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ERTMS USERS GROUP - ENGINEERING GUIDELINE

75. Management of Shunting Activities utilising SH

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1 Introduction

1.1 Introduction

- 1.1.1.1 Shunting is an activity where trains are prepared, moved, split or combined in preparation for service. This can occur at a number of locations and for a number of operational reasons.
- 1.1.1.2 Where the train is operating in ETCS, the preferred method is to issue movement authorities to the train. However, there are operational situations where the train cannot be driven from a driving cab at the front of the train or where the activity needs to take place on lines not controlled from the signalling system (e.g. yards).
- 1.1.1.3 This guideline addresses the situations where the operation is not to be undertaken using movement authorities. Some applications utilise Shunt routes resulting in a Movement Authority being sent to the train (typically OS mode profile) which are out of scope.
- 1.1.1.4 ETCS includes a mode called SH which enables trains to be moved both forwards and backwards and without the need for the trackside to issue movement authorities. Having granted permission for the train to enter SH, the trackside has very restricted functionality available to manage the train movement or to restrict it from entering an operational line leading to collision.
- 1.1.1.5 SH has an operational advantage that it does not require the driver to enter full train data which can be an advantage when trains are being combined or split, when the driving desk has to be changed frequently and when parts of the train have brake systems isolated.
- 1.1.1.6 Following a workshop held in November 2016, this guideline has been prepared to describe the scenarios when shunting activities often occur and the trackside arrangements which can be used to safely manage such activities.
- 1.1.1.7 Shunting activities can take place at predictable locations where it is possible to establish shunting areas. In predictable locations it is desirable that the authorisation of SH is automated by the trackside (subject to appropriate controls).
- 1.1.1.8 Shunting activities may also take place anywhere on the network. Additionally, the trackside must support requests for shunting at predictable locations where the authorisation cannot be automated (e.g. onboard reports unknown position).
- 1.1.1.9 The management of the shunting activity (permission to move, extent of movement, confirmation of position of infrastructure, etc.) is outside the scope of this guideline and may involve operational rules, site personnel or the provision of lineside signals/indicators.
- 1.1.1.10 Movements in SH are restricted in speed by the National Value V_NVSHUNT except where the trackside sends a mode profile including SH and V_MAMODE<>127.
- 1.1.1.11 The extent of movements in SH may be restricted by balise messages (Packet 132 – Danger for Shunting information) or balise lists.

1.2 Scope and Field of Application

- 1.2.1.1 This document is based on ERTMS/ETCS Baseline 2 and 3 (including MR1, R2 and R2 with 2018 Technical Opinion) and applicable for ETCS Levels 0, 1, 2 and 3. This document also highlights some of the issues relative to Level NTC in Baseline 3.
- 1.2.1.2 It is strongly recommended that any entity using ERTMS/ETCS follows the recommendations defined in this document.

1.3 Applicable system versions

- 1.3.1.1 Table 1 describes which trackside and onboard system versions are managed by this guideline. It also describes in which guidelines other system version combinations are managed.

	Trackside System Version	
Onboard System Version	1.Y	2.Y
1.Y	This guideline	Not applicable
2.Y	This guideline	This guideline

Table 1: System version management

- 1.3.1.2 This guideline is applicable for a trackside where system version is 1.Y or 2.Y.
- 1.3.1.3 This guideline takes into consideration the following onboard systems:
 - Onboard system with pure system version 1.Y (i.e.: they are not fitted with any other system version)
 - Onboard system supporting version 1.Y and 2.Y, with active system version 1.Y or 2.Y

1.4 Intentionally Deleted

1.5 Document structure

- 1.5.1.1 The document is organised as follows. Chapter 3 describes the different activities that are usually performed while in SH. Chapter 4 lists the issues that can be found when performing these activities. Chapter 5 mirrors chapter 4 and proposes different recommendations to cope with the existing issues.

2 References and Abbreviations

2.1 Abbreviations

Abbreviation	Description
EVC	European Vital Computer
FS	Full Supervision Mode
L0/1/2/3	Level 0/1/2/3
LS	Limited Supervision Mode
NTC	National Train Control
OS	On Sight Mode
PS	Passive Shunting Mode
PT	Post Trip Mode
RBC	Radio Block Center
SB	Standby Mode
SN	National System Mode
SH	Shunting Mode
SR	Staff Responsible Mode
STM	Specific Transmission Module
TR	Trip Mode
UN	Unfitted Mode

2.2 References

2.2.1.1 The following documents and versions apply:

Ref. N°	Document Reference	Title	Version
[1]		System Requirements Specification	3.6.0
[2]	CFC15	SH Speed Limit	0.1
[3]		Subset 0.35. Specific Transmission Module FFFIS	3.2.0
[4]		Subset 040.Dimensioning and Engineering Rules	3.4.0
[5]		CR1287	

3 SH Activities

3.1 Entry into SH

3.1.1 NTC/L0

3.1.1.1 SH is always available for selection by the driver when at a stand in SB, SN and UN.

3.1.1.2 The ETCS trackside is not involved in the entry into SH.

3.1.2 L1

3.1.2.1 SH is always available for selection by the driver when at a stand in SB, FS, OS, LS, SR and PT.

3.1.2.2 The ETCS trackside may instruct the onboard to enter SH as part of a mode profile included in a Level 1 Movement Authority.

3.1.3 L2/3

3.1.3.1 SH is always available for selection by the driver when at a stand in SB, FS, OS, LS, SR and PT and the communication session is established. Entry into SH is dependent on authorisation from the RBC.

3.1.3.2 In the event of no response from the RBC the onboard will, after a number of attempts, inform the driver and not switch to SH.

3.1.3.3 The ETCS trackside may instruct the onboard to enter SH as part of a mode profile included in a Level 2/3 Movement Authority.

3.1.3.4 The change of mode is reported to the RBC and any session is terminated by the RBC (in accordance with Subset 026 [1], 5.6.2.2 (S100)).

3.2 Exit from SH

3.2.1.1 Exit from SH is managed by the driver when at a stand.

3.2.1.2 The ETCS trackside is not involved in the exit from SH (except where a trackside message results in the train entering TR).

3.2.2 L2/3

3.2.2.1 The change of mode is reported to the RBC with the onboard establishing a connection if required.

3.3 Baseline 2 and 3

3.3.1.1 Level STM (Baseline 2) does not support SH.

3.3.1.2 Level NTC (Baseline 3) does support SH.

3.3.1.3 Note: Administrations need to consider the implications of the introduction of Baseline 3 trains on a baseline 2 trackside with the potential for SH to be selected in Level NTC. A Baseline 2 track side may not have considered the management of baseline 3 trains operating in Level NTC and SH.

3.4 Use of Movement Authorities

- 3.4.1.1 Each administration should consider whether shunting activities can be undertaken using movement authorities. These limit the extent of the movement and provide the normal security of moveable infrastructure.
- 3.4.1.2 The use of movement authorities requires the driver to have completed data entry (and for the data to be available to the driver for that entry). This may add extra time where a driver needs to change cab which may be operationally unacceptable.
- 3.4.1.3 In order to enable the use of movement authorities for shunting activities, the trackside needs to be configured to enable all the relevant routes to be set and appropriate movement authorities issued – this may require extra facilities to those provided for normal operations. Each required route will require a signal and associated balise(s) and encoders.

4 ISSUES

4.1 Protection of shunting activities

- 4.1.1.1 Trains in SH are not normally in communication with the trackside and are unsupervised by the trackside. There is a risk that if other trains are allowed to enter the area of shunting collisions may occur.

4.2 Protection of other train movements

- 4.2.1.1 There is a risk that shunting movements can exceed the area of authorised shunting activity. This could lead to collision with another authorised train movement.
- 4.2.1.2 The ability of the trackside to control movements in SH is very limited and varies according to Level.

4.2.2 NTC and L0

- 4.2.2.1 In Levels NTC and 0 the ETCS onboard does not supervise the train for ETCS modes including SH with the exception of the ceiling speed.
- 4.2.2.2 Balise groups containing Packet 132 - “Danger for Shunting Information” are not accepted in Level 0 or NTC unless they are accompanied by an immediate level transition order to Levels 1,2 or 3.

4.2.3 L1/2/3

- 4.2.3.1 Entry into SH in Level 2/3 requires authorisation of the RBC which can be conditional on other controls being in place.
- 4.2.3.2 Movements in SH are restricted by the ceiling speed for the mode (either National Value or mode profile speed).
- 4.2.3.3 Note: When the onboard exits SH the mode profile speed will be deleted. See [2]
- 4.2.3.4 Balise groups containing Packet 132 - “Danger for Shunting Information” are accepted in Level 1 leading to train trip.

4.2.3.5 Packet 49 – “List of balises for SH area” may be sent with a Level 1/2/3 Movement Authority including a mode profile containing SH. Passing a balise group not in the list will lead to train trip. Note: unlike balise lists associated with movements in SR, Packet 132 – “Danger for Shunting Information” is always accepted and actioned irrespective of whether the balise group is included in the balise list.

4.3 Management of shunting movements

4.3.1.1 When in SH the driver receives no information from the system on the extent or direction of the authorised movement – this has to be provided by other means.

4.3.1.2 The status of moveable infrastructure needs to be communicated to the driver or person in charge to avoid derailment or infrastructure damage.

4.3.1.3 The driver is reliant on what they can see from the driving location (which may be in the cab or remote).

4.4 Class B systems (Only in NTC)

4.4.1.1 Where a class B system is interfaced to the onboard of a Baseline 3 train using an STM, on entry to SH in Level NTC, the class B system will be commanded to CS (Cold Standby) in accordance with Subset-035, v3.2.0 [3]. Note: a non-STM interface may follow the principles applicable to an STM.

4.5 L2/3 Issues

4.5.1 Shunting in non-signalled areas

4.5.1.1 In these areas where no signalling system is in place the workload of the person in charge of the shunting zone must be considered.

4.5.1.2 No other interlocking controls are in place.

4.5.2 Movements into a non-signalled area with an SH mode profile

4.5.2.1 There is no a specific position or instant in which the SH mode is offered.

4.5.3 Shunting granted subject to controls

4.5.3.1 In areas where SH is often used, each administrator has to take into account the required controls to prevent movements into that area.

4.5.3.2 Those controls must contemplate the way SH is initiated.

4.5.3.3 Each administrator must set the rules on how the movements between different SH areas have to be performed.

4.5.4 Shunting granted to specific trains

4.5.4.1 Where shunting is required to take place outside an area which can be protected from other train movements or where the points need to be controlled by the dispatcher, the operational arrangements need to be considered.

4.5.4.2 The authorisation of the onboard to enter SH needs to be considered.

4.5.4.3 The potential for the dispatcher to set routes which authorise SH should be considered.

4.5.4.4 The rules for authorising each shunting movement between the person in charge, driver and dispatcher is administrator specific.

4.5.5 Moving between shunting areas

4.5.5.1 The movement between shunting areas using balise groups with Packet 132 – “Danger for Shunting Information” could lead to a train trip.

4.5.5.2 Moveable infrastructure may be moved when traveling from one shunting area to another one. The procedure to establish a protected route must be described.

4.5.6 Mode profiles

4.5.6.1 The issue of a movement authority into an area not controlled from the signalling system or activated pre-defined shunting area may require the controls to be released for the movement. Consideration should be given to how this is achieved and the protection is re-established after the movement.

4.5.6.2 Where a mode profile is used, the location where the driver will be offered SH may not be consistent (depending on train speed) and allow the train to enter SH before it is partially or completely within the Shunting area. This reduces the effectiveness of controls to restrict train movements to the Shunting area.

4.5.6.3 Because the shunting mode related speed restrictions coming with the mode profile is deleted when exiting SH, the following issues may arise:

- Different shunting speeds being supervised in the same area
- For safety reasons, if the shunting speed is set under the NV, it cannot be guaranteed to remain applicable.
- For operational or safety reasons, if the shunting speed is set above the NV, it cannot be guaranteed to remain applicable

4.5.6.4 Because the shunting mode related speed restrictions coming with the mode profile prevails over NV, a change in the NV for safety reasons (E.g. flank protection) will not be applied by the train.

4.5.7 Changing shunting area boundaries

4.5.7.1 Allowing trains to move between shunting areas or combining shunting areas into a larger area may be required operationally.

4.5.7.2 The use of a balise list is not practicable in these situations since once the train enters SH it disconnects and it is not possible for the trackside to update the balise list.

4.5.7.3 Balise lists are retained where Passive Shunt is used and on re-entry to SH following desk opening will remain applicable.

4.5.8 Releasing shunting areas

4.5.8.1 Since one the train enters SH it is disconnected from the RBC, procedures to prevent that no train is moving in into or out of the area are necessary in order to deactivate a shunting area.

4.5.9 Train movements after exiting SH

4.5.9.1 Entry into SH amends the status but retains train data. The driver is required to enter new or revalidate train data prior to receiving a movement authority. Each administration will have its own operational rules.

4.5.9.2 The actual train position after exiting SH is not always known. Procedures or infrastructure to determine such position may be needed.

4.5.10 Level transitions and SH

4.5.10.1 With system version X=1, Shunting should not be permitted in the vicinity of Level Transitions (or RBC handovers) in accordance with 6.1.1.1.1 of Subset 040 v3.4.0.

4.5.10.2 A train operating in SH mode receiving a level transition order will not change level until SH is exited on board.

4.5.10.3 Note: A train operating in L2 SH entering a LNTC area and subsequently being tripped will change level as part of the trip procedure. When trip is acknowledged the train will enter LNTC SH.

4.5.10.4 The implication is that Packet 132 - "Danger for Shunting Information" protection will be ineffective when trains in SH enter a Level 1, 2 or 3 area from a Level 0 or Level NTC area.

4.5.11 Use of Passive Shunt

4.5.11.1 Passive Shunt is restricted to a locomotive with one EVC and two cabs or two separate locomotives mechanically but not electrically coupled. Selecting "Continue Shunting on desk closure" prior to desk closure suspends SH but retains relevant information.

4.5.11.2 The selection of Passive Shunt causes the system to retain the information such as balise lists which were applicable before entering PS. If the train is moved, using another active cab, into a different shunting area then, on reopening the first cab it will re-enter SH but the first balise passed over will lead to a trip.

4.5.11.3 A cab moved in Passive Shunt will retain the ability to re-enter SH when the cab is opened

4.5.12 Establishment of National Values

4.5.12.1 In SH the ceiling speed of trains is managed by V_NVSHUNT except where a speed was sent as part of a mode profile. Where the value reduces at a boundary there is a risk of the train receiving an intervention

4.5.13 Level 3 specific issues

4.5.13.1 Once a train enters SH it will be instructed to disconnect by the RBC and its location will become unknown. Subsequent movements will be "invisible" to the system (in the absence of trackside train detection) and the system needs to consider a wider area as unknown.

- 4.5.13.2 On reconnection to the RBC when the train leaves SH the information reported may be incomplete (e.g. no train data available so length unknown).
- 4.5.13.3 If a train is split or combined whilst operating in Level 3 and SH, the trackside needs to consider how the safe movement of other trains will be managed in the absence of train integrity information from the shunting train. There is no requirement for a loss of train integrity to be reported by a train in SH.
- 4.5.14 Authorisation of SH (Only for L2/3)**
 - 4.5.14.1 In Level 2/3, Shunting is not an option to the driver unless a communication session exists.
 - 4.5.14.2 Each administration must consider when to authorise SH and what conditions should apply.

5 RECOMMENDATIONS

5.1 Protection of shunting activities

- 5.1.1.1 Each administration must consider options for the positioning of moveable infrastructure to prevent the entry into the area of shunting of other train movements.
- 5.1.1.2 Each administration should consider the provision of controls, either trackside or in the control centre, to prevent other trains being routed into the area of shunting.
- 5.1.1.3 National operational rules should provide for the protection of shunting activities from other authorised train movements.

5.2 Protection of other train movements

- 5.2.1.1 Each administration must consider options for the positioning of moveable infrastructure to prevent shunting movements exiting the area of shunting.
- 5.2.1.2 National operational rules should provide for the protection of other authorised train movements from shunting activities. This may include the procedure for agreeing the limits of the shunting area with the driver and other on-site staff.

5.2.2 L1/2/3

- 5.2.2.1 When utilising balise protection, account must be taken of the fact that it is the passage of the active onboard over the balise group that leads to the trip and that onboard may not be at the front of the train movement.

5.3 Management of shunting movements

- 5.3.1.1 Each administration must establish operational rules for when SH may be selected and any associated processes/authorisation.
- 5.3.1.2 National operational rules must determine whether the movement can be undertaken by the driver alone or requires a person in charge on site.

- 5.3.1.3 Each administration must consider how moveable infrastructure within the shunting area will be managed particularly where it can be controlled remotely.
- 5.3.1.4 Each administration must consider how the position and status of moveable infrastructure controlled remotely will be conveyed to the driver or person in charge.
- 5.3.1.5 Each administration must consider how the authority to move the train (including the extent of the movement) will be conveyed to the driver and whether lineside signals are required.
- 5.3.1.6 National operational rules should address the choice of driving position of the driver for them to be able to observe the line ahead, hand and lineside signals and the movement of the train.
- 5.3.1.7 National operational rules must include how the driver is authorised to undertake the movement and the information required including the speed and extent of the movement to be undertaken.

5.3.2 L1

- 5.3.2.1 Where the entry into SH occurs in response to a mode profile associated with a movement authority, each administration must consider what information the driver requires about the extent of movements once in SH.

5.4 Class B systems (Only for NTC)

- 5.4.1.1 Each administration must analyse whether the risks of the use of SH without a Class B comply with their operational safety rules and targets. Some countries have legislation relating to the availability of Class B systems which must be considered.
- 5.4.1.2 Options which may be considered to maintain Class B protection in all modes include the inhibition of selection of SH in specific Levels NTC or the provision of an interface which does not suppress the Class B system when SH is entered. Each administration needs to consider the safety risks and whether operational restrictions are required which may be included in the authorisation of the vehicles. [The issue is described in CR1287][5].

5.5 L2/3 Issues

5.5.1 Shunting in non-signalled areas

- 5.5.1.1 The administration should identify areas where the use of SH does not require other interlocking controls to be in place and hence there is no signalling system.
- 5.5.1.2 The administration must decide whether the RBC will automatically respond to a request for SH with authorisation in such areas or whether the signaller or person in charge on site needs to confirm authorisation.
- 5.5.1.3 Note: Where frequent changes of driving cab are required it, the signaller or person in charge workload should be considered.
- 5.5.1.4 Such areas would typically be yards or depots where there are not signalling controls but the position reported by the train is valid and within the area.

5.5.1.5 Note: where the train position reported is invalid, the process for an unknown position applies (see 5.5.3.1), and consideration should be given to the provision of balise groups within the area for train positioning.

5.5.2 Movements into a non-signalled area with an SH mode profile

5.5.2.1 Where the entry into SH occurs in response to a mode profile associated with a movement authority, each administration must consider what information the driver requires about the extent of movements once in SH.

5.5.2.2 Each administration must consider where the transition to SH will occur and how the driver will obtain information regarding the remainder of the required movement. The location of the transition should consider other driver workload and distractions, and the need for the driver to acknowledge the transition.

5.5.3 Shunting granted subject to controls

5.5.3.1 Each administration should identify areas where the use of SH will be regularly required subject to interlocking controls being in place.

5.5.3.2 Each administration must decide whether the RBC will automatically respond to a request for SH with authorisation in such areas or whether the signaller or person in charge on site needs to confirm authorisation. Note: Where frequent changes of driving cab are required it, the signaller or person in charge workload should be considered.

5.5.3.3 Such areas would typically be stations or sections of the line where trains need to undertake shunting activities and the cost of additional controls is justified. This can include where shunting activities extend out of a non-signalled area for certain movements. Note: where the train position reported is invalid, the process for an unknown position applies (see 5.5.3.1).

5.5.3.4 An administration may provide facilities for shunting areas to be defined by the combination of a number of smaller areas prior to the issue of SH authorisation to the train.

5.5.3.5 For each area, the administration must identify the controls to be in place to prevent other movements into the area where shunting is taking place. This may require controls being applied to moveable infrastructure or the technical prohibition of route setting into the area. Note: Once a shunting area is activated, the controls should apply until the area is deactivated.

5.5.3.6 For each shunting area, the method of activating the authorisation of SH must be established. This could be by selection of a control by the signaller, the taking of control by a person on site or automatically upon request for SH. Activation should require all relevant controls to be in place or apply the controls automatically.

5.5.3.7 Each administration must consider options for the positioning of moveable infrastructure to prevent shunting movements exiting the area of shunting. Note: arrangements may be required for moveable infrastructure to be moved to enable signalled movements into and out of the area.

5.5.3.8 Each administration must consider when to use balise groups containing Packet 132 - "Danger for Shunting Information" to manage the movement of the active cab.

Note: authorised movements out of the shunting area either need to be undertaken with a movement authority or a switchable balise group is required.

Note: Only the active cab is supervised and where vehicles are being propelled they may leave the shunting area before a trip occurs.

- 5.5.3.9 Each administration must consider when Packet 49 – “List of balises for SH area” should be sent with a SH authorisation. Passing a balise group not in the list will lead to train trip.

Note: unlike balise lists associated with movements in SR, Packet 132 - “Danger for Shunting Information” is always accepted and actioned irrespective of whether the balise group is included in the balise list.

Note: Subset 040, 4.3.2.1.1-b) places restrictions on the number of balise identities (15) that can be included in a single balise list.

- 5.5.3.10 When utilising balise protection, account must be taken of the fact that it is the passage of the active onboard over the balise group that leads to the trip and that onboard may not be at the front of the train movement.

- 5.5.3.11 Where an activated shunting area adjoins a non-signalled area, consideration should be given to how movements between the two areas will be managed. This may require controls protecting either area to be released for the purposes of the movement.

- 5.5.3.12 In some locations there may be a number of potential shunting areas. Consideration should be given to the need to activate or deactivate an adjacent area and how the controls to protect the shunting area/other movements will be affected.

5.5.4 Shunting granted to specific trains

- 5.5.4.1 Where trains movements require the use of SH and may occur outside a preconfigured shunting area (non-signalled or pre-defined), the administration must define the conditions under which SH can be authorised.

- 5.5.4.2 Where a train is unable to report a valid position within a non-signalled area or an activated pre-defined shunting area, the administration must define the conditions under which SH can be authorised.

- 5.5.4.3 The use of SH in Level 2/3 areas requires the RBC to authorise the change to SH, where this cannot be undertaken automatically the administration must provide facilities for the signaller to instruct the RBC to authorise SH for specified train(s).

- 5.5.4.4 Where the shunting activity may require the cab to be changed a number of times, the administration may consider allowing the instruction to permit the RBC to authorise SH to remain active for multiple requests from the same train for a time period.

- 5.5.4.5 Each administration must consider what actions must be taken by the signaller to protect the shunting activity before the RBC could authorise SH including setting the position of moveable infrastructure to prevent the unauthorised entry into the area of shunting by other train movements.

- 5.5.4.6 When placing balise groups containing Packet 132 - “Danger for Shunting Information” for the purposes of managing shunting in pre-defined areas, the impact on unplanned

shunting should be considered. Operational rules may be required to enable trains in SH to pass such balise groups.

- 5.5.4.7 Where a “route set for shunting” is used then the risks of a train changing direction or exceeding the route limits need to be considered. Since a balise list cannot be updated once the train is in SH, it may not be practical to use balise groups containing Packet 132 if the route can subsequently be extended.

5.5.5 Moving between shunting areas

- 5.5.5.1 Consideration should be given to the need for shunting movements to pass from one shunting area to an adjacent area. In order to make the movement it may be necessary to release the controls on moveable infrastructure. Consideration should be given to how this is achieved and the protection is re-established after the movement.
- 5.5.5.2 Any balise groups containing Packet 132 - “Danger for Shunting Information” will need to be switchable to prevent the movements in SH leading to a trip.
- 5.5.5.3 There may be a requirement to exit shunting and request shunting again in order to update balise lists, etc. when moving between shunting areas. Where this is required operational rules and lineside signage may be required.

5.5.6 Mode profiles

- 5.5.6.1 The mode profile to change to SH should consider where the mode change will be offered to the driver and any risks associated with the possibility that the train may enter SH before entering the shunting area.
- 5.5.6.2 Note: A mode profile needs to consider when the driver will be invited to acknowledge the change to SH. A longer distance before the start of the SH area allows more time for the driver however it means the train may be in SH within an area which is undesirable to the administration. A shorter distance forces the train to a lower speed (the mode profile to SH being treated as an EoA) and may be too restrictive.
- 5.5.6.3 Set V_MAMODE parameter to 127, national speed value of the required mode, to avoid unpredictable shunting speeds due to 4.2.3.3, 4.5.6.3 and 4.5.6.4.

5.5.7 Changing shunting area boundaries

- 5.5.7.1 No recommendations see 4.5.7

5.5.8 Releasing shunting areas

- 5.5.8.1 Once trains have been authorised to enter SH, the onboard disconnects from the RBC. Each administration needs to establish when it is safe to deactivate a shunting area, to release controls protecting the shunting activity/other movements and for the signaller to enable normal train movements. This may use technical or operational means to confirm there are no trains in the shunting area.
- 5.5.8.2 Consideration should be given to how many onboards may have been authorised to enter SH and whether a record can be kept when they report a mode change to SB.

5.5.9 Train movements after exiting SH

- 5.5.9.1 Each administration must put in place processes for the driver to be supplied with the correct train data to be entered (where this cannot be readily determined).
- 5.5.9.2 Each administration must consider the likely location of trains having exited SH and the appropriate trackside facilities for issuing a movement authority. Where this requires the driver to select override or the trackside to offer SR, the potential to enable the train to start in OS should be considered.

5.5.10 Level transitions and SH

- 5.5.10.1 A train operating in SH mode receiving a level transition order will not change level until SH is exited on board. The trackside design needs to take account of this scenario.
- 5.5.10.2 Where a non-signalled area is not managed by ETCS (e.g. a Level 0 yard) then the boundary between the area of shunting and the ETCS controlled area will coincide with a level transition.
- 5.5.10.3 When entering an area other than Level 2/3 in SH, the mode change may not be reported to the RBC when exiting SH. This will prevent use of mode change information to support the deactivation of a shunting area. Similarly if the train enters the Level 2/3 area already in SH, there is no requirement for the onboard to notify the RBC until the mode is changed – this may require extra provision at entry to a Level 3 area.
- 5.5.10.4 When entering a Level NTC area in SH mode, the transition to Level NTC will not occur until SH is exited. This means that Class B protection within the Level NTC area will be ineffective.

5.5.11 Use of Passive Shunt

- 5.5.11.1 A cab moved in Passive Shunt will retain the ability to re-enter SH when the cab is opened unless Packet 135 – “Stop shunting on desk opening” is included in balise groups at the boundary of the shunting area.

5.5.12 Establishment of National Values

- 5.5.12.1 In SH the ceiling speed of trains is managed by V_NVSHUNT except where a mode profile speed is sent. Where the value reduces at a boundary there is a risk of the train receiving an intervention. Assuring the train has the correct values on entry to a Level 1, 2 or 3 area needs to be managed by the trackside.

5.5.13 Level 3 specific issues

- 5.5.13.1 No recommendations (see 4.5.13.1).
- 5.5.13.2 Note: Work is ongoing for Level 3 operation and recommendations will be included in the next revision.

5.5.14 Authorisation of SH (Only for L2/3)

- 5.5.14.1 Radio coverage needs to be provided where shunting is required.
- 5.5.14.2 Authorisation of SH needs to take account of potential requests where:
 - a) The train is in an ETCS area not controlled by the signalling system (e.g. a yard) and hence an MA cannot be utilised (see 4.5.1.1)

- b) The train is in a pre-defined area of ETCS signalling where it is required to permit SH subject to specified controls. Such areas can be activated or deactivated by the signaller or automatically (see 5.25.5.1),
- c) The train is not in an area where SH authorisation has been pre-configured as described in 1.1 above (see 5.5.3),
- d) The train reports an unknown or invalid position (see 5.5.3.1).