are permitted by the Railway Undertaking.

When the form backwards movement authorisation is completed, the Driver must press “Shunt” to enter SH-mode and perform the movement as instructed. The Driver must inform the Signaller when the movement is completed, and the train is at a standstill.
When the Driver informs the Signaller that the backwards movement is completed, and the train is at a standstill, the Signaller must instruct the Driver to exit SH-mode and prepare the train to continue its mission.

When the train has exited SH-mode, the Signaller must end the temporary shunting area, or ensure the entire route for shunting is released, as applicable.

When instructed by the Signaller, the Driver must exit SH-mode and initiate the procedure Normal operation - Enter onboard train data to continue the mission.
Degraded operation

Detect and log trailed point

FORUDSÆTNING

A point has been trailed.

FORMÅL

Stopping traffic in the affected area and ensure trailing and operational constraints are logged in the Signaller log.

PROCEDURE

Driver

If the Driver of a train or vehicle observes the trailing of a point, the Driver must immediately stop the train or vehicle, and report the incident to the Signaller.

Shunter

If the Shunter observes the trailing of a point, the Shunter must instruct the Driver of the shunting movement to stop immediately, and report the incident to the Signaller.

Signaller

When a point with a point machine operated by interlocking is detected trailed the signalling system will revoke any related movement authorities and an alarm is raised to the Signaller on the signalling control display.

Signaller

The Signaller must react on the reported trailing by bringing all movements to a stop applying procedure Emergency - Stop trains and vehicles from entering hazardous area.

Signaller

When all trains and vehicles are at standstill the Signaller must apply the procedure Infrastructure fault - Handling report of infrastructure fault.

Signaller

The Signaller must ensure the trailed point is logged in the Signaller log and any connected operational constraints are recorded.
Speed restriction

Activate planned temporary speed restriction

A temporary speed restriction has been planned in the signalling system.

To establish the temporary speed restriction to ensure that all supervised trains are supervised according to the temporary speed restriction, and updating the Signaller log.

PROCEDURE

Banedanmark has a procedure to ensure that the Signaller has access to an overview of all planned temporary speed restrictions within their area of responsibility. The list contains as a minimum the following information:

- Speed restriction ID
- applicable speed
- start and end location of the speed restriction (in kilometres)
- expected start and end timing
- reason for the speed restriction.

When the Maintainer wishes to activate a planned temporary speed restriction, the Maintainer must contact the Signaller and request activation. The request must contain the speed restriction ID.

When the Maintainer requests the activation of a planned temporary speed restriction, the Signaller must check that the requested speed restriction ID is shown on the overview of planned temporary speed restrictions.

Prior to activating the speed restriction, the Signaller must ensure that:

- No supervised trains are currently running in the area...
- the Driver of any unsupervised movement in the area is informed when the speed restriction is below 40 km/h ...and
- the Shunter of any shunting movement in the area is informed when the speed restriction is below 25 km/h.

When the listed conditions are met, the Signaller must activate the speed restriction in the signalling system.

When the temporary speed restriction is activated and indicated on the signalling control display, the Signaller must make an entry in the Signaller log. The entry must include the applicable speed, name of the person requesting the activation of the speed restriction and the location where the speed restriction applies.

If the Signaller knows that the planned temporary speed restriction is not needed, or is faulty, the Signaller must reject the request and inform the O&M coordinator.
Speed restriction

Deactivate temporary speed restriction

FORUDSÆTNING
There is no longer a need for a temporary speed restriction.

FORMÅL
To deactivate the temporary speed restriction and ensure the Signaller log is updated.

PROCEDURE

Maintainer
When there is no longer a need for a temporary speed restriction, the Maintainer must contact the Signaller and request the speed restriction de-activated.

The request must contain the speed restriction ID.

O&M coordinator
If the O&M coordinator is informed that a temporary speed restriction cannot be deactivated safely, the O&M coordinator must inform the Signaller.

Signaller
When the Maintainer requests the de-activation of a temporary speed restriction, the Signaller must assess if it can be de-activated safely.

If the speed restriction can be de-activated safely, the Signaller must de-activate the speed restriction in the signalling system.

If the speed restriction cannot be de-activated safely, the Signaller must reject the request and inform the O&M coordinator.
Speed restriction

Inform Driver of an unplanned speed restriction

FORUDSÆTNING

The Driver of an unsupervised train is instructed to stop due to an unplanned speed restriction below 40 km/h.

FORMÅL

To ensure that the unsupervised trains do not exceed the unplanned speed restriction speed.

PROCEDURE

Driver

The Driver must report to the Signaller when the train is at a standstill.

Signaller

When the Signaller is informed by the Driver that the train is at a standstill, the Signaller must revoke the current Written Order 01 and issue a new Written Order 01 containing the new speed restriction.
**Speed restriction**

**Handling an unplanned speed restriction**

The need for an unplanned speed restriction is reported to the Signaller.

Ensuring that trains do not run in the affected area at a speed greater than the unplanned speed restriction.

**PROCEDURE**

2704 **Signaller**

When the need for an **unplanned speed restriction** is reported by anyone other than the O&M coordinator, the Signaller must bring all movements in or into the affected area to a standstill.

2703 **Signaller**

When the need for an **unplanned speed restriction** is reported by the O&M coordinator, the Signaller must:

1. Revoke existing movement authorities in or into the area
2. disable automatic route setting into the affected area
3. bring relevant **unsupervised movements** to a standstill.

2705 **Signaller**

The Signaller must ensure that all supervised trains inside or entering the affected area remain at standstill until such time the speed restriction is implemented in the **signalling system**.

2706 **Signaller**

If the unplanned speed is lower than the maximum permitted speed for **unsupervised movements** the Signaller must ensure that all unsupervised movements inside or entering the affected area remain at standstill until the Drivers are informed about the **unplanned speed restriction** according to the procedure **Speed restriction - Inform Driver of an unplanned speed restriction**.

3786 **Signaller**

The Signaller must plan the speed restriction according to the procedure **Speed restriction - Implementing an unplanned speed restriction**.
Speed restriction

Implementing an unplanned speed restriction

FORUDSÆTNING

The need for an unplanned speed restriction has been reported to the Signaller.

FORMÅL

Ensuring that the unplanned speed restriction is planned as a temporary speed restriction and activated in the signalling system.

PROCEDURE

Signaller

When a need for an unplanned speed restriction is reported, the Signaller must obtain information about the reason for the speed restriction and the location that it must apply.

Signaller

If the speed restriction is reported by staff with relevant technical competences, the Signaller must plan the speed restriction in the signalling system according to the reported location and speed. The planning must include the reason for the speed restriction which will be shown on the Driver’s DMI as a text message.

If the speed restriction is reported by anyone other than staff with relevant technical competences, the Signaller must prepare the speed restriction with a ceiling speed of 10 km/h, and an additional 200 metres either side of the reported location. The planning must include the reason for the speed restriction which will be shown on the DMI as a text message.

Signaller

When the speed restriction is planned, the Signaller must ensure that it is checked and approved by another person with competences as a Signaller.

The Signaller must then finally approve and activate the speed restriction.

Signaller

When the speed restriction is approved by the Signaller, the speed restriction is ready for activation according to the planned starting time.

Signaller

When the speed restriction is activated, the Signaller must ensure action is taken to restore the infrastructure according to procedure Infrastructure fault - Correcting infrastructure fault.
Speed restriction

Handling of an unplanned speed restriction in a transition area

The need for an unplanned speed restriction in a transition area has been reported to the Signaller.

Ensuring that the speed of the train does not exceed the speed restriction when passing the transition point.

PROCEDURE

Banedanmark has procedures to ensure that speed restrictions which occur in a transition area is always extended across the transition point to ensure that the speed of the train does not exceed the speed restriction when passing the transition point.

When the need for a speed restriction is reported between the “Start of ETCS-signalling” marker and the first ETCS stop marker, the Signaller must apply the procedure Speed restriction - Handling an unplanned speed restriction to ensure that no trains or vehicles exceed the speed restriction.

The Signaller must contact the level 0 or level ATC Signaller responsible for the area on the other side of the transition area and request that the speed restriction is also established in the neighbouring system.

The Signaller must then plan the speed restriction in the signalling system according to procedure Speed restriction - Implementing an unplanned speed restriction. The Signaller must plan the speed restriction to start at the “Start of ETCS-signalling” marker and end at least 50 meters after the opposite facing “Start of ATC-signalling” or “End of ETCS-signalling” marker.

Change per 2019-05-15:

When the need for a speed restriction is reported between the transition “Start point of ETCS-signalling” marker and the first ETCS stop marker, the Signaller must apply the procedure Speed restriction - Handling an unplanned speed restriction to ensure that no trains or vehicles exceed the speed restriction.

The Signaller must contact the level 0 or level ATC Signaller responsible for the area on the other side of the transition area and request that the speed restriction is also established in the neighbouring system.

The Signaller must then plan the speed restriction in the signalling system according to procedure Speed restriction - Implementing an unplanned speed restriction. The Signaller must plan the speed restriction to start at the “Start of ETCS-signalling” marker and end at least 50 meters after the opposite facing “Start of ATC-signalling” or “End of ETCS-signalling” marker.
When the need for a speed restriction is reported between the “Start of ATC-signalling” or “End of ETCS-signalling” marker and the first lineside signal, the Signaller must apply the procedure Speed restriction - Handling an unplanned speed restriction to ensure that no trains or vehicles exceed the speed restriction.

The Signaller must then plan the speed restriction in the signalling system according to procedure Speed restriction - Implementing an unplanned speed restriction. The Signaller must plan the speed restriction to start 50 metres before the “Start of ATC-signalling” or “End of ETCS-signalling” marker and end at the opposite facing “Start of ETCS-signalling” marker.

**Change per 2019-05-15:**

When the need for a speed restriction is reported between the transition “Start point of ATC-signalling” or “End of ETCS-signalling” marker and the first lineside signal, the Signaller must apply the procedure [Speed restriction - Handling an unplanned speed restriction] to ensure that no trains or vehicles exceed the speed restriction.

The Signaller must then plan the speed restriction in the signalling system according to procedure [Speed restriction - Implementing an unplanned speed restriction]. The Signaller must plan the speed restriction to start 50 metres before the “Start of ATC-signalling” or “End of ETCS-signalling” marker and end at the opposite facing “Start of ETCS-signalling” marker.

3818  Signaller

Before granting an authority to move past the last ETCS stop marker towards the transition point, the Signaller must inform the Driver that the speed restriction in the transition area is also valid past the transition point and to the first lineside signal.

The Signaller may omit informing the Driver when the level 0 or level ATC Signaller has confirmed that the speed restriction is managed from the transition point.

**Change per 2019-05-15:**

Before granting an authority to move past the last ETCS stop marker towards the transition point, the Signaller must inform the Driver that the speed restriction in the transition area is also valid past the transition point and to the first lineside signal.

The Signaller may omit informing the Driver when the level 0 or level ATC Signaller has confirmed that the speed restriction is managed from the transition point.
When the Driver is informed via the DMI, or on a written order, about a temporary speed restriction which is valid up to the transitions point, the Driver must assume that the speed restriction is also valid from the transition point to the first lineside signal, unless other information is received.

**Change per 2019-05-15:**

When the Driver is informed via the DMI, or on a written order, about a temporary speed restriction which is valid up to the transitions point, the Driver must assume that the speed restriction is also valid from the transition point to the first lineside signal, unless other information is received.
**Tunnel**

**Train triggers alarm from tunnel protection system**

A train exceeding the tunnel values has passed the tunnel protection system and triggered an alarm.

The train is stopped and examined before entering the tunnel to avoid causing any harm to humans, or damage to infrastructure or rolling stock.

**PROCEDURE**

**Infrastructure Manager**

Banedanmark has location specific descriptions defining the preferred inspection tracks and the stopping locations for trains triggering alarms.

**Driver, Signaller**

If a supervised train triggers an alarm, the movement authority will be emergency shortened to the location specified in the location specific descriptions.

**Signaller**

When receiving an alarm from the tunnel protection system the Signaller must:

- Inform the Driver why the train has been stopped
- provide the Driver with available useful information concerning the alarm
- instruct the Driver where to inspect the train
- inform the Network manager.

When the Driver is informed the Signaller may route the train into the inspection track.

**Railway Undertaking**

The Railway undertaking must have procedures in place for the Drivers describing when the train can resume operation after inspection.

**Driver**

When instructed by the Signaller, the Driver must inspect the train at the assigned inspection track. If the Driver cannot inspect the train safely, the Driver may request the Signaller to provide additional protection by applying the procedure Incidents - Signaller protected area requested by a railway competent person.

After inspection the Driver must inform the Signaller about if and how the train can continue operation.
Tunnel

Handling of a train with a defective train radio in a tunnel

FORUDSÆTNING

A train has a defective train radio. The train is either on approach to a tunnel, or already in the tunnel.

FORMÅL

To ensure that all trains passing through a tunnel can be contacted by the Signaller.

PROCEDURE

Infrastructure Manager

Banedanmark has location specific descriptions containing information about restrictions applying to specific tunnels, tunnel approach locations and information on when restrictions must change due to tunnel equipment maintenance.

Driver

If the Driver observes that the train radio has failed before passing the tunnel approach location the train must not enter the tunnel. The Driver must bring the train to a standstill and apply the procedure Train failure - Train and/or onboard failure during a mission.

Driver

If the Driver observes that the train radio has failed after passing the tunnel approach location, the Driver must inform the Signaller about which mobile phone number can be used to contact the Driver.

Signaller

If the Driver reports that the train radio has failed or the Signaller through other sources is informed about a failed radio, the Signaller must apply tunnel restrictions for that train to ensure the application of tunnel distance as far as practicable.
Incidents

Reporting incident

FORUDÆTNING
An incident considered being a threat to the operation of the railway or the safety of people is reported or detected.

FORMÅL
To ensure that the incident is reported and appropriate actions are taken.

PROCEDURE

Infrastructure Manager
Banedanmark has procedures describing how to handle reported incidents affecting the operation of the railway or the safety of people or infrastructure. This includes how to report and to whom.

All
When an incident is observed this must be reported to the Signaller immediately. This report has to include the name and contact information of the observer, location of the incident, what the incident is and any other observations or information that may be relevant.

Signaller
When the Signaller observes, is involved in or is informed of an incident, the incident must be reported according to the Banedanmark procedure for handling incidents.

Signaller
If the severity of the reported incident could escalate, the Signaller must attempt to prevent or reduce this by any available means.

Signaller
If the incident was caused by a possible Driver error, has affected the capability of the Driver or was caused by defective rolling stock, the Signaller must have permission from the Network manager prior to allowing the train or vehicle to continue.

Signaller
If the incident was caused by failure in the infrastructure or the infrastructure is damaged, the Signaller must obtain confirmation from the O&M coordinator that the infrastructure is safe to resume operations.
Incidents

Signaller protected area requested by a railway competent person

An unplanned need, not related to an emergency or infrastructure works, to allow a railway competent person short-term access to the track has occurred.

To set up safe conditions to protect the area requested.

PROCEDURE

The person identifying the need to have an area protected must contact the Signaller and request the protection.

The request must include name and telephone number (if possible) of the person requesting protection, location, area to be protected and description of situation.

When requested to protect an area the Signaller must assess the information to determine the area needed. The Signaller may decide to refuse the request.

The Signaller must have in mind that the person requesting the protection may have a limited local knowledge of the area in question.

The Signaller must take appropriate measures to safeguard the area requested. This may include making the necessary arrangements with the Shunting area manager.

When the area is protected, the Signaller must inform the person requesting the protection about the boundaries of the area.

The Signaller must ensure that an entry is made in the Signaller log detailing the signaller protected area.

The Signaller must only remove protection after receiving a report from the person who requested the protection, that the need for protection is no longer required.
Incidents

Signaller protected area requested by Emergency services

A need, identified by the Emergency services, to allow Emergency services access to the track has occurred.

To set up safe conditions to protect the area requested.

PROCEDURE

Banedanmark has procedures in place to direct all Emergency services communication to the Network manager, who will then distribute the information to the appropriate Signaller.

When the Signaller is requested by the Network manager to provide a protected area to allow Emergency services access to the track, the Signaller must take appropriate measures to safeguard the area requested.

The Signaller must have in mind that non railway competent persons are involved when assessing the area to be protected.

When the area is protected the Signaller must inform Network manager about the boundaries of the area.

The Signaller must ensure that an entry is made in the Signaller log detailing the signaller protected area.

The Signaller must only remove protection after receiving a report from the Network manager that the need for protection is no longer required.
Emergency

Impact with object and/or derailment

A train or a vehicle has had an impact with an object and/or a derailment severe enough to cause possible damage or threat to any train, vehicle, infrastructure or people.

To prevent the incident from worsening, require relevant help, investigate rolling stock and infrastructure for visible damage and to restore normal operation.

PROCEDURE

Driver

When a train or a vehicle has had an impact with an object and/or a derailment the Driver must do an immediate assessment of the severity of the situation. The Driver must establish if the incident presents any danger to other operations in the area.

If the incident presents a danger to other operations in the area or if the Driver is not able to assess if there is any danger to other operations the Driver must:

1. Emergency brake the train
2. immediately contact the Signaller using the railway emergency call function by applying the procedure Emergency - Handling railway emergency call.
3. Report any immediate danger to other operations in the area.

Railway Undertaking

The Railway undertaking must have procedures in place to handle the situation where the Driver believes that the train has struck a person.

Driver

If the Driver believes that the train has struck a person the Driver must follow relevant Railway undertaking procedures and report to the Signaller that the train has struck a person.

Signaller

When the Signaller is informed about a situation where a person is believed to have been struck and/or the train may have derailed, or other immediate danger to other operations in the area exists, the Signaller must immediately stop supervised trains in the relevant area. The Signaller must stop all other movements in the relevant area by applying the procedure Emergency - Stop trains and vehicles from entering hazardous area.

Driver

When the train involved in the impact is at standstill the Driver must expect the movement authority to be shortened and without exposing people to danger:

1. Attempt to identify the object involved in the impact
2. re-evaluate danger to other operations in the area
3. report further findings to the Signaller if any and an estimated time frame for investigating possible damages.

Railway Undertaking

The Railway undertaking must have procedures in place for the Drivers describing when an impact with an object requires assessment from a technical rolling stock specialist before the train can resume operation.

Driver

When the Driver has reported the findings to the Signaller the Driver must try to establish the possible damage the impact has caused on rolling stock and infrastructure without exposing people to danger.
If there is no visible damage to the infrastructure, and the train can resume normal operation, the Driver must inform the Signaller, and may then request a movement authority.

If the train can continue with restrictions applied and/or there is visible damage to the infrastructure, the Driver must inform the Signaller about the restrictions and/or the damage. When the Signaller has been informed, the Driver may request a movement authority.

If the train cannot be moved the Driver must inform the Signaller.

If any damage to the infrastructure has been detected or has been reported by the Driver the Signaller must apply the procedure Infrastructure fault - Handling report of infrastructure fault.

If the Driver requests a new movement authority with no information on restricted train capabilities, the Signaller may allow a new movement authority for the train.

If the Signaller is informed by the Driver that the train has restricted capabilities the Signaller must update the production plan according to the procedure Normal operation - Signaller handling changes to operation.

If the Signaller is informed by the Driver that the train is not to be moved the Signaller must apply the procedure Train failure - Assisting a disabled train.

If the Signaller needs additional information to assess the situation the Signaller may apply the procedure Normal operation - Observations while driving.
Emergency

Stop trains and vehicles from entering hazardous area

A train or vehicle is in, about to enter or about to traverse an area identified as hazardous.

FORUDSÆTNING

A train or vehicle is in, about to enter or about to traverse an area identified as hazardous.

FORMÅL

Reduce the risk of a serious incident by bringing trains and vehicles within or about to enter a hazardous area to a standstill.

PROCEDURE

Driver, Signaller

Emergency shortening of a movement authority immediately replaces the movement authority held by the train onboard with the new movement authority.

- If the train has already passed the new end of authority the train will enter TR-mode
- If the train runs at a speed above the intervention curve of the new movement authority an automatic brake application will occur.

Signaller

If any supervised trains have movement authorities within, entering or traversing the hazardous area the Signaller must protect supervised trains from entering or moving in the hazardous area by applying an emergency stop or emergency shortening any movement authorities to a location as far as possible preventing the train from entering the hazardous area.

The Signaller must ensure that any further setting of routes entering or traversing the hazardous area is prevented.

If one unsupervised train or vehicle has authority to move in or into the hazardous area the Signaller must use an emergency call to order the Driver to bring the train or vehicle to a standstill.

If more than one unsupervised train or vehicle has authority to move in or into the hazardous area the Signaller must use a group emergency call to order the Drivers to bring the train(s) and/or vehicle(s) to a standstill. Following the group call the Signaller must individually contact each Driver in the group to verify that the train(s) and/or vehicle(s) are at a standstill.

If there are railway lines running adjacent to the hazardous area on the Fjernbane infrastructure, the Signaller must ensure that the Signaller in charge of the adjacent line is informed that the hazardous area involves their line.

Signaller

If a shunting area is active within the hazardous area the Signaller must contact the Shunting area manager and order that all movements are brought to a standstill.

If shunting movements, on routes for shunting, are being performed within the hazardous area, the Signaller must contact the Shunter and order that the movement is brought to a standstill.

Shunting area manager

If ordered by the Signaller to bring all movements to a standstill, the Shunting area manager must immediately inform the Shunter.
If the Shunter is ordered by the Signaller or Shunting area manager to bring the shunting movement to a standstill, the Shunter must do so immediately.

If the Driver is ordered by the Signaller or Shunter to bring the train or vehicle to a standstill the Driver must do so immediately.

When all traffic in the hazardous area has been suspended, the Signaller must inform the Network manager.

The Signaller must ensure that traffic remain suspended until the Network manager reports that it is safe to resume traffic in the area.
Emergency

Call Emergency services

FORUDSÆTNING
An incident or other emergency requires Emergency services to be alerted.

FORMÅL
Alert Emergency services quickly and enable further coordination of the incident.

PROCEDURE

Driver
If the Driver requests Emergency services directly, and the train is transporting hazardous goods, the Driver must inform the Emergency services about class, UN-number and position in the train.

Driver
If the Driver has called the Emergency services or if the Driver is aware that the Emergency services have been requested by others relating to an incident on the train or during the journey, the Driver must inform the Signaller.

Signaller
If the Signaller requests Emergency services, for a train transporting hazardous goods, the Signaller must inform the Emergency services about class, UN-number and position in the train.

Signaller
The Signaller must inform the Network manager when aware that Emergency services have been requested in relation to an incident with a train.
Emergency

Evacuation of train

Remaining on the train is hazardous to people on the train and the train must be evacuated.

Safe evacuation from a disabled train or a train exposed to any kind of danger as a rescue or precautionary measure.

PROCEDURE

Railway Undertaking

The Railway undertaking must have procedures in place describing how and when to conduct an evacuation from all types of rolling stock.

Driver

When the Driver has identified that the train must be evacuated the Driver must inform the Signaller about the exact location of the train and request authorisation from the Signaller to ensure safe operational conditions for the evacuation.

Signaller

When the Signaller is informed that an evacuation of a train is to be performed, the Signaller must ensure that all other trains or vehicles vacate the area, or are brought to a standstill.

The Signaller must ensure that unsupervised trains and vehicles are not authorised to move in the area.

If the Signaller has knowledge of a broken overhead wire in the proximity of the “emergency” train the Signaller must apply the procedure Catenary isolation - Emergency catenary isolation.

Banedanmark has location specific descriptions describing how to conduct an evacuation in an area not easily accessible e.g. on a bridge or in a tunnel in their respective infrastructure areas.

The Signaller must carry out any relevant procedures included in location specific descriptions before authorising the evacuation of the train.

When the area is operationally safe for evacuation the Signaller may authorise the Driver to begin evacuation. The Signaller must inform the Network manager that evacuation has been authorised.

When the Driver is authorised by the Signaller the Driver must follow Railway Undertaking procedures and procedures in location specific descriptions to ensure safe evacuation of the train.

When the evacuation is completed and the track is clear of staff and passengers the Driver must inform the Signaller that the evacuation is completed.

When the Signaller is informed that the evacuation is completed and the track is clear of staff and passengers the Signaller must inform the Network manager and then allow operations to resume.
Emergency

Handling railway emergency call

A Driver is involved in or observes an incident or other emergency situation. A Driver has made a railway emergency call.

**Change per 2019-05-15:**
A Driver is involved in or observes an incident or other emergency situation. A Driver has made a railway emergency call.

Alert the Signaller and other relevant affected Drivers in the area and ensure that appropriate actions are taken.

**Change per 2019-05-15:**
Alert the Signaller and other relevant affected Drivers in the emergency area and ensure that appropriate actions are taken.

**PROCEDURE**

**Signaller**

When receiving a railway emergency call the Signaller must evaluate the report from the Driver and determine if the incident may be hazardous to other trains in the area.

The Signaller must apply the procedure Emergency - Stop trains and vehicles from entering hazardous area if the area is determined to be hazardous to other trains.

**Signaller**

The Signaller must alert the appropriate Emergency services in response to the reported emergency situation, as necessary.

**Change per 2019-05-15:**

The Signaller must alert the appropriate Emergency services in response to the reported emergency situation, as necessary.

**Signaller**

The Signaller must provide the details about the emergency to the Network manager.

**Signaller**

The Signaller must inform other parties about the emergency if required in location specific descriptions and follow any included special procedures.

**Signaller**

The Signaller must inform trains driving on sight because of the railway emergency call, when driving on sight is no longer required.
Change per 2019-05-15:

The Signaller must inform trains driving on sight because of the railway emergency call, when driving on sight is no longer required.
Emergency

Emergency brake activated by person

Emergency brake is activated by a passenger or train crew member. To examine the reason for the activation and how to proceed if possible.

PROCEDURE

If a train is braked without the Driver applying the brake, the Driver must:

- Inform the Signaller ...and
- provide an estimate for the time needed for examination ...and
- examine the reason for the brake application.

The Driver must expect any movement authority to be shortened immediately.

Banedanmark has defined non-stopping areas. Location specific descriptions will contain information on what the Driver must do in event of receiving an emergency brake application inside a non-stopping area.

The Railway Undertaking must have procedures for handling an emergency brake activation inside a non-stopping area. This must include enabling the Driver to override the emergency brake application when within a non-stopping area. The route book will indicate the location of non-stopping areas.

If the train is inside a non-stopping area, the Driver must override the emergency brake activation and react according to the location specific description.

When a train is marked with the failed train marking, the signalling system will attempt to shorten any movement authority associated with the train. The signalling system will avoid routing trains into gridlock around the failed train and will suggest possible production plan updates.

When the Signaller is informed of an unplanned standstill the Signaller must mark the train with the failed train marking, and use the information on an expected timeframe for fault investigation to update routing of trains to minimise impact to the timetable.

If the situation can be resolved with no restrictions, the Driver must inform the Signaller. When the Signaller has been informed, the Driver may request a movement authority.

If the situation can be resolved but requires restrictions, the Driver must inform the Signaller about the restrictions. When the Signaller has been informed, the Driver may request a movement authority.

If the situation requires the train to be kept at a standstill, the Driver must contact the Signaller.

If the Driver requests a new movement authority with no information on restricted train capabilities the Signaller must remove the marking of "failed train" to allow a new movement authority for the train.
If the Signaller is informed by the Driver that the train has restricted capabilities the Signaller must:

1. Update the timetable according to the procedure Normal operation - Signaller handling changes to operation ...and
2. remove the failed train marking to allow a new movement authority for the train.

If the Signaller is informed by the Driver that the train is not to be moved the Signaller must initiate the procedure Train failure - Assisting a disabled train.
Emergency

Bridge collision alarm

FORUDSÆTNING

A potential collision with a railway bridge has been reported by a competent person or detected by a collision detection system.

FORMÅL

To avoid any trains or vehicles being trapped on the bridge when a potential collision has been identified.

PROCEDURE

Infrastructure Manager

Banedanmark has agreements with the bridge supervising authorities for a bridge collision alarm to provide a minimum of 10 minutes warning before a predicted ship to bridge collision. The Signaller can receive the alarm generated via the SCADA system or by a verbal report.

Signaller

The "Bridge collision" function will stop all trains approaching the bridge and let trains already on the bridge continue.

Signaller

When the Signaller receives a bridge collision alarm the Signaller must:

1. Use the "Bridge collision" function to prevent supervised trains from approaching the bridge.
2. contact any Drivers stopped on the bridge to make immediate arrangements for their trains or vehicles to be moved to a safe location.
3. follow the location specific instructions for moving trains running on written orders.
4. contact any Shunter or PICOP with authority on the bridge.

Signaller

The Signaller must inform the Network manager that further traffic crossing the bridge is suspended due to a potential bridge collision.

Signaller

The Signaller may only resume traffic after receiving authorisation from the person responsible for the specific bridge.
Emergency situation on a bascule bridge

FORUDSÆTNING

A potentially hazardous situation on a bascule bridge is identified by the Bridge guard.

FORMÅL

To avoid any trains or vehicles entering the bridge when a potential hazardous situation has been identified.

PROCEDURE

Signaller, Bridge guard

An emergency stop button is available to the bridge guard. Pressing the emergency stop button will emergency stop all trains with a movement authority on, or on to, the bridge.

Bridge guard

When the Bridge guard identifies a potentially hazardous situation is emerging on the bridge, the Bridge guard must assess if the optimal solution is to stop the train immediately, or allow the train to pass the bridge before stopping operations.

If the Bridge guard assesses that the train has to be stopped immediately, the Bridge guard must press the emergency stop button, and immediately inform the Signaller about the situation.

If the Bridge guard assesses that the train has to pass the bridge before stopping operations, the Bridge guard must immediately inform the Signaller about the situation. The Bridge guard must press the emergency stop button as soon as the train has passed.

Signaller

If the Signaller is informed by the Bridge guard of a potential hazardous situation on the bridge, the Signaller must:

1. Apply the procedure Emergency - Stop trains and vehicles from entering hazardous area
2. contact any PICOP with authority on the bridge.

Signaller

The Signaller must inform the Network manager that further traffic crossing the bascule bridge is suspended due to a potentially hazardous situation.

Bridge guard

The Bridge guard must inform the Signaller when the potentially hazardous situation is resolved and the bridge has not been damaged.

Signaller

If the potential hazardous situation is resolved and the bridge has not been damaged, the Signaller may resume traffic when confirmation from the Bridge guard is received. The Signaller must inform the Network manager that traffic has resumed.

If the bridge has been damaged the Signaller may only resume traffic after receiving authorisation from the person responsible for the bridge.
Infrastructure fault

Handling report of infrastructure fault

FORUDSÆTNING
A fault or error in the infrastructure is detected by an observer or the signalling system.

FORMÅL
To quickly process faults or errors and identify the problem to avoid further damages and/or accidents.

PROCEDURE

O&M coordinator
When a fault report is received, the O&M coordinator must ensure the fault or error is logged in the signalling system. The O&M coordinator must, in coordination with the Signaller, decide upon the most appropriate response to the reported fault or error.

Signaller
If the Signaller assesses the situation as hazardous, the Signaller must use all possible means to stop all movements from entering the hazardous area by initiating the procedure Emergency - Stop trains and vehicles from entering hazardous area.

If a fault report is received from sources other than the O&M coordinator, the Signaller must inform and discuss the implications with the O&M coordinator. If the reported fault concerns the catenary system, the Signaller must inform the Catenary manager.

O&M coordinator
If the fault or error demands an unplanned speed restriction, the O&M coordinator must initiate the procedure Speed restriction - Implementing an unplanned speed restriction.

If the fault or error results in changes to driving conditions, the O&M coordinator must initiate the procedure Infrastructure fault - Changes in driving conditions.

O&M coordinator
The O&M coordinator must contact the maintainer to plan appropriate corrective actions.
**Infrastructure fault**

**Correcting infrastructure fault**

The O&M coordinator has called in a Maintainer for corrective maintenance. The Maintainer has arrived at the site of the reported fault and is ready to commence fault correction.

**FORUDSÆTNING**

Correct faults without affecting the safety of trains.

**PROCEDURE**

**Maintainer**

The Maintainer must assess if corrective maintenance can be done without affecting traffic or safety.

If the corrective maintenance can be performed without affecting traffic or safety, the Maintainer may commence correcting the fault.

If the corrective maintenance will affect traffic or safety, the Maintainer must contact the Signaller to obtain authorisation and arrange the course of work.

**Signaller**

If the Signaller is informed by a Maintainer that corrective maintenance will affect traffic or safety, the Signaller must take necessary actions to ensure the safety of train operations will not be affected.

The Signaller must consider arranging for the corrective maintenance activity to be performed at a different time, if performing the activity will cause significant disruption to rail traffic. The Signaller must coordinate the activity in cooperation with the O&M coordinator. The Signaller may consider diverting rail traffic to permit the maintenance activity to be undertaken safely.

The Signaller must record any restrictions to full operational use of the infrastructure in the Signaller log.

When the Signaller has ensured that the work can be performed without affecting the safety of train operations, the Signaller may authorise the Maintainer to commence corrective maintenance.

**Maintainer**

When the corrective maintenance is complete, the Maintainer must report to the O&M coordinator and the Signaller that work is complete and include any unresolved issues.

**O&M coordinator**

The O&M coordinator must handle any reports of unresolved issues by applying the procedure Infrastructure fault - Handling report of infrastructure fault.

**Signaller**

When informed by the Maintainer that the work is complete, the Signaller may revoke related restrictions in the signalling system. The Signaller must update the records in the Signaller log, including details of restrictions that have been revoked.
Infrastructure fault

Reset of axle counter section

The signalling system unexpectedly indicates an axle counter section as occupied or disturbed.

Reset of the axle counter section.

PROCEDURE

2413 Signaller

If the signalling system detects that an axle counter section is unexpectedly occupied, the signalling system will indicate the fault to the Signaller on the signalling control display.

2414 Signaller

When the signalling system indicates that an axle counter section is unexpectedly occupied, the Signaller must assess if the occupancy could be caused by rolling stock in the track.

2416 Signaller

When the Signaller has assessed the cause of the unexpected occupancy, and the track is, or is presumed to be, unoccupied, the Signaller must ensure that no other trains are authorised into the track section.

The Signaller may then reset the axle counter.

3585 Signaller

When the axle counter section is reset, the Signaller must instruct the Driver of the first train to pass over the axle counter section to be vigilant to obstructions and any possible conflicting movements for the route ahead including, as far as practicable, conflicting movements from the flank.

The Signaller must instruct the Driver to report back when the movement is completed.
Infrastructure fault

Handling of a trailed point

The Signaller needs to issue a Written Order 01 passing a trailed point. The point has been examined by a person competent to assess points and the point is clamped in the required lie. Any operational constraints have been logged in the Signaller log.

Setup conditions to allow the Signaller to authorise the Driver to pass a trailed point.

**PROCEDURE**

- **Signaller**
  The Signaller must assess if there are any constraints preventing the passing of the point by checking the Signaller log.

- **Signaller**
  If any constraint in the Signaller log prevents the passing of the point, the Signaller must inform the Driver that passing the point is not possible.

- **Signaller**
  If there are no constraints in the Signaller log preventing the passing of the point the Signaller may consider the point as safe to pass.
Infrastructure fault

Handling of an undetected point that is not trailed

The Signaller needs to issue a Written Order 01. A train is at a standstill and ready to pass a point in a situation where a point is not detected. The missing detection is not caused by trailing.

Ensure safe passing of point without detection. The missing detection is not caused by trailing.

PROCEDURE

Signaller

The Signaller must assess if the point is going to be passed in a trailing or a facing direction.

If the point is going to be passed in a trailing direction the Signaller must ensure the point is in the correct lie, e.g. by assessment from the Driver. When the point is confirmed to be in the correct lie, the Signaller must block the point.

When the point is in the correct lie, and the point is blocked, the Signaller may consider the point as safe to pass.

If the point is going to be passed in a facing direction the Signaller must ensure the point is in the correct lie, e.g. by assessment from the Driver.

When the facing point is in the correct lie, the Signaller must ensure the point is clamped.

The Signaller may order the Driver to clamp the point. When the facing point is clamped the Signaller must ensure the information is recorded in the Signaller log.

When the point is clamped the Signaller may consider the point as safe to pass.

Railway Undertaking

The Railway Undertaking must provide instructions to enable the Driver to clamp a point based on instructions provided by Banedanmark.

Driver

If specified to do so, the Driver must at any time be prepared to receive and carry out orders from the Signaller to clamp a point.

The Driver may request the Signaller to provide additional protection in order to carry out clamping of the point by initiating procedure Incidents - Signaller protected area requested by a railway competent person.
Infrastructure fault

Changes in driving conditions

A Maintainer has inspected an infrastructure fault and has identified a change in the condition of the infrastructure. This is reported to the O&M coordinator.

To update the condition of the infrastructure in the signalling system and adjust operations to the new capabilities.

PROCEDURE

If the O&M coordinator is informed about a change in the condition of the infrastructure, the O&M coordinator must evaluate the consequences of the change. The O&M coordinator must do so in close cooperation with the Signaller.

If the Signaller is informed about a change in the condition of the infrastructure, the Signaller must evaluate the consequences of the change and the necessary changes to operations. The Signaller must do so in close cooperation with the O&M coordinator.

The Signaller must inform the Network manager about the changes in driving conditions.

The O&M coordinator must initiate appropriate measures and register the changes in conditions in the infrastructure in the signalling system.
**Infrastructure work**

**Plan possession for corrective maintenance**

Corrective maintenance has been agreed with the O&M coordinator and a need for a possession has been identified.

Planning of possession for corrective maintenance and issuing of possession documentation.

**PROCEDURE**

Banedanmark has a procedure that ensures that persons with competences as a Signaller are always available in the traffic control centre to check and approve the Signaller’s planning of possessions for corrective maintenance.

The procedure ensures that the check and approval of the planning can be done in due time.

The PICOP must contact the Signaller and request a possession for corrective maintenance. The request must contain:

- A geographical location ...and
- a list of ETCS stop markers marking the boundaries of the requested possession ...and
- an estimate of the time required for the work.

The Signaller must use the signalling system to plan the possession including possession protection requirements to meet the request of the PICOP.

The Signaller must ensure that the planning of the possession is checked and approved by another person with competences as a Signaller.

When the planning of the possession is checked and approved, the signalling system will generate a unique possession ID number.

If the Signaller can plan a possession according to the PICOP request, the Signaller must supply the PICOP with the possession ID number and inform the PICOP about the timing of the possession.

If the Signaller is unable to plan a possession as requested, the Signaller must reject the request and inform the PICOP.
Infrastructure work

Request planned possession with handheld terminal

The PICOP has arrived at the site and is ready to initiate a planned possession.

Indicating that the PICOP is ready at the site, and determining if the possession can be established as planned.

PROCEDURE

The PICOP must use the handheld terminal to request the planned possession.

The signalling system can only start a possession if all elements of the possession are not used by a route or an overlap, or used by another active possession or temporary shunting area.

When the signalling system requests to establish a possession, the Signaller must assess if there are any conditions preventing the possession from being established as planned.

If the possession can be established as planned, the Signaller must accept the request from the signalling system.

If the possession cannot be established as planned, the Signaller must reject the request from the signalling system and contact the PICOP.
Infrastructure work

Establish possession with handheld terminal

The PICOP is at the possession site and has requested a planned possession using the handheld terminal. The possession request has been assessed and accepted by the Signaller.

Establish a planned possession.

PROCEDURE

Signaller

When the Signaller has accepted the possession request, the signalling system will commence the possession protection requirements and present the possession to the Signaller on the signalling control display and request the Signaller to confirm. The possession protection requirements are implemented once the Signaller has confirmed the possession.

Signaller

When the Signaller is presented with the possession on the signalling control display, the Signaller must check that the possession data indicated on the signalling control display is consistent with the possession planning.

If the possession data indicated on the signalling control display is consistent with the possession planning, the Signaller must confirm that the possession protection requirements can be implemented.

Signaller

If the possession data indicated on the signalling control display is NOT consistent with the possession planning, the Signaller must reject the possession and as far as possible plan a new possession in cooperation with the PICOP.

Signaller , PICOP

Once the Signaller has confirmed the possession and the protection requirements are implemented, the signalling system will request the PICOP to prove their location according to possession data. The possession cannot be established until the PICOPs location has been proven correctly.

PICOP

When requested by the signalling system, the PICOP must prove their location by scanning an RFID-tag at an ETCS stop marker, or other infrastructure object associated with the possession.

Signaller , PICOP

Scanning an ID-tag not associated with the possession will result in the PICOP receiving an error message on the handheld terminal.

PICOP

If the PICOP cannot prove their location correctly, the PICOP must inform the Signaller.

Signaller , PICOP

When the location of the PICOP is proven correctly, the signalling system will establish the possession and send a message to the handheld terminal confirming to the PICOP that the possession is established.

Signaller

The Signaller must ensure that establishing date and time, including possession data, is noted in the Signaller log.

PICOP

When the handheld terminal indicates that the possession is established, the PICOP must setup worksite protection.
Infrastructure work

Establish possession without handheld terminal

The PICOP has arrived at the site and is ready to initiate a planned possession. A handheld terminal is not available.

Indicating that the PICOP is ready at the site and, if possible, establishing the possession as planned.

PROCEDURE

When the PICOP is ready to initiate the planned possession in an interlocked area, the PICOP must contact the Signaller to request the planned possession. The request must contain:

- Possession ID number
- PICOP ID
- PICOP mobile phone number
- location in the infrastructure.

If the possession is outside the interlocked area and a Shunting area manager is present on site, the PICOP makes the arrangements with the Shunting area manager.

When the Signaller is contacted by a PICOP requesting a planned possession, the Signaller must assess if there are any conditions preventing the possession from being established as planned.

If the possession can be established as planned, the Signaller must manually request the possession in the signalling system.

If the possession cannot be established as planned, the Signaller must contact the PICOP and inform about the reason for the rejection.

The signalling system can only start a possession if all elements of the possession are not locked by a route, or by an overlap, or used by another established possession or a temporary shunting area.

When the Signaller is presented with the possession on the signalling control display, the Signaller must check that the possession data indicated on the signalling control display is consistent with the possession planning.

If the possession data indicated on the signalling control display is consistent with the possession planning, the Signaller must confirm that the possession protection requirements can be implemented.

If the possession data indicated on the signalling control display is NOT consistent with the possession planning, the Signaller must reject the possession and as far as possible plan a new possession in co-operation with the PICOP.

The possession is established when the Signaller has approved it.

The Signaller must ensure that establishing date and time, including possession data, is noted in the Signaller log.
When the possession approved, the Signaller must instruct the PICOP about the possession boundaries and timing arrangements. The Signaller must inform the PICOP that the possession is established and include the time of establishment.

When instructed by the Signaller that the possession is established, the PICOP must register the name of the Signaller as well as time and date of establishing the possession in the PICOP log. The PICOP must then setup worksite protection.
Establish possession in a transition area

The PICOP is ready to establish possessions on both sides of the transition point in the transition area.

Establishing of possessions in the transition area and ensuring that all relevant agreements are made with the Signallers on both sides of the transition point.

PROCEDURE

The Infrastructure manager must ensure that possessions in the transition area are planned and executed as individual possessions on both sides of the transition point with the same PICOP.

In addition, the Infrastructure manager must ensure that the PICOP is competent to establish possessions on both sides of the transition point.

The PICOP must apply the procedure Infrastructure work - Request planned possession with handheld terminal or Infrastructure work - Establish possession without handheld terminal to establish the possession in the level 2 area.

When receiving a request to establish a possession in a transition area, the Signaller must first contact the Signaller responsible for the area on the other side of the transition point and request that signalling to the transition area is prevented.

The Signaller may then apply the procedure Infrastructure work - Request planned possession with handheld terminal or Infrastructure work - Establish possession without handheld terminal.

Only when possessions on both sides of the transition point are established and the worksite protection is placed the PICOP may authorise the work to commence.

The signalling system will only allow driving between the two possessions in the direction towards level 2 past the transition point provided that the onboard is in SH-mode and the Driver presses “Override” just prior to passing the transition point.

If the Driver does not press “Override” when passing the transition point, the onboard will change to TR-mode.

The PICOP may allow driving between the two possessions past the transition point without further authorisation from the Signaller.

If the onboard changes to TR-mode when driving past the transition point towards level 2 in a possession, the Driver must acknowledge the change to TR-mode and select “Shunting” on the DMI to request SH-mode from the signalling system.
Infrastructure work

Possession handover with handheld terminal

A relieving PICOP is ready to take over responsibility of an active possession. Both the responsible PICOP and the relieving PICOP have handheld terminals available.

Handing over responsibility of a possession between two PICOPs, and ensuring data is transferred to the signalling system.

PROCEDURE

Before responsibility of a possession can be handed over, the relieving PICOP must obtain all relevant information about the possession from the responsible PICOP.

Using the handheld terminal, the relieving PICOP must select the unique possession ID number and request possession handover.

The handheld terminal allows the relieving PICOP to request a possession handover. The handheld terminal of the responsible PICOP will indicate the request and require an acknowledgement.

When presented with a possession handover request, the responsible PICOP must decide if it is appropriate and convenient for the handover to take place. Using the handheld terminal the PICOP must either accept or reject the request.

If the responsible PICOP accepts the possession handover request, the signalling system automatically updates the possession data in the Signaller log and sends out a message to both PICOPs confirming the change in responsibility.

If the responsible PICOP rejects the possession handover, a rejection message is sent to the handheld terminal of the relieving PICOP.

Once the relieving PICOP receives a confirmation message on the handheld terminal, responsibility for the possession is transferred and the relieving PICOP becomes the PICOP responsible for the possession.

If the relieving PICOP receives a rejection on the handover request the relieving PICOP must contact the responsible PICOP to negotiate conditions for handover.
Infrastructure work

Possession handover without handheld terminal

FORUDÆTNING

A relieving PICOP is ready to take over responsibility of an active possession. Either of the PICOPs, or both, are without a handheld terminal.

FORMÅL

Handing over responsibility of a possession between two PICOPs, and ensuring data is transferred to the signalling system.

PROCEDURE

PICOP

Before responsibility of a possession can be handed over, the relieving PICOP must obtain all relevant information about the possession from the responsible PICOP.

PICOP

The relieving PICOP must contact the Signaller and request the possession handover. If the possession is outside interlocked areas and a Shunting area manager is assigned to the area, the PICOP informs the Shunting area manager.

The request must contain:

- Possession ID number
- relieving PICOP ID
- relieving PICOP mobile phone number.

Signaller

A PICOP will contact the Signaller to request a possession handover. The Signaller must then obtain and record the PICOP ID and mobile phone number of the new PICOP into the possession data in the signalling system.

Signaller

When the data in the signalling system is updated, the Signaller must inform the relieving PICOP that responsibility for the possession is effectively transferred. The message must include date and time of handover.

PICOP

The relieving PICOP must assume responsibility of the possession when the Signaller has confirmed that details have been recorded. The relieving PICOP must contact the PICOP to confirm the transfer in responsibility.

Both PICOP’s must register the date and time of possession handover in their PICOP logs.

PICOP

Where the PICOP has a handheld terminal available, the PICOP must use it to request the control of the possession be transferred from the signalling system to the handheld terminal.
Infrastructure work

End possession with handheld terminal

Infrastructure work has been completed and information about any restrictions in the use of the infrastructure is passed on to the Signaller. The PICOP has a handheld terminal available.

Ensure that the responsibility of the infrastructure is handed back to the Signaller.

PROCEDURE

When the PICOP has determined that the infrastructure is cleared and safe to be handed back into operations, according to the rules for working in infrastructure, the PICOP must remove the worksite protection.

The PICOP must end a possession by selecting the appropriate possession ID number on the handheld terminal and scan an RFID-tag at an ETCS stop marker, or other infrastructure object associated with the possession.

Scanning a tag not associated with the possession will result in an error message.

When a request to end a possession is received from the handheld terminal, the signalling system will run a diagnostics test of the infrastructure and log any detected errors.

The signalling system will present any detected errors to the Signaller and request the Signaller to accept or reject to end the possession.

If the request to end the possession is accepted it will indicated on the handheld terminal.

When a request to end a possession is displayed on the signalling control display, the Signaller must decide if the possession can be ended as requested. The Signaller must either accept or reject the request.

When the handheld terminal indicates that the request to end the possession has been accepted the PICOP is relieved of responsibility for the infrastructure.

The Signaller must ensure an entry in the Signaller log when the possession is ended.

If an end of possession request is rejected due to detected infrastructure errors the PICOP must contact the Signaller to negotiate conditions for ending the possession.
**Infrastructure work**

**End possession without handheld terminal**

**FORUDSÆTNING**
Infrastructure work has been completed and information about any restrictions in the use of the infrastructure is passed on to the Signaller. The PICOP does not have a handheld terminal available.

**FORMÅL**
Ensure that the responsibility of the infrastructure is handed back to the Signaller.

**PROCEDURE**

**PICOP**
When the PICOP has determined that the infrastructure is cleared and safe to be handed back into operations, according to the rules for working in infrastructure, the PICOP must remove the worksite protection.

**PICOP**
The PICOP must end a possession or a part of a possession by contacting the Signaller and report:

- **PICOP ID** ...and
- **possession ID number** of the possession that can be ended ...and
- that the area is safe for operations.

If the possession is outside interlocked areas and a Shunting area manager is assigned to the area, the PICOP informs the Shunting area manager.

**Signaller**
When the Signaller receives a request to end a possession from a PICOP the Signaller must:

1. Verify that the PICOP is registered as responsible for the possession ...and
2. enter the request into the signalling system.

**PICOP, Signaller**
The signalling system will run a diagnostics test of the infrastructure handed back by the Signaller and log any detected errors. If any error is detected the signalling system will request the Signaller for an acknowledgement.

If no error is detected the request to end a possession is automatically accepted.

**Signaller**
The Signaller must evaluate reported errors from the signalling system and either reject or accept the request to end a possession.

**Signaller**
If the request to end the possession is rejected due to detected infrastructure errors the Signaller must instruct the PICOP to correct the error or negotiate conditions for ending the possession.

**Signaller**
When the request to end a possession is accepted the Signaller must inform the PICOP the time that the possession ended.

**PICOP**
When the PIOCP is informed by the Signaller of the time the possession ended the PICOP must enter the time into the PICOP log and then the PICOP is relieved of responsibility for the infrastructure.
Signaller

The Signaller must ensure an entry in the Signaller log when the possession is ended.
**Infrastructure work**

**End possession in a transition area**

The infrastructure work has finished and the PICOP is ready to end both possessions in a transition area.

Ensure that the responsibility for the infrastructure on both sides of the transition point is handed back to the Signallers.

**PROCEDURE**

**PICOP**

Before a possession in a transition area can be ended, the PICOP must ensure that both possessions are ready to be ended.

The PICOP may then apply the procedure Infrastructure work - End possession with handheld terminal or Infrastructure work - End possession without handheld terminal to end the possession in the level 2 area.

**Signaller**

When the PICOP requests to end a possession in a transition area, the Signaller must apply the procedure Infrastructure work - End possession with handheld terminal or Infrastructure work - End possession without handheld terminal.

**PICOP**

When both possessions in the transition area are ended, the PICOP must report to the Signaller responsible for the part of the infrastructure where the possession was ended last, that both possessions are ended, and the track is cleared.

**Signaller**

When the PICOP reports that both possessions in the transition area are ended, the Signaller must contact the Signaller on the other side of the transition point and agree the conditions for resuming operation.
Catenary isolation

Plan catenary isolation

A need for a catenary isolation has been identified.

To ensure that the catenary isolation is properly planned in respect to the timetable. If needed all agreements with Railway Undertakings are made to make a changed timetable.

PROCEDURE

Banedanmark has procedures in place describing cooperation and responsibility of the roles involved in producing a planned catenary isolation.

Minimum operational requirements of a catenary isolation (the catenary department might have further requirements):
- Unique ID#
- Time
- Affected catenary section(s)

Banedanmark has a procedure describing that the Banedanmark operations planner must evaluate all requests for a catenary isolation and record the result of the evaluation.

Operational details of the catenary isolation request are loaded into the signalling system and the signalling system is used to do this evaluation.

Banedanmark has a procedure describing that the Banedanmark operations planner must evaluate a catenary isolation request using the signalling system and reject a catenary isolation request if the proposed catenary isolation cannot be accommodated within the timetable or the possible changes to the timetable.

Banedanmark has a procedure describing that the Banedanmark operations planner must notify the Catenary manager when a planned catenary isolation has been accepted and registered with the signalling system. The catenary isolation report is issued by the catenary management system with a unique ID-number.
Catenary isolation

Request planned catenary isolation

A catenary isolation has been planned.

The Catenary manager requests permission from the Signaller to set up a planned catenary isolation and the Signaller performs an operational assessment.

PROCEDURE

Banedanmark has a procedure in place describing the checks needed to ensure that any work associated with planned catenary isolation are safely carried out.

The Catenary manager must obtain permission from the Signaller before isolating catenary.

When the Signaller is requested by the Catenary manager to authorise a planned Catenary isolation, the Signaller must use the production plan to assess if the timing of the catenary isolation can be carried out as planned.

If the Signaller wants to use an alternative timing for the catenary isolation the Signaller must plan and coordinate the update in cooperation with the Catenary manager.

If the Signaller chooses to reject a request for a Catenary isolation the Signaller must inform the Catenary manager.
Catenary isolation

Establish planned catenary isolation

FORUDSÆTNING

A planned catenary isolation has been requested by the Catenary manager and the Signaller has assessed that the request is operationally acceptable.

FORMÅL

To establish a planned catenary isolation and provide technical protection in the signalling system.

PROCEDURE

Signaller

The signalling system will present information on the planned catenary isolation to the Signaller and request Signaller approval.

Signaller

The Signaller must ensure that there are no electrically powered traction units approaching or running within the area where catenary isolation is requested.

Signaller

The Signaller may accept and acknowledge the request for the catenary isolation if no electrically powered traction units will be affected.

Signaller

If electrically powered traction units will be affected by the caterary isolation, the Signaller must contact the Railway Undertaking to request that affected trains are closed down and pantographs are lowered as appropriate.

Railway Undertaking

The Railway Undertaking has procedures ensuring lowering and reporting on lowered pantographs when requested.

Signaller

When confirmation from the Railway Undertaking is received that electrically powered traction units in the affected area are closed down and pantographs are lowered the Signaller may accept and acknowledge the request for a Catenary isolation. The Signaller must record the request in the Signaller log.

Signaller

The acceptance entered by the Signaller is compared to other dependencies in the signalling system and:

- The signalling system provides electric traction unit restriction for the relevant sections and indicates this to the Signaller ...
or
- the signalling system rejects the request.

Signaller

When the signalling system indicates that electric traction unit restriction has been provided, the Signaller may authorise the Catenary manager to isolate the power.

The Signaller must then ensure that the catenary isolation is noted in the Signaller log.

Infrastructure Manager

The FKI contains instructions ensuring the safe isolation of catenary, and instructions ensuring the safety of work crews, including catenary worksite protection.

Catenary manager

When the Catenary manager receives authorisation from the Signaller the Catenary manager may isolate the power to the catenary sections specified in the agreed catenary isolation plan.
Catenary isolation

Electrical traction unit in earthed area

An electrical traction unit has entered into an earthed area.

Ensuring that all earthing arrangements are checked and fit for purpose before work continues.

PROCEDURE

Signaller

If an electrical traction unit has entered into an earthed area, the Signaller must immediately inform the PICOP and the Catenary manager about the incident.

PICOSS

When the PICOSS is informed that an electrical traction unit has entered into an earthed area, the PICOSS must ensure that all work is stopped immediately.

The PICOSS must ensure that the work is not continued until the Catenary manager has reported that it is safe to do so.

Catenary manager

When the Catenary manager is informed that an electrical traction unit has entered into an earthed area, the Catenary manager must instruct the Catenary field leader to check all earthing arrangements in the isolated area and report back.

Catenary manager

When the Catenary field leader has reported that all earthing arrangements are checked and found fit for purpose, the Catenary manager must inform the Signaller that work can continue.
Catenary isolation

End catenary isolation

The work task taking place under catenary isolation has ended.

To safely restore electrical power to the isolated section.

PROCEDURE

The FKI contains instructions describing how and when electrical power can be safely restored to isolated catenary sections.

The Catenary manager may restore electrical power to an isolated catenary section when work has ended and it is safe to do so. The Catenary manager must inform the Signaller when electrical power has been restored.

When the Signaller is informed that electrical power has been restored, the Signaller must inform any Railway Undertaking with electrically powered units affected by the isolation that the catenary isolation has ended.

When the Catenary manager confirms that the catenary isolation has ended, the Signaller may remove the catenary isolation protection.

The Signaller must ensure that the end of the catenary isolation is noted in the Signaller log.

When the catenary isolation has ended the Signaller may resume normal operation with electric units.
Catenary isolation

Emergency catenary isolation

FORUDÆTNING
A fault or other need for an immediate catenary isolation has been detected by the catenary system or an observer.

FORMÅL
Perform an emergency catenary isolation to reduce likelihood of injury to people, or damage to trains, vehicles or infrastructure.

PROCEDURE

Catenary manager
When a fault or a malfunction has been detected in the catenary system the Catenary manager must ensure that the catenary management system has isolated the affected section automatically.

The Catenary manager must inform the Signaller.

Catenary manager
When a fault has been detected by an observer and reported to the Catenary manager, the Catenary manager must assess the situation to decide if an emergency catenary isolation is needed.

If an emergency catenary isolation is needed the Catenary manager must ensure that the affected section is isolated manually.

The Catenary manager must inform the Signaller.

Signaller
If an emergency catenary isolation has been performed in a catenary section the signalling system will automatically impose electric traction unit restriction for the affected area.

The emergency catenary isolation will be indicated to the Signaller on the signalling control display.

Signaller
When the Signaller has received information about an emergency isolation in a specific catenary section, the Signaller must:

1. Ensure that all movement authorities issued to the affected area are revoked
2. revoke all written orders approaching or within the affected area
3. ensure that no written order’s will be issued into or within the affected area
4. ensure shunting movements in the affected area are stopped and relevant PICOPs and/or Shunting area managers are instructed about the situation
5. contact relevant Railway Undertakings and request that affected electrical units in the area are closed down, and pantographs are lowered.
Catenary isolation

Emergency catenary isolation requested by Emergency services

An emergency catenary isolation has been requested by the Emergency services via the Network manager.

Ensure safe working conditions for the Emergency services.

PROCEDURE

Infrastructure Manager

Banedanmark has procedures in place to direct all Emergency services communication to the Network manager, who will then distribute the information to the appropriate Signaller.

Banedanmark defines in the FKI procedures allowing specially trained Emergency services personnel to setup earthing arrangements in order to speed up fire-fighting and rescue actions upon receiving confirmation that all movements are at a standstill and the power is shut-off.

Signaller

When requested by the Network manager to setup an emergency catenary isolation the Signaller must:

1. Ensure that all movements in the requested area are brought to a standstill, and that all movements approaching the requested area are prevented from entering.
2. Request an emergency catenary isolation from the Catenary manager.

Catenary manager

When requested by the Signaller to perform an emergency catenary isolation the Catenary manager must ensure that power is isolated in the requested catenary sections and confirm this to the Signaller.

Signaller

When the Catenary manager confirms that the emergency catenary isolation has been established the requested catenary sections, the Signaller must inform the Emergency services via the Network manager that all movements are at a standstill, and the emergency catenary isolation is established.
Catenary isolation

End emergency catenary isolation

FORUDSÆTNING
An emergency catenary isolation has been established. The Catenary field leader has arrived on the scene.

FORMÅL
To safely initiate the end of an emergency catenary isolation.

PROCEDURE

Infrastructure Manager
Banedanmark defines procedures in FKI to be followed by the Catenary field leader when removing additional earthing equipment set up by Emergency services as well as standard earthing protection.

Infrastructure Manager
Banedanmark has procedures describing communication between Emergency services and the Network manager and Catenary manager.

The Emergency services informs the Network manager when an emergency catenary isolation is no longer needed.

The Network manager informs the Catenary manager when an emergency catenary isolation is no longer needed.

Catenary manager
If an emergency catenary isolation was requested by Emergency services, the Catenary Manger must be instructed by the Network manager that the isolation is no longer needed, before ending the emergency isolation.

Catenary manager
When the emergency catenary isolation is no longer needed, the Catenary Manger must initiate the procedure Catenary isolation - End catenary isolation.
Train failure

Train and/or onboard failure during a mission

FORUDSÆTNING

A train and/or onboard failure has been detected by the Driver.

Informing the Signaller of the failure and update of the production plan to incorporate failure related changes.

PROCEDURE

The Railway Undertaking must have procedures, for handling train and/or onboard failures, enabling Drivers to:

- Bring trains back into service including any necessary restriction on train capabilities,
- determine if the train is not to be moved.
- determine need to isolate the onboard.

Driver

When at standstill the Driver must inform the Signaller of expected timeframe for failure investigation/attempt at failure correction. The Driver must expect any movement authority to be shortened immediately.

Driver

If the investigation of the failure requires the Driver to leave the cab, the Driver may request the Signaller to provide additional protection by applying the procedure Incidents - Signaller protected area requested by a railway competent person.

Signaller

When a train is marked with the failed train marking the signalling system will attempt to shorten any movement authority associated with the train. The signalling system will avoid routing trains into gridlock around the failed train and will suggest possible production plan updates.

Signaller

When the Signaller is informed of an unplanned standstill the Signaller must mark the train with the failed train marking, and ensure that the route associated to the failed train is released.

The Signaller must use the information on an expected timeframe for fault investigation to update routing of trains to minimise impact to the timetable.

Driver

The Driver must examine the train to determine the failure.

If the failure can be resolved with no restrictions the Driver must inform the Signaller.

If the failure can be resolved but restrictions must be applied, the Driver must inform the Signaller about the restrictions.

If the failure can only be resolved by the Driver isolating the onboard the Driver must inform the Signaller before isolating.

If the train cannot be moved, the Driver must inform the Signaller.
If the Driver during the investigation needs to inspect the loading of a wagon, the Driver must ensure that:

- The inspection can be done without violating the protective distance
  ...and
- no part of the wagon or its load has come into contact with the catenary system

If the conditions listed above cannot be met, the Driver must inform the Signaller that the inspection of the load cannot be performed unless the Catenary manager has reported that the power is switched off, and that earthing arrangements has been put in place.

If the Driver requests a new movement authority with no information on restricted train capabilities the Signaller must remove the failed train marking to allow a new movement authority for the train.

If the Signaller is informed by the Driver that the train has restricted capabilities the Signaller must:

1. Update the timetable to incorporate and minimise the effect of the restricted capabilities according to the procedure Normal operation - Signaller handling changes to operation ...and
2. remove the failed train marking to allow a new movement authority for the train.

If the Signaller is informed by the Driver that the onboard is isolated the Signaller must initiate the procedure Train failure - Isolate onboard.

If the Signaller is informed by the Driver that the train is not to be moved the Signaller must initiate the procedure Train failure - Assisting a disabled train.
Train failure

Isolate onboard

A failure in the onboard requires the onboard to be isolated to allow the train to be moved. The Driver has informed the Signaller that the onboard will be isolated.

To allow the train to be moved with the onboard isolated.

PROCEDURE

Signaller

When the Signaller is informed by the Driver that the onboard needs to be isolated the Signaller must make an entry into the Signaller log and assess if the train has to be moved.

If passengers are trapped on the train the Signaller may follow the procedure Degraded operation - Authorised passing of the end of authority to route the train into the nearest convenient platform to disembark the passengers.

If the train is at a standstill at a location where traffic operation is impeded the Signaller may follow the procedure Degraded operation - Authorised Passing of the end of authority to route the train into a convenient location.

When the train has been moved to a location where it will not impede traffic operation or it is convenient to disembark passengers, the Signaller must:

1. Inform the Driver that the service of the train has ended ...
2. initiate the procedure Train Failure - Assisting a disabled train.
Train failure

Assisting a disabled train

FORUDÆTNING

A train is disabled. The Driver has determined that the train cannot be moved.

FORMÅL

To assist the disabled train either by repairing it on site or moving it by an assisting train.

PROCEDURE

Driver

The Driver must inform the Signaller of:

- Location of train ...and
- relevant description of problem ...and
- kind of help needed.

Signaller

The Signaller must pass information received from the Driver on to the Network manager.

Infrastructure Manager

Banedanmark has descriptions defining how the Network manager can decide between to send a maintainer to repair the train on site or to send an assisting train.

If the decision is to send an assisting train, the Network manager initiates that an existing timetable is changed or an extra train is announced.

Signaller

The Signaller must ensure that the Driver on the disabled train is informed that an assisting train is approaching and from which direction.

Before setting a route to a track section where a disabled train is located, the Signaller must ensure that the Driver of the assisting train is informed that the train is entering an occupied section.

Signaller

The Signaller must initiate the procedure Normal operation - Planned joining.
Train failure

Prepare an assisting train after joining

FORUDSÆTNING
An assisting train has been coupled to a stationary disabled train.

FORMÅL
To determine under which conditions the train can be moved.

PROCEDURE

Railway Undertaking
The Railway Undertaking must have procedures, for handling train failures, enabling Drivers to:

- Bring trains back into service including determining any necessary restrictions on train capabilities,
- determine need to isolate onboard
- determine train not to be moved.

The Railway Undertaking must have procedures describing how to coordinate with the Network manager and pass on the information regarding the failed train.

Driver
When the train is safe and fit for service, and a valid timetable is available, the Driver must apply the procedure Normal operation - Enter onboard train data.

Driver
If the train is not safe and fit for service the Driver must apply the procedure Train failure - Moving defective rolling stock.
Train failure

Moving defective rolling stock

Rolling stock cannot be made safe for normal operation, but has to be moved.

Moving defective rolling stock to a non interlocked area or depot with restrictions.

PROCEDURE

The Railway Undertaking must have procedures for inspecting and moving defective rolling stock. The procedure states how the rolling stock is prepared, the conditions for moving it and at what speed the defective rolling stock can be moved.

The procedure describes the communication to the Network manager.

Banedanmark has procedures to ensure the movements of defective rolling stock are planned in cooperation with the Railway Undertaking. The Signaller is informed about the movements, including the necessary safety precautions.

The Driver must inform the Signaller when the defective rolling stock is ready to be moved, and confirm the restrictions under which the defective rolling stock is to be moved.

When the Signaller receives confirmation that the defective rolling stock is ready to be moved the Signaller must:

1. Arrange with the Driver the establishment of a temporary shunting area and necessary safety precaution as planned by the Network manager
2. instruct the Driver about the shunting movement to be performed
3. ensure that no trains or vehicles have authority to move within the temporary shunting area.

When the temporary shunting area is set up and protected the Signaller may authorise the Driver to proceed.

When authorised to proceed by the Signaller the Driver may perform the shunting movement as instructed.

When the shunting movement has been completed, and the defective rolling stock is at a standstill, the Driver must ensure that the rolling stock is complete. The Driver must contact the Signaller and:

- Report the defective rolling stock is complete ...and
- report the shunting movement ended.

When the Driver reports the defective rolling stock complete and the shunting movement ended, the Signaller may end the temporary shunting area.
Weather conditions

Handling of wind restrictions

FORUDSÆTNING

Wind has risen above the specified level.

FORMÅL

Ensuring that all relevant wind restrictions described in the location specific description are implemented and respected.

PROCEDURE

Infrastructure Manager

Banedanmark has location specific descriptions defining at which wind speeds wind restrictions in a particular area are to be activated, and describes how an alarm is sent to the Signaller. Wind restrictions may be different from area to area and the relevant restriction is determined by the immediate wind speed.

Signaller

Temporary speed restrictions, with associated text messages, are predefined in the signalling system for areas with foreseeable high wind influence. These temporary speed restrictions can be quickly activated by the Signaller upon receiving an alarm.

Signaller

When the Signaller receives an alarm of high winds the Signaller must immediately implement wind restrictions in the signalling system according to the location specific description for the area concerned.

Before activating a wind restriction, the Signaller must take into account that some types of wind restrictions are valid for specific train types only.

When wind related restrictions are implemented the Signaller must inform the Network manager.
Weather conditions

Removal of wind restrictions

The speed of the wind is below the speed stated in location specific descriptions.

FORUDSÆTNING

Removal of wind related restriction when wind speed has dropped sustainably.

PROCEDURE

Banedanmark has location specific descriptions defining when wind restrictions can be removed and how the Signaller is informed.

Signaller

When the conditions in the location specific description are met the Signaller may remove wind restrictions.

Signaller

The Signaller must inform the Network manager when wind restrictions are removed.
Weather conditions

Snow clearing

A train is prepared for snow clearing operation with snow ploughs fitted front and rear.

Updating train data with snow clearing information.

PROCEDURE

Banedanmark has snow clearing guidelines describing how to carry out snow clearing.

To provide appropriate protection the Driver must update the onboard train data to reflect that the train has been fitted with snow ploughs according to the procedure Normal operation - Update onboard train data.

The Driver must contact the Signaller and report ready for snow clearing operation.

When the Driver reports ready to initiate snow clearing, the Signaller must ensure that no other trains are authorised into the track section behind the snow clearing train in order to allow the snow clearing train to change driving direction, if required.

If large snow drifts require the Driver to change driving direction in order to get a good run up, the Driver must inform the Signaller.

The Driver must close down the desk of the lead cab, proceed to the rear cab and apply the procedure Normal operation - Enter onboard train data.

When the Signaller is informed about the need for changing driving direction, the Signaller must ensure that a route is set in the opposite direction.

The Driver must report to the Signaller when the snow clearing has finished.

When the Signaller is informed that the Driver has finished snow clearing, the Signaller may activate automatic route setting for the area.
**Shunting**

**Prepare shunting movement**

A train or vehicle is to be moved as a shunting movement.

Ensure that shunting movements are only carried out with rolling stock that is safe for shunting movements and necessary instructions are provided.

**PROCEDURE**

**Railway Undertaking**

The Railway Undertaking must have procedures describing:

- Preparation of traction units prior to shunting movements ...and
- how checks are performed to meet the requirements to ensure rolling stock is safe for shunting movement ...and
- the safe coupling of rolling stock.

**Driver**

The Driver must ensure the traction unit is safe for shunting movement prior to engaging in shunting movements.

**Shunter**

The Shunter must plan the shunting movement to take place inside a permanent shunting area, a temporary shunting area, a possession or on a route for shunting.

The Shunter may request assistance from the Signaller when planning for a temporary shunting area or a route for shunting.

**Shunter**

The Shunter must coordinate all movements within a permanent shunting areas (if applicable), temporary shunting areas and possessions with the Shunting area manager.

**Signaller**

If requested by a Shunter the Signaller must provide assistance in planning a shunting movement, assessing the optimum use of a temporary shunting area or route for shunting.

**Shunter**

The Shunter must ensure that:

- Only rolling stock that meets Railway Undertaking requirements to be safe for shunting movement is added to the consist of a shunting movement ...and
- coupling of rolling stock is performed according to Railway Undertaking procedures.
The Shunter must instruct the Driver prior to the shunting movement to ensure the movement can be controlled safely within the area of control of the Shunter. The instruction must contain sufficient information for the Driver to recognise the boundary of the area appointed for the shunting movement.

If the shunting movement is to be controlled by use of a radio, the Shunter must instruct the Driver about which number to use for communication.

If the shunting movement is to be controlled by use of a radio without control tone functionality, or if the Shunter cannot safely perform the shunting tasks while using the control tone, the Shunter must inform the Driver that verbal control tone will be used instead.

If the shunting movement is performed without the use of radio, the Shunter must control the shunting movement using hand signals.
Shunting

Shunting on a route using a handheld terminal

A Shunter has identified the need for an immediate shunting movement with no intermediate stops, to take place outside of a shunting area. The movement cannot be controlled from the front cab. The Shunter has a handheld terminal available.

To enable a safe movement outside a shunting area without an active cab in front of the direction of travel.

PROCEDURE

Planned routes for shunting can be requested by a handheld terminal and will consist of a route that will be released behind the movement as the movement travels through the route.

Once the train is in SH-mode, the data communication is ended with the signalling system. Therefore, to receive new information the train must exit SH-mode to re-establish a communication session with the signalling system.

The Shunter must use the handheld terminal to request the planned route for shunting.

The signalling system will assess requests for routes for shunting for possible operational conflicts with other routes. The signalling system will request the Signaller to acknowledge, change or reject a proposed route for shunting before the route is automatically set.

If the Signaller is presented with a proposed route for shunting the Signaller must decide to:
- Accept the proposed route for shunting ...or
- manually update the timing of the proposed route for shunting ...or
- reject the route for shunting.

When a route for shunting is indicated as granted on the handheld terminal, the Shunter must instruct the Driver to select SH-mode, if the train is not already in SH-mode, and perform the shunting movement.

The Shunter must ensure the shunting movement:
- Is performed immediately ...and
- is run in the forward direction of the route for shunting only ...and
- concludes without intermediate stops ...and
- ends at the planned location.
The Shunter must ensure that all level crossings included in the route for shunting are activated and are protected, just prior to the passing. The Shunter must ensure that level crossings are deactivated immediately after passing the level crossing.

If a level crossing cannot be protected, and the cab is in the forward facing end of the movement, the Shunter must instruct the Driver to use sound signal “Warning” until the cab has cleared the level crossing.

If the cab is not in the forward facing end of the movement, the Shunter must stop the road traffic by using hand signal “Road traffic, stop”. When the hand signal is used, the Shunter must instruct the Driver not to use sound signal “Warning” during the passing of the level crossing.

When the shunting movement has reached the end location of the route for shunting, and the location is outside a possession or shunting area, the Shunter must instruct the Driver to exit SH-mode.

If a request for a route for shunting is rejected the Shunter may:

- Request the route at another time ...or
- request another route ...or
- contact the Signaller to plan an alternative solution.
Shunting on a route without using a handheld terminal

A Shunter has identified the need for an immediate shunting movement with no intermediate stops, to take place outside of a shunting area. The movement cannot be controlled from the front cab. No handheld terminal is available.

To enable a safe movement outside a shunting area without an active cab in front of the direction of travel.

PROCEDURE

Routes for shunting can be set by the Signaller and will consist of a route that will be released behind the movement as the movement travels through the route.

Once the train is in SH-mode, the data communication is ended with the signalling system. Therefore, to receive new information the train must exit SH-mode to re-establish a communication session with the signalling system.

The Shunter must contact the Signaller and request the route for shunting. The request for a route for shunting must contain the start and end location of the route.

If the route for shunting is to be used by a train the request must include the train running number. If no train running number is available the fixed traction unit number, of the unit from which the train is driven, is used. The Shunter must ensure the train is not in SH-mode when the route is requested.

The Signaller must assess the request for conflicts with other routes and either set the route for shunting or reject the request.

If the Signaller sets the route, the Signaller must verify that the route is indicated on the signalling control display and then inform the Shunter, that the route for shunting has been granted.

If the Signaller rejects the request for the route for shunting, the Signaller must contact the Shunter to inform them, that the route for shunting cannot be granted.

When the Signaller grants a route for shunting, the Shunter must instruct the Driver to select SH-mode, if the train is not already in SH-mode, and perform the shunting movement.

The Shunter must ensure the shunting movement:

- is performed immediately ...and
- is run in the forward direction of the route for shunting only ...and
- concludes without intermediate stops ...and
- ends at the planned location.
The Shunter must ensure that all level crossings included in the route for shunting are activated and is protected, just prior to the passing. The Shunter must ensure that level crossings are deactivated immediately after passing the level crossing.

If a level crossing cannot be protected, and the cab is in the forward facing end of the movement, the Shunter must instruct the Driver to use sound signal “Warning” until the cab has cleared the level crossing.

If the cab is not in the forward facing end of the movement, the Shunter must stop the road traffic by using hand signal “Road traffic, stop”. When the hand signal is used, the Shunter must instruct the Driver not to use sound signal “Warning” during the passing of the level crossing.

When the shunting movement has reached the end location of the route for shunting, and the location is outside a possession or shunting area, the Shunter must instruct the Driver to exit SH-mode.
Shunting

Shunting movement

A shunting movement is to be performed inside a possession or shunting area.

To perform a shunting movement inside a possession or shunting area.

PROCEDURE

Interlocked points inside possessions or temporary shunting areas are released for local control if not locked for protective purposes. The handheld terminal can be used to throw the lie of the point inside possessions or temporary shunting areas.

The lie of points is not indicated on the handheld terminal.

The Shunter must setup the conditions to allow the required shunting movement to be performed by ensuring:

- Points are in the correct lie for the movement ...and
- obstacles that may cause a hazardous situation are avoided ...and
- the shunting movement will not come into conflict with other shunting movements in the area ...and
- level crossings included in the shunting movement are activated via the local control box and protected.

If a level crossing cannot be protected, and the cab is in the forward facing end of the movement, the Shunter must instruct the Driver to use sound signal “Warning” until the cab has cleared the level crossing.

If the cab is not in the forward facing end of the movement, the Shunter must stop the road traffic by using hand signal “Road traffic, stop”. When the hand signal is used, the Shunter must instruct the Driver not to use sound signal “Warning” during the passing of the level crossing.

Throughout the shunting movement the Shunter must be located in a position from where as much of the shunting path can be observed, and as far as possible, continually ensure the conditions listed above are met.

When performing shunting movements in areas with public access the Shunter must ensure that yellow flashing light on the traction unit is activated if mounted.

When performing shunting movements in areas with public access in darkness or low visibility the Shunter must ensure that first and last vehicle is marked with yellow flashing light.

If the shunting movement is controlled by using a radio with control tone functionality, the Shunter must ensure that the control tone is activated at all times during the movement.

In case the shunting movement is controlled by using a radio without control tone functionality, the Shunter must use verbal control tone. The Shunter must use verbal control tone by transmitting the message “Continue” with a maximum of 10 second intervals when no other messages needs to be exchanged.
When the Shunter has setup the conditions for the required shunting movement, the Shunter must contact the Driver of the train to initiate the movement.

The Shunter must use the standard phrases or hand signals to instruct the Driver about the movement to take place.

The Shunter may be located in a position from where the shunting path cannot be observed, provided:

- The Driver is controlling the train from the leading cab for the direction of travel ...and
- the Driver is instructed about the shunting movement.

The instruction must include an unambiguous start and end location, and any relevant information related to the shunting movement.

When the Driver receives shunting instructions from the Shunter, the Driver must perform the movement as instructed.

Throughout the entire movement the Driver must as far as possible observe that:

- The lie of points matches the intended movement
- obstacles that may cause a hazardous situation are avoided
- the shunting movement will not come into conflict with other shunting movements in the area.

If a point is not in the correct lie for the intended movement, or there is potential for a hazardous situation to occur, the Driver must immediately bring the train to a standstill and contact the Shunter.

When performing a shunting movement by use of radio, the Driver must continuously check that the control tone or verbal control tone (message “Continue” is transmitted with a maximum of 10 second intervals) is audible.

If the control tone or verbal control tone cannot be heard, the Driver must bring the shunting movements to a standstill and inform the Shunter.

When the entire consist of rolling stock has cleared the level crossing, the Shunter must ensure the level crossing is deactivated.
Shunting

Start shunting from SB-mode

The Driver of a train in SB-mode inside a possession or shunting area has been instructed by a Shunter to select SH-mode.

To authorise the train in SB-mode to enter into SH-mode.

PROCEDURE

Driver

The Driver must press the “Shunting” button on the DMI to request SH-mode from the signalling system.

Driver, Signaller, Shunter

If the train is inside an active shunting area or possession, and the position of the train can be validated by the signalling system, the request to enter SH-mode will be accepted.

If the position of the train can be validated by the signalling system, but the train is outside an active shunting area or possession, or if the position of the train cannot be validated, the request to enter SH-mode will be refused. The text message “SH refused” will be indicated to the Driver on the DMI.

Driver

If the text message “SH refused” is displayed on the DMI, the Driver must inform the Shunter.

Shunter

If the Driver reports that the request to enter SH-mode has been refused by the signalling system, the Shunter must inform the Signaller.

Signaller

If the Signaller is informed by the Shunter that the request to enter SH-mode has been refused, the Signaller must assess if the reason for the refusal is because the position of the train cannot be validated by the signalling system.

If the reason for the refusal is that the position of the train cannot be validated, the Signaller must establish the location of the train in cooperation with the Shunter.

Signaller

If the location of the train is established within an active shunting area or possession, the Signaller must activate the special function which will allow the signalling system to accept the train’s next request to enter SH-mode. The Signaller must inform the Shunter that another press of the “Shunting” button will be necessary.

If the train is not located within an active shunting area or possession, the Signaller must inform the Shunter that the train is located in an area where shunting is not permitted.
Shunting

Exit SH-mode

A train has concluded shunting movements in a possession or shunting area.

To ensure that no trains remain in SH-mode once shunting is concluded.

PROCEDURE

The Shunter must inform the Driver of a train that shunting is concluded.

When shunting is concluded, the Driver must exit SH-mode and inform the Shunter.

When the Driver has confirmed exiting SH-mode, the Shunter must inform the Shunting area manager that the train under their control has completed the required shunting movements and has exited SH-mode.
Shunting

Leaving a possession or shunting area

A train has finished work within a possession or shunting area and is ready to shunt towards the exit ETCS stop marker.

To get the train to the exit ETCS stop marker of the area and ready to leave the area as a supervised movement.

PROCEDURE

Shunting area manager

Prior to allowing a train to drive to the exit ETCS stop marker of the area, the Shunting area manager must ensure that this is according to planned sequence or is agreed with the Signaller.

Shunter

The Shunter must come to an agreement with the Shunting area manager before a train can shunt to the exit ETCS stop marker of the area. In case no Shunting area manager is assigned, the agreement is made with the Signaller.

Driver

The Driver must drive as close as possible to the exit ETCS stop marker according to instructions received from the Shunter.

If the area is equipped with a “Stop at danger point” marker, the Driver must stop the train in front of the marker instead.

Driver

To leave the possession or shunting area the Driver must first press "Exit Shunting" if not in SB-mode. The Driver should only begin train awakening when the train has reached a position such that there are no obstacles between the front end of the train and the exit ETCS stop marker.
Shunting

Establish temporary shunting area with handheld terminal

The need for a temporary shunting area has been identified. The Shunting area manager has a handheld terminal available.

Establish a temporary shunting area and communicate the boundaries and timing of the area.

PROCEDURE

Shunting area manager

The Shunting area manager must use the handheld terminal to request a temporary shunting area. The request must contain an estimate of the time needed.

Requests for temporary shunting areas will be indicated on the signalling control display and will require the Signaller acceptance prior to the areas being established.

The signalling system can only activate a temporary shunting area if all elements of the area are not locked by a route, or by an overlap, or reserved by another established temporary shunting area or possession.

Signaller

When the Signaller is requested by the signalling system to accept the establishment of a temporary shunting area, the Signaller must ensure that no written order movements are authorised in the area.

The Signaller must then assess if the establishment of the area will affect any other traffic in the area. If no other traffic in the area is affected, the Signaller must accept the establishment of the temporary shunting area.

If other traffic in the area will be affected, the Signaller must use the signalling system to produce an alternative timing for establishing the area.

Shunting area manager

When the establishment of a temporary shunting area has been accepted by the Signaller this will be indicated on the handheld terminal and result in points within the temporary shunting area being released for local control by the handheld terminal.

Signaller

The Signaller must ensure an entry in the Signaller log when the temporary shunting area is established.

Shunting area manager

The Shunting area manager must assume responsibility for the temporary shunting area when the handheld terminal indicates that the requested temporary shunting area has been established.

Signaller

If the handheld terminal presents the Shunting area manager with a changed suggestion for the timing of the temporary shunting area, the Shunting area manager must assess the suggestion and either accept or reject the suggestion.

Signaller

If the suggested timing change of the temporary shunting area is rejected, the Signaller must either suggest a second change to the requested timing or reject the request.
If the handheld terminal indicates a rejection of the request for a temporary shunting area, the Shunting area manager may submit a new request or seek advice from the Signaller.
**Shunting**

**Establish temporary shunting area without handheld terminal**

3422

The need for a temporary shunting area has been identified. The Shunting area manager does not have a handheld terminal available.

3424

Establish a temporary shunting area and communicate the boundaries and timing of the area.

**PROCEDURE**

3426

The Shunting area manager must contact the Signaller and request the establishment of the temporary shunting area.

The request must contain:

- **Shunting area manager ID**
- **radio ID** and/or mobile phone number
- location in the infrastructure/predefined area ID
- estimation of the time needed.

3427

The signalling system can only activate a temporary shunting area if all elements of the area are not locked by a route, or by an overlap, or reserved by another established temporary shunting area or possession.

An established temporary shunting area will be indicated on the signalling control display.

3428

When the Signaller is requested by the Shunting area manager to establish a temporary shunting area, the Signaller must ensure that no written order movements are authorised in the area.

The Signaller must then assess if the establishment of the area will affect any other traffic in the area. If no other traffic in the area is affected, the Signaller must establish the temporary shunting area and inform the Shunting area manager about the timing of the area and log the details of the Shunting area manager in the signalling system.

If other traffic in the area will be affected, the Signaller must use the signalling system to produce an alternative timing for establishing the area and inform the Shunting area manager.

The Signaller must ensure an entry in the Signaller log when the temporary shunting area is established.

3429

The Shunting area manager must assume responsibility for the temporary shunting area when the Signaller confirms that the area has been established.

3430

If the Signaller suggests an alternative timing of the temporary shunting area, the Shunting area manager must assess the suggestion and either accept or reject.
Shunting

Handover of a shunting area

FORUDSÆTNING

A relieving Shunting area manager is ready to take over a shunting area from a responsible Shunting area manager.

FORMÅL

To ensure that the relevant information is given to the relieving Shunting area manager and responsibility for the shunting area is transferred.

PROCEDURE

Shunting area manager

The signalling system will always require a Shunting area manager to be responsible for a temporary shunting area. There can also be a Shunting area manager for a permanent shunting area. The signalling system will only allow one responsible Shunting area manager for each shunting area. A Shunting area manager can be responsible for more than one shunting area.

Shunting area manager

The relieving Shunting area manager must:

- Request relevant information from the responsible Shunting area manager,
- inform the Signaller of the handover of the shunting area ...and
- inform the Signaller about contact possibilities and if any, ID of handheld terminal.

Signaller

The signalling system cannot automatically update the information in the Signaller log when the responsibility of a shunting area is handed over. The handover and contact information of the new shunting area manager will require a manual update by the Signaller.

Signaller

When a Signaller is informed of handover of a shunting area, the Signaller must manually update the information in the signaller log. This update has to include:

- Name of the new Shunting area manager,
- contact possibilities to the new Shunting area manager ...and
- if any, ID of handheld terminal.
**Shunting**

**End temporary shunting area with handheld terminal**

All movements inside the temporary shunting area have ended or the Signaller needs the temporary shunting area ended. The Shunting area manager has a handheld terminal available.

Ensure that all trains have exited SH-mode and all moveable elements are detected, and then hand back control of the infrastructure to the Signaller.

**PROCEDURE**

**3436 Shunting area manager**

The agreed timing of an established temporary shunting area is displayed on the handheld terminal.

If a temporary shunting area is not ended within the agreed timing a message will be indicated on the handheld terminal and the signalling control display.

**3437 Shunting area manager**

The Shunting area manager must request the temporary shunting area to be ended at the agreed time, as far as possible.

**3438 Signaller**

If the temporary shunting area is not ended at the agreed time, the Signaller must:

- Contact the Shunting area manager and request the temporary shunting area ended...or
- agree to extend the duration of the temporary shunting area with the Shunting area manager.

**3439 Shunting area manager**

Before the Shunting area manager can request a temporary shunting area ended, the Shunting area manager must ensure that all trains inside the temporary shunting area have exited SH-mode and all moveable elements are set in the correct position.

**3440 Shunting area manager**

The Shunting area manager must request to end the temporary shunting area by selecting the appropriate temporary shunting area on the handheld terminal.

**3441 Signaller, Shunting area manager**

When the temporary shunting area is requested ended by a handheld terminal, the signalling system will end the temporary shunting area if no routes are set into the area, and all moveable elements are detected. The handheld terminal will display a confirmation when the temporary shunting area is ended.

When a temporary shunting area is ended this will be displayed on the signalling control display.

**3794 Signaller**

The Signaller must ensure an entry in the Signaller log when the temporary shunting area is ended.

**3442 Shunting area manager**

The Shunting area manager must observe confirmation that the signalling system has ended the temporary shunting area on the handheld terminal before leaving the area.
Shunting

End temporary shunting area without handheld terminal

All movements inside the temporary shunting area are concluded or the Signaller needs the temporary shunting area ended. The Shunting area manager does not have a handheld terminal available.

Ensure that all trains have exited SH-mode and all moveable elements are in a lockable position, and then hand back control of the infrastructure to the Signaller.

PROCEDURE

Signaller

If a temporary shunting area is not ended within the agreed timing a message will be indicated on the signalling control display.

Shunting area manager

The Shunting area manager must request the temporary shunting area ended at the agreed time as far as possible.

Signaller

If the temporary shunting area has not been ended at the agreed time, the Signaller must:

- Contact the Shunting area manager and request the temporary shunting area ended ...
or
- agree to extend the duration of the temporary shunting area with the Shunting area manager.

Shunting area manager

Before the Shunting area manager can request to end a temporary shunting area, the Shunting area manager must ensure that all trains inside the temporary shunting area have exited SH-mode and all moveable elements are in the correct lie.

Shunting area manager

The Shunting area manager must request to end a temporary shunting area by contacting the Signaller and report:

- Shunting area manager ID ...
and
- temporary shunting area ...
and
- a confirmation that all trains have exited SH-mode.

Signaller

When the Signaller receives a request to end a temporary shunting area from a Shunting area manager, the Signaller must:

1. Verify that the Shunting area manager is registered as responsible for the temporary shunting area ...
and
2. enter the request into the signalling system.

Signaller

When the temporary shunting area is requested ended by the Signaller, the signalling system will end the temporary shunting area if no routes are set into the area, and all moveable elements are detected.

When a temporary shunting area is ended this will be displayed on the signalling control display.
The Signaller must verify from indications on the signalling control display that the signalling system has ended the temporary shunting area.

The Signaller must ensure an entry in the Signaller log when the temporary shunting area is ended.

The Signaller must inform the Shunting area manager when the temporary shunting area is ended.

The Shunting area manager must await Signaller confirmation that the temporary shunting area is ended before leaving the area.
Communication

Introduction

It is of vital importance that communication between the user roles of railway operation ensures that the right people communicate and that the right understanding of messages are achieved. To avoid any confusion only necessary communication is allowed. Brevity is important, and message exchanges should be kept as clear and concise as possible.

Think before you initiate a message exchange; know what you want to say and if it is a lengthy message, write it down if necessary before initiating the message.

Language

All communication mandated by the Operational rules must be conducted in Danish. Messages must be short and unambiguous. The terminology of the Operational rules must be used and where standard phrases are available their use is mandatory.

Names, numbers and identifiers are never to be abbreviated.

Message classes

Safety messages

All messages containing content of relevance to railway safety are called safety messages. Safety messages are given in writing or verbally but do always follow the defined message structure.

The standard phraseology must be used for exchange of safety messages.

You must only act upon the content of any safety messages other than emergency messages once the correct reception of the message has been confirmed by the sender of the message.

In the event that more than one safety message is to be exchanged the safety messages must be completed and verified one by one.
Emergency messages

Emergency messages are safety messages. Emergency messages are intended to give urgent operational instructions that are directly linked to the safety of the railway. Emergency messages will lose their purpose of preventing or limiting an incident if delayed. Emergency messages are similar to safety messages but follow a shortened message structure to allow speedy transmission and application.

Due to their urgent and imperative nature emergency messages:

- May be sent or received while performing other operations,
- may skip the identification part of the message structure
- must be repeated at least once by the sender
- must be supplemented by further information as soon as possible.

Change per 2019-05-15:

Due to their urgent and imperative nature emergency messages:

- May be sent or received while performing other operations,
- may skip the identification part of the message structure
- must be repeated at least once
- must be supplemented by further information as soon as possible.

Written orders

Written orders are safety messages. Safety messages for which a written order form exists in the Book of Forms must be transmitted in the written order format.

When initiating an exchange of a safety message for which a written order form exists you must instruct the receiver about which written order form to use.

When you receive a safety message for which a written order form exists you must bring out the form as instructed and fill in the form using the information given by the sender of the message.

The written order form must be completed by the sender prior to transmitting the message so that the full text of the message can be sent in one single transmission.

All written orders carry a unique authorisation number and the written order is only valid when this number is included in the message. The authorisation number is controlled by the sender of the written order.

The Driver must only complete a written order when the train is at a standstill.

The Driver must request that information is repeated or elaborated if it is unclear or ambiguous.

To avoid confusion, the information required to be completed on the written order form should be communicated in the order in which it appears on the form.
Informative messages

Informative messages are not safety messages. Exchange of informative messages does not require the use of standard phrases.

Informative messages contain information of operational importance but have no relevance to railway safety. Informative messages do not have to follow the message structure but must still be clear and concise as to their content and meaning.

Message structure

The transmission of safety messages falls into 3 stages:

- Identification and request
- transmission of message
- termination of communication exchange.

Identification and request

When communicating you must make sure you are communicating to the right person. Before transmitting any safety message other than an emergency message the persons who are going to communicate must identify themselves. The identity of receiver and sender of safety messages must be clearly stated.

The valid possible identifications of receiver and sender of safety messages are:

- Name of TCC
- train running number
- name of Railway Undertaking
- user role and name.

The identification to be used if several valid identities exist, is the one that most clearly identifies the function, identity and context of the sender and receiver.

When you communicate any safety message other than emergency messages you must ensure that the identity of the person you are communicating with is clearly and unambiguously identified.

When you initiate a communication exchange you must always state the reason for the exchange before commencing transmission of the message. The reason must clearly identify if the communication is a safety message exchange.
Transmission of message

All safety messages must be transmitted by use of the standard terminology. The standard phrases may not always be adequate. In that case, use whatever words are necessary so your message can be understood.

When you receive a safety message other than an emergency message you must read-back the message by:

- Repeating all numbers and other identifiers in the message
- repeating the key points of the message
- identifying the receiver of the message.

As the sender of a safety message you must verify that the message has been received correctly by verifying a read-back of the message. You must always give an acknowledgement of conformity or non-conformity of the read-back.

If necessary the receiver and the sender must exchange questions and clarifications until both parties agree on the content of the safety message.

Safety messages transmitted by other means than train radio or phone always requires a return receipt to confirm the message has been read by the receiver. The return receipt must be issued by a person or validating system to guarantee the message has been read and not just delivered. An automatic return receipt of an e-mail or telefax cannot suffice as return receipt of a safety message.

Termination

When the communication exchange has been successfully completed or the exchange has to be put on hold this must be clearly communicated to both parties.

Use of radio and phone

When you receive a call from one of the users defined in the Operational rules you must as far as it is safe and practicable to do so answer the call immediately. When you receive a call you must always evaluate if the call can be answered without diverting your attention from other safety critical tasks.

Train radio

Safety messages between Signaller and Driver must take advantage of the train radio whenever available. Safety messages exchanged via radio must be exchanged verbally and never using any text capability of the radio.

Whenever a Driver becomes aware that a train radio has failed the Driver must inform the Signaller and provide the number of a mobile phone that the Driver can be reached on if available.
Emergency calls and other group calls

During emergency calls and other group calls Drivers not initiating the call are only to contribute to the communication if explicitly invited to do so by the Signaller or if the Driver possess information vital to reduce or avoid imminent danger.

Emergency calls and other group calls initiated by the Signaller must be repeated.

Mobile phone

Safety messages exchanged via mobile phone must be exchanged verbally and never using any text capability of the phone. The mobile phone is only to be used when no train radio is available.

The mobile phone number of a Driver can be requested from the Railway Undertaking via the Network manager.

If the Signaller is called using a mobile phone you must always inform the Signaller of your phone number and current location during the initial communication unless you know that the Signaller already has a record of this information.

The Signaller must record the phone number in the Signaller log against a train running number, possession, shunting area etc. as appropriate.

The Signaller is only to call using a mobile phone if a landline phone is not available.

Logging of communication

All communication must be expected to be logged and all voice communication recorded. The logs and recordings can be used for incident investigation and in anonymized form for education purposes without further notification.

The Signaller must record all safety messages in the Signaller log unless the information contained is already automatically recorded by the Signaller log or another automated system.

When communicating with a person not performing the role of a user within the Operational rules and the communication takes place on a device that is recorded the Signaller must inform the person of the conversation being recorded.

Relay

A Signaller receiving a safety message related to an area outside their area of control must relay the safety message to the Signaller controlling the area.

When a Signaller transfer the caller to the correct Signaller, the Signaller must inform the caller where the call is being transferred to so as not to introduce any further confusion.

Terminology
**Standard phrases**

Where a standard phrase is available you must use this for exchange of safety messages to promote understating of your message and to counter ambiguity.

<table>
<thead>
<tr>
<th>Phrase</th>
<th>Meaning</th>
<th>Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Train [TRN], this is [TCC name]&quot;</td>
<td>Signaller identification.</td>
<td>Signaller to Driver identification.</td>
</tr>
<tr>
<td>&quot;[TCC name], this is train [TRN]&quot;</td>
<td>Driver identification.</td>
<td>Driver to Signaller identification.</td>
</tr>
<tr>
<td>&quot;This is an emergency call&quot;</td>
<td>The message provides information which needs immediate action to prevent death, serious injury or damage.</td>
<td>Used to initiate an emergency message if Railway emergency call is not available.</td>
</tr>
<tr>
<td>&quot;This is a safety message&quot;</td>
<td>This message provides information of relevance to railway safety.</td>
<td>Used to initiate a safety message exchange.</td>
</tr>
<tr>
<td>&quot;Safety message follows&quot;</td>
<td>The exchange of a safety message is about to commence.</td>
<td>Used when a safety message trial other message exchange to clearly mark the beginning of a safety message.</td>
</tr>
<tr>
<td>&quot;This is an information message&quot;</td>
<td>This message provides operational information and shall not take priority.</td>
<td>Used to initiate an informational message exchange.</td>
</tr>
<tr>
<td>&quot;Over&quot;</td>
<td>Transmission ended expects other party to speak.</td>
<td>Used to transfer the opportunity to speak to the opposite party.</td>
</tr>
<tr>
<td>&quot;Out&quot;</td>
<td>Message has ended.</td>
<td>Used to signify that communication exchange has completed.</td>
</tr>
<tr>
<td>&quot;Wait&quot;</td>
<td>A temporary break in communication that does not break the connection.</td>
<td>Used to keep the other party waiting if break is temporary and does not break the connection.</td>
</tr>
<tr>
<td>&quot;Call again&quot;</td>
<td>Connection is going to be broken but will be resumed later on.</td>
<td>Used to break incomplete message exchange to be completed later.</td>
</tr>
<tr>
<td>&quot;Received&quot;</td>
<td>Message has been received.</td>
<td>Confirming that the sent message has been received.</td>
</tr>
<tr>
<td>&quot;Correct&quot;</td>
<td>Message has been read-back correctly.</td>
<td>Used by sender of message to confirm message has been read-back correctly.</td>
</tr>
<tr>
<td>CO.121</td>
<td>&quot;Error&quot;</td>
<td>Transmission error is discovered. Sender of message discovers error while transmitting: &quot;Error&quot; (= prepare new form ... / starting over). Or: Sender of message discovers error in read-back: &quot;Error&quot; (= I say again), followed by repeating the message.</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>CO.122</td>
<td>&quot;Speak slowly&quot;</td>
<td>Be particular of pronunciation and transmit message slowly. Used by the receiver of a message when communication conditions are such that information cannot be readily received.</td>
</tr>
<tr>
<td>CO.123</td>
<td>&quot;Spell out...&quot;</td>
<td>Spell out the requested name, number etc. by the use of the phonetic alphabet. Used in combination with &quot;say again&quot; to request clarification of a previous message.</td>
</tr>
<tr>
<td>CO.124</td>
<td>&quot;Say again&quot;</td>
<td>Ask the other party to repeat the current message from the top. Used by the receiver of a message to have the message repeated in the event of poor reception or misunderstanding.</td>
</tr>
<tr>
<td>CO.125</td>
<td>&quot;I say again&quot;</td>
<td>Current message is repeated from the top. Used by the sender of a message when communication conditions require a message to be repeated.</td>
</tr>
<tr>
<td>CO.126</td>
<td>&quot;Starting over&quot;</td>
<td>An error has been made, disregard message and receive again from the top. Used in combination with &quot;error&quot; when the sender discovers the error and will retransmit the correct message.</td>
</tr>
<tr>
<td>CO.127</td>
<td>&quot;Prepare procedure (WO number)&quot;</td>
<td>Get out written order form and get ready to receive instruction on completing the form. The Signaller initiates the exchange of written order.</td>
</tr>
<tr>
<td>CO.128</td>
<td>&quot;Prepare new form&quot;</td>
<td>Discard the current written order form and prepare to receive a new written order. Used in combination with &quot;error&quot; when the sender discovers the error and will retransmit the correct message.</td>
</tr>
<tr>
<td>CO.129</td>
<td>&quot;Cancel procedure (WO number)&quot;</td>
<td>Cancel the written order procedure underway. If the message is then to subsequently be resumed, the procedure shall be repeated from the start.</td>
</tr>
<tr>
<td>CO.130</td>
<td>&quot;Emergency stop all trains&quot;</td>
<td>Need to stop all trains. Signaller issue order to all trains in an area to emergency stop.</td>
</tr>
<tr>
<td>CO.131</td>
<td>&quot;Train (number) Emergency stop&quot;</td>
<td>Need to stop a particular train. Signaller issue order to a particular train to emergency stop.</td>
</tr>
<tr>
<td>CO.132</td>
<td>&quot;Emergency current isolation&quot;</td>
<td>Need to cut the traction power supply. Driver informs signaller of the need for an emergency catenary isolation.</td>
</tr>
</tbody>
</table>
**Phonetic alphabet**

You must use the phonetic alphabet for single letters and to spell out groups of letters or difficult words. The phonetic alphabet is available in this Communications section.

Additionally you must use the phonetic alphabet when communication conditions are such that the information cannot be easily received without their use, for example in a high noise environment.

**Numbers**

You must transmit numbers one digit at a time. Example: **Train** 2183 = “Train two-one-eight-three”.

Time must be given in Danish local time, in plain language using 24 h notation.

- Example: 10:52 = “Ten fifty-two”.
- Example: 23:59 = “Twenty-three fifty-nine”.
- Example: 00:00 = “Zero-zero zero-zero”.

Dates must be expressed in the Danish notation, in plain language using day and month).


Distances must be expressed in kilometres and speeds in kilometres per hour.

- Example: km 23,1 = "Kilometre two-three-point-one".
- Example: 20 km/h = "Two-zero kilometres-per-hour".
**Use of hand signals**

**Danger**

The hand signal for danger is the hand signal used to try and stop a train or a vehicle approaching a hazardous area, or an area expected to be hazardous.

<table>
<thead>
<tr>
<th>Phrase</th>
<th>Day</th>
<th>Night</th>
<th>Instruction to Driver</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Danger”</td>
<td><img src="image1.png" alt="Hand Signal" /></td>
<td><img src="image2.png" alt="Hand Signal" /></td>
<td>The Driver is to try to stop the train or vehicle before entering the hazardous area. Note: In case a red light is not available – use whatever light colour available.</td>
</tr>
</tbody>
</table>
Shunting

Hand signals may be used during shunting movements when the Driver and Shunter have identified themselves to each other and a continuous visual contact can be maintained between the Driver and Shunter for the duration of the shunting movement.

Hand signals can substitute the four standard shunting phrases of:

<table>
<thead>
<tr>
<th>Phrase</th>
<th>Day</th>
<th>Night</th>
<th>Instruction to Driver</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Forward”</td>
<td><img src="image1.png" alt="Image" /></td>
<td><img src="image2.png" alt="Image" /></td>
<td>The traction unit is to pull. If no wagons are attached or wagons are attached either end the direction to pull is the direction faced by the Driver.</td>
</tr>
<tr>
<td>“Backward”</td>
<td><img src="image3.png" alt="Image" /></td>
<td><img src="image4.png" alt="Image" /></td>
<td>The traction unit is to push. If no wagons are attached or wagons are attached either end the direction to push is the direction not faced by the Driver.</td>
</tr>
<tr>
<td>“Slowly”</td>
<td><img src="image5.png" alt="Image" /></td>
<td><img src="image6.png" alt="Image" /></td>
<td>The traction unit is to reduce speed.</td>
</tr>
<tr>
<td>“Stop”</td>
<td><img src="image7.png" alt="Image" /></td>
<td><img src="image8.png" alt="Image" /></td>
<td>The traction unit is to come to a standstill.</td>
</tr>
</tbody>
</table>
Road traffic, stop

The hand signal "Road traffic, stop" can be used when a level crossing cannot or must not be activated. The hand signal is shown towards the road traffic just in front of the level crossing.

Change per 2019-05-15:

The hand signal "Road traffic, stop" can be used when a level crossing cannot or must not be activated. The hand signal is shown towards the road traffic just in front of the level crossing.

<table>
<thead>
<tr>
<th>Phase</th>
<th>Day</th>
<th>Night</th>
<th>Instruction to Driver</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Road traffic, stop&quot;</td>
<td></td>
<td></td>
<td>Road traffic must stop.</td>
</tr>
</tbody>
</table>
# Phonetic Alphabet

<table>
<thead>
<tr>
<th>Character</th>
<th>Telephony</th>
<th>Character</th>
<th>Telephony</th>
<th>Character</th>
<th>Telephony</th>
</tr>
</thead>
<tbody>
<tr>
<td>“A”</td>
<td>Alfa</td>
<td>“K”</td>
<td>Kilo</td>
<td>“U”</td>
<td>Uniform</td>
</tr>
<tr>
<td>“B”</td>
<td>Bravo</td>
<td>“L”</td>
<td>Lima</td>
<td>“V”</td>
<td>Victor</td>
</tr>
<tr>
<td>“C”</td>
<td>Charlie</td>
<td>“M”</td>
<td>Mike</td>
<td>“W”</td>
<td>Whisky</td>
</tr>
<tr>
<td>“D”</td>
<td>Delta</td>
<td>“N”</td>
<td>November</td>
<td>“X”</td>
<td>X-ray</td>
</tr>
<tr>
<td>“E”</td>
<td>Echo</td>
<td>“O”</td>
<td>Oscar</td>
<td>“Y”</td>
<td>Yankee</td>
</tr>
<tr>
<td>“F”</td>
<td>Foxtrot</td>
<td>“P”</td>
<td>Papa</td>
<td>“Z”</td>
<td>Zulu</td>
</tr>
<tr>
<td>“G”</td>
<td>Golf</td>
<td>“Q”</td>
<td>Quebec</td>
<td>“Æ”</td>
<td>Ægir</td>
</tr>
<tr>
<td>“H”</td>
<td>Hotel</td>
<td>“R”</td>
<td>Romeo</td>
<td>“Ø”</td>
<td>Ødis</td>
</tr>
<tr>
<td>“I”</td>
<td>India</td>
<td>“S”</td>
<td>Sierra</td>
<td>“Â”</td>
<td>Åse</td>
</tr>
<tr>
<td>“J”</td>
<td>Juliet</td>
<td>“T”</td>
<td>Tango</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Numbers

<table>
<thead>
<tr>
<th>Character</th>
<th>Telephony</th>
</tr>
</thead>
<tbody>
<tr>
<td>“1”</td>
<td>One</td>
</tr>
<tr>
<td>“2”</td>
<td>Two</td>
</tr>
<tr>
<td>“3”</td>
<td>Three</td>
</tr>
<tr>
<td>“4”</td>
<td>Four</td>
</tr>
<tr>
<td>“5”</td>
<td>Five</td>
</tr>
<tr>
<td>“6”</td>
<td>Six</td>
</tr>
<tr>
<td>“7”</td>
<td>Seven</td>
</tr>
<tr>
<td>“8”</td>
<td>Eight</td>
</tr>
<tr>
<td>“9”</td>
<td>Nine</td>
</tr>
<tr>
<td>“0”</td>
<td>Zero</td>
</tr>
<tr>
<td>“,”</td>
<td>(decimal point)</td>
</tr>
<tr>
<td>“.”</td>
<td>(full stop)</td>
</tr>
<tr>
<td>Stop</td>
<td></td>
</tr>
</tbody>
</table>

### Example of Emergency Message

The Signaller has used the signalling system functionality to stop all supervised trains in an area because of an emergency. The Signaller contacts the Driver of any train running on written order authority in order to give the emergency message to stop.

- **Signaller**
  
  "This is an emergency. This is Traffic Control Centre East. Driver of 5-4-8-4-4 emergency stop. There is a reported obstruction on the tracks at Østerport. Over"

- **Driver**
  
  "This is train running number 5-4-8-4-4. Message received and stopping. Over"

### Example of written order message

A train is at standstill at an ETCS stop marker without a movement authority. The Driver contacts the Signaller and requests permission to continue.

- **Signaller**
  
  "Traffic Control Centre East, this is Stefan."

---

**Change per 2019-05-15:**

The Driver of a train has reached the standstill next at an ETCS stop marker using without a written movement order authority, and the Driver contacts the Signaller to receive the next requests authority permission to proceed. The Driver initiates the call continue.
Change per 2019-05-15:
"Traffic Control Centre East, this is Stefan. Over."

CO.92 Driver
"This is Michael in train 4-7-1-1. I am at a standstill at ETCS stop marker Kilo-Foxtrot-4-5-6 in track 2."

Change per 2019-05-15:
"This is the Driver Michael in train 4-7-1-1. I am at a standstill at ETCS stop marker Kilo-Foxtrot-4-5-6 in track 2. Over"

CO.93 Signaller
"This is a safety message. Prepare Written Order 0-1. Over"

Change per 2019-05-15:
"This is a safety message. Prepare Written Order 0-1. Over"

CO.94 Driver
"Written Order 0-1 ready. Over"

CO.95 Signaller
"This is Traffic Control Centre East, it is the 4th January 2019 at thirteen twenty two. Train running number 4-7-1-1 at ETCS stop marker Kilo-Foxtrot-4-5-6 in track 2. Mark with a cross in box 1 and write Kilo-Foxtrot-4-5-6. Mark with a cross in box 2 and write 3-0 km/h from Kilo-Foxtrot-4-5-6 to Kilo-Foxtrot-4-5-7. Delete km in all the brackets. Over"

Change per 2019-05-15:
"This is Traffic Control Centre East, it is the 4th January 2019 at thirteen twenty two. Train running number 4-7-1-1 at ETCS stop marker Kilo-Foxtrot-4-5-6 in track 2. Mark with a cross in box 1 and write Kilo-Foxtrot-4-5-6. Mark with a cross in box 2 and write 3-0 km/h from Kilo-Foxtrot-4-5-6 to Kilo-Foxtrot-4-5-7. Delete km in all the brackets. Over"

CO.96 Driver
"Received, Traffic Control Centre East, 4th January 2019 at thirteen twenty two. Train running number 4-7-1-1 at ETCS stop marker Kilo-Foxtrot-4-5-6 in track 2. I have marked with a cross in box 1 and written Kilo-Foxtrot-4-5-6. I have marked with a cross in box 2 and written 3-0 km/h from Kilo-Foxtrot-4-5-6 to Kilo-Foxtrot-4-5-7. I have deleted km in all the brackets. Over."
"I repeat. Received, Traffic Control Centre East, 4th January 2019 at thirteen twenty two. Train running number 44-27-31-1 at ETCS stop marker KKilo-FFoxtrot-4-5-6 in track 2. I have marked with a cross in box 1 and written KKilo-FFoxtrot-4-5-6. I have marked with a cross in box 2 and written 203-0 km/h from KKilo-FFoxtrot-4-5-6 to KKilo-FFoxtrot-4-5-7. I have deleted km in all the brackets. Over."

CO.97  Signaller

"Correct. Your authorisation number is Sierra-Tango-Charlie-Romeo-2-3. Over"

CO.98  Driver

"Received, authorisation number Sierra-Tango-Charlie-Romeo-2-3. Over."

CO.159  Signaller

"Correct. Out."
Rules for Working in the Infrastructure

Preface

These regulations are to be read in combination with the general regulations on personal safety contained in the leaflet: "Pas på, på banen".

For work in and around any parts of the catenary system a reference must be made to the relevant catenary system regulations.

When these rules talk about specific persons it is always as a reference to the role of the person and not a specific individual. The reader is reminded that a single individual might perform more than one role within these rules. E.g. a maintainer taking out a possession as part of his job tasks will have to assume the role of PICOP to do so.

General regulations

Application of the rules

Areas without public access

The Rules for working in infrastructure applies:

- Whenever work takes place in an area, managed by Banedanmark, where regular public access is not allowed, and the work takes place within 4 metres of the nearest rail of an operational railway ...
- And
- Whenever work takes place in a technical installation that could affect railway safety regardless of the work being carried out on behalf of Banedanmark, another company or a private person.

Areas with public access

When work takes place in an area, managed by Banedanmark, with regular public access or in an area managed by a private company or person and borders on the area managed by Banedanmark the Track Work Safety Coordinator (TWSC) will decide the necessary railway safety measures in cooperation with the contractor and the client.

Track workers competencies

Walking about in the tracks

Walking about in the tracks defines the situation when a person is moving within the prescribed personal safety distance of an operational railway.

When walking about in the tracks, full attention must be directed towards train movements and no tools or items must be carried, if they prevent the person from moving freely.

Simple tasks can be carried out while Walking about in the tracks but only following a specific assessment and subsequent approval by the TWSC on the condition that a written instruction has been given.
Working in or near an operational railway

Working in or near an operational railway defines the situation when a person performs a task closer to the nearest rail than prescribed by the personal safety distance of an operational railway and:

- Full attention is not directed towards train movements ...
- the safety distances towards the live parts of the catenary system are violated ...
- the safety distances for material, tools or machinery are violated ...
- the functionality or stability of the infrastructure including any technical equipment are affected ...
- the TWSC has assessed that the specific work can only take place safely if performed within a possession.

ID card

Persons are only allowed within 4 metres of the nearest rail in an area without public access, if:

- It is necessary to perform a specific task ...
- when necessary instructions on personal safety have been received ...
- when meeting the required competence of the specific task ...
- in possession of a valid ID card.

When walking in a group each individual has full responsibility for their own safety.

Persons without an ID card

Acute corrective maintenance

Persons without ID cards who are called upon to assist in acute corrective maintenance tasks or in emergencies must receive special safety instructions relating to the specific task and the specific geographical location from the PICOSS.

The person calling on assistance is responsible for briefing all personnel with the safety instructions before work is commenced.

If assistance is called in connection with infrastructure work overseen by a PICOSS, it is always the responsibility of the PICOSS to carry out the safety instructions.

Visitors

Visitors without ID cards must be accompanied by a railway safety trained member of staff.

The railway safety educated member of staff is responsible for briefing the instructions to all visitors.

Authorities

Authorities have access to the operational railway without the need to possess an ID card e.g. police are permitted to walk about the tracks where their duties require this.
Possession

Application of the rules

Possession work can take place in all types of tracks and be used to carry out all types of infrastructure work.

Planned possessions

General conditions

Work inside a planned possession cannot commence until final possession details have been agreed between the PICOP and the Signaller and the worksite protection has been put in place.

Log book

A PICOP log is personally issued and is used by the PICOP and PICOSS to record necessary safety related information relating to their duties. The PICOP and PICOSS must always be prepared to show their PICOP log to the TWSC or Banedanmark incident investigator on request.

The PICOP will primarily record possession details relating to establishing, handing over and ending of a possession.

The PICOSS will primarily record details which substitute a railway safety plan, including clearing time, sighting and safety distances in relation to planning of possessions for corrective maintenance.

Worksite protection

Before commencing any work inside a possession, worksite protection must be established.

At every entrance to a worksite, from where a train or vehicle can approach, a dual faced stop marker must be placed between the rails of the track.

The dual faced stop marker indicates the boundary of the worksite to Trackworkers working in the possession and warns Drivers approaching or leaving the worksite. It is the responsibility of the PICOP that the dual faced stop markers are always correctly in place to protect the worksite.

The dual faced stop markers must always be placed within the boundary of the possession. If infrastructure work is to be carried out between two parallel tracks, both tracks must be under possession. If infrastructure work is required in the overlap between two adjacent sections, the possession must include both sections.

The dual faced stop markers can be removed briefly to allow driving in and out of the worksite, but must be replaced in the correct position immediately after the passage.

Prior to starting the work, the PICOP must ensure that the highest level of protection of the work is achieved by contacting the Signaller and ensuring that all related possessions are established and any corresponding temporary speed restrictions are activated.
Driving inside a possession

All driving inside a possession is performed as a shunting movement with a maximum speed of 25 km/h and the PICOP controlling the movement as Shunting area manager. The limits of shunting within the possession are marked by the dual faced stop markers.

The Signaller may only allow driving into the possession after obtaining authorisation from the PICOP.

Trains are only allowed to exit the possession with authorisation from the Signaller.

Delays in planned work

The PICOP must immediately inform the Signaller if an agreed start or finish time for a possession cannot be respected.

Ending the work

Work supervisor

Before concluding the work, the Work supervisor must complete any necessary technical procedures then report to the PICOP when the infrastructure is ready to be handed back to operational use. The Work supervisor must inform the PICOP if any technical restrictions are imposed to any parts of the infrastructure e.g. temporary speed restrictions, clamped points etc.

Watchman

Work crew protected by the use of a watchman

Application of the rules

A watchman is required where work is to be carried out in an operational railway within the personal safety distance and the track is not protected by a possession.
A single watchman is positioned to watch all directions and warn the work crew of approaching trains.

Protecting a work crew by the use of a single watchman is allowed when:

- The time needed to vacate the track does not exceed 5 seconds ...and
- vacating the track can happen to a place of safety ...and
- only light hand tools are used ...and
- the sighting distance for trains provides sufficient time to vacate the track ...and
- a maximum of 4 persons are participating in the work ...and
- an acoustic warning device is used or if a maximum of 2 persons are participating in the work direct communication is used.

The TWSC can demand that additional watchmen must be used to ensure sufficient warning of approaching trains is achieved.

Pending a specific assessment of the location and the conditions of the work to take place the TWSC can allow more than 4 persons to participate in the work.

When vacating the track the work crew must move to a location respecting the personal safety distance of the operational track or to a track where a possession is established.

Vacating the track by crossing other operational tracks is not allowed without specific agreement from the TWSC.

The TWSC can based on a specific assessment of the operational conditions and the geographical location, allow that the track can be cleared by crossing an operational track.

The time needed to vacate the track must not exceed 5 seconds unless the TWSC has assessed that a time exceeding 5 seconds is permissible.

The time needed to vacate the track is determined as the time from the watchman giving the warning to the last person and all tools being removed to a position of safety.

The time needed to vacate the track must be assessed by a test, carried out at the worksite before commencing the work.
**Sighting distance**

The sighting distance is the minimum distance required between the approaching train and the worksite when the Watchman warns the work crew.

If the sighting distance is not able to be obtained either a temporary speed restriction or a possession is requested to be able to do the work.

Sighting distances are determined from the following table:

<table>
<thead>
<tr>
<th>Maximum train speed in km/h</th>
<th>Sighting distance in metres with 10 seconds reaction time, and 5 seconds of clearing time</th>
</tr>
</thead>
<tbody>
<tr>
<td>250</td>
<td>1050</td>
</tr>
<tr>
<td>240</td>
<td>1000</td>
</tr>
<tr>
<td>220</td>
<td>920</td>
</tr>
<tr>
<td>200</td>
<td>840</td>
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<tr>
<td>180</td>
<td>750</td>
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<tr>
<td>160</td>
<td>670</td>
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<tr>
<td>140</td>
<td>590</td>
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<td>120</td>
<td>500</td>
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<td>100</td>
<td>420</td>
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<td>90</td>
<td>380</td>
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<td>340</td>
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<td>70</td>
<td>300</td>
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<td>60</td>
<td>250</td>
</tr>
<tr>
<td>50</td>
<td>210</td>
</tr>
<tr>
<td>40</td>
<td>170</td>
</tr>
<tr>
<td>25</td>
<td>110</td>
</tr>
</tbody>
</table>

**Warning of a work crew**

The acoustic device used to warn the work crew must be approved by Banedanmark.

If the work crew consists of a maximum of 2 persons the use of an acoustic warning device can be substituted by verbal or physical communication.

The Watchman must immediately warn the work crew when an approaching train is observed.

The warning must be continued until all members of the work crew have begun vacating the track.

When work is performed at night time and warning is given by the use of an acoustic device the warning must continue until the train has passed the worksite unless the Watchman has received an indication (e.g. a radio call) that the entire work crew has begun vacating the track.

If the sighting distance is unexpectedly reduced (e.g. because of fog or snow) the Watchman must immediately warn the work crew that the track must be cleared. The Watchman must inform the PICOSS about the interruption.
**Special warning devices (fjernbane only)**

If work is performed in the vicinity of a level crossing the acoustic warning device of the level crossing may be used as a substitute for a watchman.

The conditions for using the acoustic warning device of a level crossing as a substitute must be stipulated in the railway safety plan.

**Watchman regulations**

A Watchman may only perform his duties for a maximum of one hour without a break. The break between lookout duties for a Watchman must be at least 15 minutes.

Two persons can perform duty as Watchman and part of work crew in turns.

A watchman:

- Must not perform other duties while being on lookout duty **and**
- Must not participate in conversation **and**
- Must not use a mobile phone or other distracting device (e.g. music or game device).

The Watchman must always carry a blue armband or a safety vest with the inscription "VAGT" when on lookout duty. The person carrying the armband or the safety vest with the inscription "VAGT" is the person responsible for warning the work crew of approaching trains.

**PICOSS regulations**

Before commencing work the PICOSS must ensure that:

- The warning devices can be heard by the work crew **and**
- The Watchman has received the necessary instructions in the use of all warning devices in use **and**
- The Watchman is placed at a location ensuring the necessary sighting distance and that the Watchman has received the necessary instructions about warning the work crew **and**
- The work crew has received the necessary instructions about the meaning of any warning signal used by the Watchman **and**
- The work crew has received necessary instructions on where they must go when vacating the track.

**Special weather conditions**

If a sufficient sighting distance cannot be guaranteed due to reduced visibility, the work must be called off or planned to be carried out inside a possession.

This also applies in case of changing weather conditions (e.g. snow, fog or heavy rain).

If the sound of the warning devices cannot be clearly heard due to noise or special weather conditions the work must be called off or planned to be carried out inside a possession.
**Other working conditions**

**Special work conditions**

**Application of the rules**

Special work conditions apply when the following conditions are all fulfilled:

- The safety distance to an operational track is not violated ...
- The worksite is situated in an area with regular public access ...
- There is a risk that the safety distance to an operational track and/or catenary system can be violated.

**Safety instructions and procedures**

The application of safety instructions and procedures are determined by the TWSC on a case by case basis. The TWSC will cooperate with the person in charge of Traffic Operations as necessary. The conditions on which the work can be carried out will be stipulated in a railway safety plan or through a special instruction note.

**Marking of work boundaries**

**Fence and shielding**

**Fence**

The construction of the fence must be of a firm and stable character with red and white vertical stripes. Tape barriers are not allowed.

Fencing may be omitted after assessment from the TWSC, or in the following situations:

- The physical boundary between the personal safety distance and the worksite is marked by a firm and stable shielding ...
- The physical boundary between the personal safety distance and the worksite consists of a ditch or a picket fence.

**Shielding**

Working inside the personal safety distance to an operational railway is allowed if a shielding is set up as a physical boundary.

The shielding must be of a sufficient robustness and height to prevent materials and tools as well as persons from passing through the shielding.

The shielding must be set up no closer than 1.60 m to the nearest rail. If regular shunting movements take place in the track, the shielding must be set up at least 1.80 m from the nearest rail.

Shieldings and other temporary fences made of conductive materials put up closer than 5 m from the nearest live overhead equipment, must be earthed.

Individual parts of a shielding or fence must be assembled into one unit according to the relevant catenary power regulations.
**Setting up fences or shieldings**

Any protective fence or shielding must be set up prior to commencing work and it must remain in place until all work has concluded.

When setting up a fence or shielding all safety distances towards the operational railway must be observed unless necessary safety measures has been taken.

If there is a need to remove the fence or shielding temporarily for working purposes, necessary safety measures must be taken to substitute the fence or the shielding before removing it. The fence or shielding must be re-established before removing any substitute safety measures.

**Safety distances**

**Safety distance for people**

The personal safety distance to operational tracks measured from the nearest rail are:

- 1.75 m for speeds of 120 km/h or below
- 2.25 m for speeds above 120 km/h.

Persons walking on or near the line must stay outside the safety distances when trains are passing.

In areas where footpaths are established, they can be used to remain, or to vacate to, when trains are approaching.

**Marking of safety distance for people**

If work is to take place closer than 1 m to the personal safety distance of an operational railway, a fence must be set up marking the physical boundary.

**Safety distances for machinery, equipment and tools**

**General conditions**

The safety distance towards an operational railway must only be violated if there is a possession in the track concerned. This applies always, even if it is only for a short period of time e.g. for turning around a crane.

All equipment and tools must be placed outside the safety distance ensuring that it cannot on purpose or by accident fall or slide into a position where it can cause damage to the infrastructure, trains, fences or shieldings.
### Safety distance for working machinery

#### Non-rail mounted working machinery

The safety distance for non-rail mounted working machinery, to the nearest rail of an operational railway, is 2 m.

Non-rail mounted working machinery must, with respect to the pivot limiter, be controlled in such a way that the machine itself cannot turn unintentionally and hence, violate the safety distance.

If, in exceptional cases, the working direction of the machine cannot be controlled, it must be ensured that the machine is at standstill well in advance of any traffic passing on the operational railway.

#### Rail mounted working machinery

The safety distance for rail mounted working machinery, to the nearest rail of an adjacent tracks of an operational railway, is 1.6 metres.

#### Pivot limiter

By use of an active pivot limiter, or other technical device, it must be ensured that no part of working machinery can unintentionally, or through operation error, violate the safety distance during the work.

### General safety regulations

#### Marker boards

When executing any kind of work on or near operational tracks, the visibility of marker boards must not be obstructed.

#### Setting up a temporary track crossing

If a temporary track crossing is needed prior approval is required from both the person responsible for Technical Operation and the person responsible for Traffic Operation. The person responsible for Traffic Operation must assess the necessary safety measures to be taken when using the track crossing and ensure that necessary instructions are available.

#### Crossing a track with vehicles and materials

**General conditions**

Crossing an operational track when transporting heavy materials, heavy machinery and/or slow driving vehicles requires an approval from the Signaller in every single case unless other instructions have been given by the person responsible for Traffic Operation. All crossing of tracks to and from the worksite are only to take place in the track crossings designed for this purpose.

To avoid damage to the rails or any technical equipment it is not allowed to drag tools or materials across the rail.
Working near a level crossing (fjernbane only)

When working near a level crossing it is the responsibility of the PICOSS to ensure that the level crossing is manually controlled if necessary as stipulated in the specific railway safety plan. The PICOSS may need to request the Signaller to prevent the issuing of movement authorities over the level crossing.

Corrective maintenance or normal maintenance in a level crossing (Fjernbane only)

If the level crossing needs to be manually controlled for test purposes during corrective maintenance or normal maintenance, the PICOSS must request the Signaller to prevent the issuing of movement authorities over the level crossing during the test.

Technical installations

Before commencing any work it is the responsibility of the contractor to plan all necessary precautions to protect technical installations from being damaged.

If technical installations are damaged the O&M coordinator must be informed immediately.

Work planning

Planning responsibility

Banedanmark

When larger railway infrastructure works requiring changes to train operation are planned Banedanmark must ensure an assessment is carried out by the person responsible for Traffic Operation. The assessment is to consider:

- The ability to operate safely and in accordance with current regulations and procedures, and
- the need for extra staff.

Banedanmark must appoint a TWSC as an advisor to ensure that railway safety rules and regulation are given due consideration.
The contractor is responsible for ensuring:

- All risks are identified and mitigated through planning and instruction ...
  - and
- an approved railway safety plan is available before commencing work ...
  - and
- all work is planned and can be executed in accordance with railway safety rules and regulations ...
  - and
- all necessary agreements are in place with the person responsible for Traffic Operation ...
  - and
- all participating crew with any kind of safety responsibility have the necessary training and experience in accordance with the scope and complexity of the work ...
  - and
- the PICOSS has the necessary knowledge of the geography and any special conditions of the worksite ...
  - and
- the PICOSS has all necessary information on the execution of the work ...
  - and
- the PICOSS is given the necessary time to compare the physical conditions at the worksite with the information in the railway safety plan before allowing the work to commence.

Work leading to changes in safety or train operation

If an infrastructure work leads to:

- A need for a possession ...
  - and/or
- train movements requiring a schedule ...
  - and/or
- temporary speed restrictions, other changes to driving conditions or technical systems ...
  - and/or
- working in the technical equipment connected to a level crossing (fjernbane only) ...
  - and/or
- a need for a catenary isolation ...
  - and/or
- other traffic or railway safety related deviations,

the contractor must enter into necessary agreements with the person responsible for Traffic Operation.

The person responsible for Traffic Operation must ensure that all planned infrastructure works leading to a need for one or all of the following:

- Possession(s) ...
  - and/or
- changes in driving conditions ...
  - and/or
- catenary isolation(s) ...
  - and/or
- other conditions influencing the use of the infrastructure

are announced for all staff affected by the changes.
Railway safety plan

General conditions

For all planned infrastructure work an approved railway safety plan describing railway safety for the work in question must be available to the PICOSS, before the work commences.

Railway safety plans are only valid once they have been approved by a TWSC.

Procedures describing the production and approval process of railway safety plans are administered by the TWSC.

Before commencing planned work on or at an operational railway, an approved railway safety plan must be produced.

The railway safety plan describes a number of safety arrangements regarding the work in question.

Several work teams working in the same possession

The TWSC must assess and stipulate the coordination of railway safety between all planned infrastructure works and ensure that it is described in the railway safety plan.

The assessment is done based on reports given by the contractors.

The TWSC can stipulate that instead of one railway safety plan covering a concotion of works in a possession separate railway safety plans must be produced for each separate part and supplemented by a coordinating railway safety plan.

The TWSC must ensure that the coordinating railway safety plan is drawn up. In addition the TWSC can stipulate that a PICOSS must be connected to each separate work inside one specific possession identifying one PICOP with sole responsibility of the entire possession.

Corrective maintenance

General conditions

Corrective maintenance is correction of acute faults and error in the infrastructure.

Corrective maintenance is transformed into planned maintenance when the effect on Traffic Operation has been assessed and analyzed by a Banedanmark planner and the necessary plans and changes have been entered into the signalling system and railway safety plan has been approved by the TWSC.

Railway safety plan

As a substitute for an approved railway safety plan the PICOSS must complete an on-site assessment and planning of railway safety.

The planning and assessment must be described in the PICOSS log book and recorded as a substitute for the railway safety plan.
Agreements made with the person responsible for Traffic Operation

The PICOSS communicates the necessary arrangements connected to corrective maintenance directly with the Signaller.

Corrective maintenance in relation to an established possession

If a need for corrective maintenance occurs in relation to an established possession the PICOSS must contact the PICOP for the possession concerned.

The PICOP for the possession must ensure:

- That all works inside the possession are coordinated ...
- That all responsibilities are clearly defined ...
- That all crew participating in the work receives the necessary instructions.

Catenary system

The structure of the catenary system

General regulations

The catenary system on the Fjernbane supplies 25,000 or 2 x 25,000 volts alternating current and on the S-bane supplies 1650 volts direct current.

The masts of the catenary system are different to other high voltage masts, and are not always equipped with high voltage warning signs.

The overhead wire is normally suspended at a height of 5.5 metres above the top of the rails, but can e.g. under a bridge, be as low as 4.92 metres.

It is prohibited and highly dangerous to get closer than 1.75 metres to the closest live pantograph or live overhead equipment.

Live overhead equipment is illustrated with red on the illustration shown below.

Be aware that all parts of the overhead equipment carries the same voltage and therefore protective distances applies to all parts of the overhead equipment.
Return current and protective earthing arrangements

To ensure that the return current can return into the catenary system in a safe way, two different types of cables are connected to the rails. These are:

- Return current cables which leads return current back into the system, and
- protective earthing cables connected to conductive objects close to overhead equipment.

For higher visibility the cables are placed on top of the ballast or the sleepers. On platforms and other areas with public access the cables are placed in protective piping.

On S-bane the protective earthing arrangements are placed above mast valves or spark gap.

If any damage to the return current cables or protective earthing arrangements is observed, the Catenary manager or catenary staff present at the location must be informed immediately.
Earth conductor (fjernbane only)

To lead the return current back into the catenary system, earth conductors are placed on some of the catenary masts. In the 25,000 volt system for every approximately 3000 metres and in the 2 x 25,000 volt system for very approximately 600 metres.

Masts with earth conductors are equipped with high voltage warning signs.

The earth conductor is a connection with four heavy black cables (marked in red on the illustration below) between the catenary mast and return rail.

Disconnecting the earth conductor is extremely dangerous and potentially lethal. If all four cables of the earth conductor are disconnected simultaneously, they must not be touched and catenary staff must be called upon immediately.
Working in or near the catenary system

General regulations

Failure to comply with protective distances to live parts of the catenary system is prohibited and potentially lethal.

If the protective distances to the catenary system cannot be respected, no work may be performed before the power has been isolated and a work permit has been handed over by the Catenary field leader. The work permit is a verification that the necessary parts of the catenary system have been isolated and earthing arrangements are put in place.

If track work requires the return rail to be cut, preventive measures need to be taken to secure the return current flow of the catenary system.

Working during catenary isolation

Work is only allowed to be carried out between the signs marking the "work limit". These signs are placed by the Catenary field leader. Only when the catenary is isolated and maintenance work with the catenary system is performed are any person or machinery allowed to come closer to any part of the catenary system than 30 cm.

Protective distances

General regulations

Protective distances apply to the entire catenary system including pantographs on electric traction units.

When assessing the protective distance it is dangerous and forbidden to measure directly to live overhead equipment with any kind of tool (e.g. a folding ruler).
**Persons and tools**

The protective distance to live overhead equipment is 1.75 m for persons and light tools. When using longer tools, e.g. a level, the length of the tool must be added to the protective distance of 1.75 m.

It is prohibited and dangerous to climb or stay on the roof, platform or any kind of construction on *rolling stock* when this can lead to unintentionally entering the protective distance of 1.75 m to live overhead equipment.
**Ladders and other long objects**

When working with ladders and other long objects special attention must be taken to avoid entering the protective distance of 1.75 m even by accident.

Only ladders made of a non conductive material must be employed when working near live overhead equipment.
Use of water hose and pressure washer

It is dangerous and prohibited to enter a protective distance of 10 m to live catenary equipment when working with water hoses and/or pressure washers unless a specific work procedure has been approved by Catenary Management.

If there is a need to work with water hoses and/or pressure washers closer than 10 m to catenary equipment, the catenary equipment must be isolated.
Larger machinery

The protective distance to live overhead equipment is 5 m for larger machinery (e.g. mechanical diggers or excavators). Larger machinery must be equipped with necessary safety devices ensuring that no part of the machinery can enter the protective distance to live overhead equipment even by accident or human error.

When assessing the protective distances to live overhead equipment the following assumptions apply:

- Calm wind ...and
- the measurement is done horizontally from a line vertical to the nearest part of the overhead equipment ...and
- allowance for unpredictable movements of machinery and of a swinging load up to 20 degrees (corresponding to 38 cm per meter) ...and
- allowance for electric traction units passing the worksite.

Catenary Management can grant deviations from the general regulations and set specific conditions for working larger machinery, including requirements on earthing of machinery according to the relevant catenary system regulations.
Smaller machinery

Smaller machinery may perform work under live overhead equipment provided they are prevented from reaching higher than 3 m from the top of the rail e.g. by special safety devices or with any other special restrictions.

Earthing of machinery of a smaller scale is not required.
Planned catenary isolation

Announcements

Requests for a [catenary isolation](#) are made to the catenary planning office.

Announcement of [planned catenary isolations](#) are published by the catenary planning office and contain:

- Unique identification number...
- name, telephone number, company and job position of the person who requested the catenary isolation...
- period(s) (time, date) for the planned work...
- specification of the geographical location of the worksite (line, track, km)...
- the nature of the work and whether use of tools and machinery of a larger scale is planned...
- the area of the catenary power isolation.

A catenary isolation can only apply to one worksite in one period of time and for one catenary power cut off interval at a time, within the announced period of time.

The Signaller in charge of the areas involved must acknowledge the receipt of an announcement of a planned catenary isolation to the catenary planning office.

Catenary isolation protection

Starting a catenary isolation

In case of bad weather, particularly thunder and lightning, the Catenary field leader must assess:

- If work can begin...
- if the [earthing](#) procedure can be carried out safely.

The Catenary field leader requests a catenary power shut-off from the Catenary manager.

When the procedure for establishing a [planned catenary isolation](#) is completed, the Catenary manager shuts off the catenary power in relevant sections and reports to the Catenary field leader that the earthing procedure can begin.

The Catenary field leader carries out the [earthing](#) on both sides of the worksite, sets up "work limit" signs and gives a written work permit to the PICOSS identifying when the work can begin.

The written work permit must contain:

- An unambiguous indication of the area where the work can take place...
- a confirmation that the catenary system in that specific area is isolated and connected to earth.
If the Catenary field leader is informed by the Catenary manager that an electrical traction unit has entered into an earthed area, the Catenary field leader must check all earthing arrangements in the isolated area. When all earthing arrangements are checked and found fit for purpose, the Catenary field leader must report to the PICOSS and the Catenary manager that it is safe to continue the work.

In case of bad weather, particularly thunder and lightning, the Catenary field leader must assess if:

- The work must be stopped temporarily ...or
- the work can end ...and/or
- the earthing equipment can be removed.

When the time is up for ending a catenary isolation, the PICOSS signs and returns the written work permit to the Catenary field leader confirming that all persons and equipment are outside the protective distance.

The Catenary field leader reports to the Catenary manager when the earthing equipment has been removed and catenary power can be reconnected.

When handing over new or changed infrastructure the Person responsible for Technical Operation of the particular technical subset of the infrastructure, such as track, level crossing (fjernbane only) and catenary system, must be informed of the condition of the infrastructure.

When handing over new or changed infrastructure on a larger scale the person responsible for Technical Operation must appoint a designated person as responsible for ensuring the handover. The designated person must ensure the safe handover of every specific technical subset of the infrastructure to the person responsible for Technical Operation.

The designated person informs the O&M coordinator when the infrastructure is handed over to operational use and of any technical restrictions and limitations on the use of the infrastructure.
Handing over new or changed infrastructure (smaller scale)

When handing over new or changed infrastructure on a smaller scale where no designated person is responsible for ensuring the handover, the work supervisor or the PICOSS is responsible for ensuring the handover.

The work supervisor or the PICOSS must ensure the safe handover of every specific technical subset of the infrastructure to the person responsible for Technical Operation.

The work supervisor or the PICOSS informs the O&M co-ordinator when the infrastructure is handed over to operational use and of any technical restrictions and limitations on the use of the infrastructure.

Conditions of the O&M coordinator

The O&M coordinator must ensure that a record is made in the Signaller log of:

- The time of the handover ...and
- the name of who was responsible for the handover ...and
- any applicable restrictions in the use of the infrastructure.

Instruction on the use of new or changed infrastructure

Following any changes to existing infrastructure or adaptation of new infrastructure the person responsible for Technical Operation must ensure all users and maintainers are properly trained and instructed in the construction and operation of every subset of the infrastructure as necessary.
A - Book of forms
PERMISSION TO PASS AN EOA

Signal box: .........................
Date: ...... / ...... / ......
       (dd / mm / yy)
Time: ...... : ......
       (hh : mm)

Train Running Number: .........................
at: ......................... on track: .................
       (km / signal)

1 [ ] Is allowed to pass EOA at: .........................
       (km / signal)

2 [ ] run with maximum speed of:
   ......................... km/h from ......................... to .........................
       (km / signal) (km / signal)
   and ......................... km/h from ......................... to .........................
       (km / signal) (km / signal)
   and ......................... km/h from ......................... to .........................
       (km / signal) (km / signal)

3 [ ] not used in Denmark
4 [ ] not used in Denmark
5 [ ] not used in Denmark
6 [ ] additional instructions: ..................................................................................................................
    ..........................................................................................................................
    ..........................................................................................................................

Authorisation Number: ...............................
PERMISSION TO PROCEED AFTER A TRIP

Signal box:........................................ Date: ....../....../......

(dd / mm / yy) Time: ...... : ......

.hh : mm

Train Running Number or Shunting Movement Number: ......................

at: ........................................ on track: ............

(km / signal)

1 [ ] If no MA received is allowed to start in SR
2 [ ] select SH
3 [ ] run with maximum speed of:

............. km/h from .................... to: ....................

(km / signal) (km / signal)

and ............. km/h from .................... to: ....................

(km / signal) (km / signal)

4 [ ] not used in Denmark
5 [ ] examine the line, for the following reason: ........................................................
6 [ ] report findings to: .................................................................................................
7 [ ] not used in Denmark
8 [ ] not used in Denmark
9 [ ] additional instructions: ..........................................................................................

Authorisation Number: ........................................

Mark with a cross the boxes of the sections that shall become valid ( ). [X]
In the valid sections fill in the information on the dotted lines.
Delete non-valid text in brackets (example: km / signal).
# Written Order 03

## OBLIGATION TO REMAIN AT A STANDSTILL

<table>
<thead>
<tr>
<th>Signal box:</th>
<th></th>
<th>Date: ....../...../..... (dd/mm/yyyy)</th>
<th>Time: ......:...... (hh:mm)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Train Running Number:</th>
<th></th>
</tr>
</thead>
</table>

at: ..................................... on track: ...........
(km / signal)

1 [ ] remain at a standstill at the current position

2 [ ] additional instructions: ........................................................................................................................................
..........................................................................................................................................................
..........................................................................................................................................................

Authorisation Number: ..................................

---

*Mark with a cross the boxes of the sections that shall become valid ( ).*

*In the valid sections fill in the information on the dotted lines.*

*Delete non-valid text in brackets (example: km / signal).*
## Written Order 04

### ETCS Written Order 04

#### REVOCATION OF ETCS WRITTEN ORDER 03

<table>
<thead>
<tr>
<th>Signal box</th>
<th>Date: ..........................</th>
<th>Time: ............. : .............</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(dd / mm / yy)</td>
<td>(hh : mm)</td>
</tr>
</tbody>
</table>

#### Train Running Number: ..................

at: ........................................ on track: ..........

(km / signal)

1. [ ] ETCS written order 03 with Authorisation Number ........................................ is revoked
2. [ ] additional instructions: ...................................................................................

Authorisation Number: ..................................

---

Mark with a cross the boxes of the sections that shall become valid ( ).

In the valid sections fill in the information on the dotted lines.

Delete non-valid text in brackets (example: km / signal).
OBLIGATION TO RUN UNDER RESTRICTIONS

Signal box: 
Date: ....../...../...... [dd/mm/yy]
Time: ......:...... [hh:mm]

Train Running Number or Shunting Movement Number: ..............

at: ....................... on track: ...........
(km / signal)

1 □ run on sight from: ....................... to: ....................... 
(km / signal)

2 □ run with maximum speed of:
.............. km/h from ....................... to: ....................... 
(km / signal)
and .............. km/h from ....................... to: ....................... 
(km / signal)
and .............. km/h from ....................... to: ....................... 
(km / signal)

3 □ examine the line, for the following reason: .............................................................

4 □ report findings to: .............................................................

5 □ additional instructions: .............................................................

Authorisation Number: .............................................................

Mark with a cross the boxes of the sections that shall become valid (X).
In the valid sections fill in the information on the dotted lines.
Delete non-valid text in brackets (example: km / signal).
**Written Order 07**

**PERMISSION TO START IN SR AFTER PREPARING A MOVEMENT**

| Signal box | Date: ....../....../......               | Time: ...... : ......
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(dd / mm / yy)</td>
<td>(hh : mm)</td>
</tr>
</tbody>
</table>

**Train Running Number: **********

**at: ************************ on track: *******

(km / signal)

1. [ ] is allowed to start in SR
2. [ ] is allowed to pass EOA at: ********
   (km / signal)
3. [ ] run with maximum speed of:
   
   [ ] km/h from ******* to: *******
   (km / signal) (km / signal)
   
   [ ] km/h from ******* to: *******
   (km / signal) (km / signal)
   
   [ ] km/h from ******* to: *******
   (km / signal) (km / signal)

4. [ ] not used in Denmark
5. [ ] not used in Denmark
6. [ ] not used in Denmark
7. [ ] additional instructions:

   ...
   ...
   ...
   ...

**Authorisation Number: **********

Mark with a cross the boxes of the sections that shall become valid ( ).

In the valid sections fill in the information on the dotted lines.

Delete non-valid text in brackets (example: km / signal).
# Request working unit movement - Part A and B

---

**Part A – working unit data**

<table>
<thead>
<tr>
<th>Date</th>
<th>Driver ID</th>
<th>Company name</th>
<th>Contact telephone number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Working unit-ID</th>
<th>Train length (meter)</th>
<th>Train load (tonnes)</th>
<th>Maximum speed (km/h)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Train consist:

- [ ] Unusual transport (UT)
- [ ] Hazardous goods

**UT circular numbers:**

If field is ticked, fill in information about *Hazardous goods* on the rear of the form.

<table>
<thead>
<tr>
<th>Start mission</th>
<th>Preferred start time</th>
<th>Destination</th>
<th>Preferred arrival time</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

**Part B – schedule for mission**

(to be dictated by responsible Signaller)

| Train Running Number: .................. is authorised to move with the following schedule: |
|-------------------------------------|----------------------------------|----------------|----------------|
| Location | Departure | Arrival | Remarks |
| Location | Departure | Arrival | Remarks |
| Location | Departure | Arrival | Remarks |
| Location | Departure | Arrival | Remarks |
| Location | Departure | Arrival | Remarks |
| Location | Departure | Arrival | Remarks |
| Location | Departure | Arrival | Remarks |

---

Request working unit movement
## Request working unit movement - Hazardous goods

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Type</th>
<th>Number</th>
<th>RID-class</th>
<th>UN-number</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compressed air 50 litre</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gas container 22 kg</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gas container 11 kg</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Petrol</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diesel</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Motor oil</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Welding powder</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Not to be extinguished with water</td>
</tr>
<tr>
<td>Round Up Bio</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Isomor 39 isolim</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acetylene 25 litre</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acetylene 50 litre</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

Signature

Request working unit movement
### Backwards movement authorisation

**BACKWARDS MOVEMENT AUTHORISATION**

<table>
<thead>
<tr>
<th>Signal box:</th>
<th>Date: ........../....../.....</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(dd / mm / yy)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Time: .......... / ......</th>
</tr>
</thead>
<tbody>
<tr>
<td>(hh : mm)</td>
</tr>
</tbody>
</table>

Driver ID: ...............  

Train Running Number: ...............  

at: ....................... on track: ...............  

(km / signal)

The train is authorised to move backwards to: .......................  

(km / marker board / platform)

Additional instructions:  

..............................................................................  

..............................................................................  

..............................................................................

Maximum speed: ............... (km/h)

Authorisation Number: ...............
B - Hazard warning plates
CLASS 1 - Explosive substances and articles.

Nr. 1
Underklasse 1.1, 1.2 og 1.3.

Nr. 1.4
Underklasse 1.4.

Nr. 1.5
Underklasse 1.5.

Nr. 1.6
Underklasse 1.6.

* * *

Angivelse af underklasse. Angives ikke, hvis de eksplosive egenskaber udgør en sekundærrisiko.

* *

Angivelse af forenelighedsgruppe. Angives ikke, hvis de eksplosive egenskaber udgør en sekundærrisiko.
CLASS 2 - Gases
Nr. 2.1
Brandfarlige gasser.

Nr. 2.2
Ikke-brandfarlige, ikke-giftige gasser.

Nr. 2.3
Giftige gasser.
CLASS 3 - Flammable liquids
CLASS 4.1 - Flammable solid substances, self-reactive substances and solid desensitised explosives
CLASS 4.2 - Combustible substances
CLASS 4.3 - Substances which generate flammable gases when in contact with water
CLASS 5.1 - Oxidizing substances
CLASS 5.2 - Organic peroxide
CLASS 6.1 - Poisonous substances
CLASS 6.2 - Contagious substances
CLASS 7 - Radioactive substances

Nr. 7A

Nr. 7B

Nr. 7C

Nr. 7E
Fissile stoffer.
CLASS 8 - Corrosive substances
CLASS 9 - Various hazardous substances and objects