Cab secure radio

(CSR) Handbook

RS/516 Issue 1 June 2008

Content
Approved by the Train Operation and Management Standards Committee.
Authorised for publication by Rail Safety and Standards Board (RSSB).
Any enquiries should be directed to the Corporate Communications
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Application
This handbook is intended to help drivers and signallers carry out their
duties.

CSR Handbook

RS/516 Issue1 (June 2008)

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You will need this CSR handbook if you use cab secure radio and carry out the duties of a:

- signaller

- driver.

 This symbol indicates extra information or guidance regarding the instructions.

Contents

Contents Uncontrolled When Printed

1.1 Local instructions

These general operating instructions apply to the most common cab secure radio (CSR) equipment in both trains and signal boxes. Instructions that give details of any variations are published locally and support these general operating instructions.

1.2 General information

CSR allows direct radio communication between the driver and the controlling signaller and must be used as the normal method of communication between the driver and signaller.

CSR can be used for normal speech or to send certain preset text messages from signaller to driver and from driver to signaller.

The signaller is also able to transmit a general call to all trains in the signaller's area which will be heard up to three times in each driving cab with CSR set up.

In this case, it is normal for only the message from the nearest channel to be clearly audible and poor quality reception does not mean the equipment is defective.

The signaller can send emergency STOP text messages to one train or to all trains in the area concerned.

CSR also allows the signaller to speak directly to passengers through the train public address system.

The signaller can use CSR to connect the driver of a train to the railway telephone network.

1.3 How CSR works

The area controlled by each signaller is allocated a two-digit area code. Each area code is displayed on a lineside sign, known as a change channel marker, where trains enter that area. The locations of these markers are also shown in table A of the Sectional Appendix.

As a train passes the marker, provided the CSR on-train equipment is set up, the equipment changes automatically to the correct area. However, if the driver is making a call at the time, the driver will need to manually change the area code at the end of the call.

CSR uses the train reporting number to identify each train. Therefore, there must be no duplication of a train reporting number within a defined area at the same time.

Each train is also identified automatically by the six-digit traction unit number which will be displayed on the CSR visual display unit in the signal box, when the driver requests a call.

This traction unit number is associated with the on-train radio equipment. If the on-train radio equipment is changed for any reason, the replacement radio must have the traction unit number correctly entered.

Each call may last a maximum of six minutes.

While a speech call is being made, the driver of any other train in the same area will not be able to speak to the signaller until that speech call is completed.

It is not possible for the driver of one train to speak to, or be heard by, the driver of another train on CSR.

The signaller and driver can, where appropriate, send a preset text message.

All conversations and exchange of telegram messages are recorded automatically.

1.4 Types of radio call

The following types of call can be made and received using CSR.

Normal speech call

Either the driver or signaller can initiate a speech call. However, the signaller is the only one who can open the speech circuit.

If the signaller needs to speak to a driver of a train in the signaller's area of control the train radio must be called. To do this, the signaller will use the train reporting number or, if the CSR cab equipment is not fully set up, the traction unit number.

If the driver requests a speech call the signaller must call the train radio concerned before conversation can take place.

Emergency call

The driver can press the **EM** button on the radio to initiate an emergency call. However, this must be done only in one of the following circumstances:

• When it is necessary to give immediate advice of the need to stop or caution trains in connection with an accident, obstruction or other exceptional incident.

• During training or assessment under the conditions shown in local instructions.

STOP message

A 'STOP message' is a preset text message sent by the signaller using the CSR equipment to one or all trains with CSR set up in that signaller's area of control.

General call

A 'general call' is a speech call made by the signaller and is received by all trains with CSR set up in that signaller's area of control.

Telegram call

As well as a STOP text message, there are other preset text messages that a driver or signaller can use to communicate with each other. These allow certain messages to be passed without the need for a speech call.

2 Cab radio equipment

2.1 Equipment

The driving cab is equipped with:

driver

- a radio unit with push buttons for setting up the CSR and for the selection of operating modes and text messages

- a telephone handset

- a loudspeaker.

The radio will only work if it is switched on in the cab where you have inserted the master key and the master switch is moved away from the 'off' position.

The button on the handset does not need to be operated.

2.2 Radio buttons

ON

ON: This powers up the radio. This will only work when the driving desk has been opened.

driver

T

Test: This performs a test function by transmitting data to and from the signal box control system.

SG

Standing at signal: This sends a text message to remind the signaller of your train's presence.

CC

Call clear: Clears the call request to the signal box. This will not clear an emergency call message.

driver

C

Call: Sends a call request to the controlling signal box. The message will include the six-digit traction unit number.

LT

Lamp test: Illuminates all the lamps to confirm the display is working.

EM

Emergency: Sends an emergency call message to the signaller. It will time out after 30 seconds if delivery fails and must then be pressed again.

Blank: Unmarked button when pressed will display the six-digit traction unit number stored in the radio.

AR

Enter area code: Allows you to enter the two-digit area code into the radio that corresponds to the area of the controlling signaller.

SU

Set up: Allows you to enter the four-digit code which identifies the signal the train is standing at during the set up procedure.

ST

Stop acknowledge: You must press this as soon as your train has been brought to a stand after receiving a 'STOP' instruction.

SP

Speak: You must press this to answer an incoming speech call. This does not apply to a general call or an emergency call.

∗

Star: Used to register characters into the radio.

#

Hash: Used to cancel entries made into the radio.

Examples of the driver's CSR radio

Stornophone 6000 in-cab radio. This radio has been correctly set up and shows area code 45 in the alpha numeric display along with train reporting number 2W85.

Siemens in-cab radio

2.3 Radio display

driver

The radio display panel is capable of showing alphanumeric characters and several standard messages as follows:

42 1B74 (example)	This is displayed after successfully setting up the radio. It shows the area code and the train reporting number.
AREA NOT SET	This indicates that no area code has been set in the radio.
RADIO LOST	The radio will display this if: • you manually set an incorrect area code • the radio fails to change area automatically • trainbourne radio equipment fails • lineside radio equipment fails • the train is no longer in a CSR area.
SPEAK(flashing)	An alert tone will sound and you may hear the signaller speaking. You must press the SP button to answer the the call from the signaller.
SPEAK(steady)	A speech call is in progress.
CHECK SIGNAL	This shows if your attempt to set up the radio has failed. The most likely cause is that you have entered the wrong information.
CHECK STOCK NUMBER	This shows if the radio has been incorrectly installed. You must press the blank button. If the number then displayed is different to the six-digit traction unit number, you must tell the signaller or maintenance depot staff. You will still be able to make an emergency call by entering the area code as normal then pressing the EM button.
EMERG	This message is displayed when you press the EM button.

		driver
CALL FAIL or TEST FAIL or SET-UP FAIL	These messages mean that the action has not been correctly acknowledged by the radio system.	
STOP (flashing)	You must immediately stop your train and then press the ST radio button. This message will be accompanied by an alert tone.	
GENERAL STOP (flashing)	You must immediately stop your train and then press the ST radio button. Every train with CSR set up in the signaller's area of control will also receive this message.	
GENERAL CALL	This message is displayed when the signaller is making a general call to all CSR trains in the area of control. The speech message will be 'receive only' It is sent out up to three times by the radio system, of which only one may be clearly audible. You must listen to the message and act upon the information given.	
PA CALL	When PA CALL is displayed, the signaller will be broadcasting a message that can also be heard by passengers on the train. This is a 'receive only' message. You must listen to the message and act upon the information given.	
DSD ALARM	This message will be displayed for 30 seconds after operation of the driver's safety device (DSD). If you do not deactivate the DSD within this 30 seconds, the message will be transmitted automatically to the signaller. In this case the signaller will immediately try to call you.	
SET-UP WAIT	Your attempt to set-up the radio has been acknowledged.	
CALL BUSY or **SET-UP BUSY**	These messages mean that the radio system is engaged in another call in the area.	

3.1 Signaller's terminal

signaller

Each controlling signaller's position is equipped with:

- a visual display unit
- a keyboard
- a telephone handset which may have a 'push to talk' button
- a loudspeaker.

3.2 Visual display unit (VDU)

signaller

The VDU displays any call that is currently in progress. It also displays a list of all incoming calls and a list of previous completed non-speech calls.

Incoming calls requiring action by you are shown in a numbered queue on the left hand side of the screen. Calls in progress and completed non-speech calls are listed on the right hand side of the screen.

The lower left hand side of the screen displays keyboard entries you have made and other prompts.

'Trains calling' queue

Incoming calls, other than emergency calls, are numbered and added to the trains calling queue in order of arrival. A second call from a train already in this queue automatically overwrites the previous entry and is not added to the end of the queue.

You can answer incoming calls in any order.

Each entry in the trains calling queue will normally show:

signaller

- the queue number
- the train reporting number
- the signal number corresponding to the berth shown occupied by the train describer equipment at the time the call request was made
- a word or phrase describing the type of message.

The following is an example of a 'trains calling' queue entry:

> **Q2 2G26 R28 STANDING AT SIGNAL**

If a train reporting number is not available, the traction unit number will be displayed in place of the train reporting number and signal number as follows:

> **Q2 165001 STANDING AT SIGNAL**

If during the driver set up procedure, the train transmits a location code and there is no train reporting number in the corresponding signal berth, the following type of entry will be displayed with the words and background colour reversed, for example:

> **Q4 165001 (0478) NO DESCRIPTION**

If during the driver set up procedure, the driver enters a train reporting number that has already been allocated to another train, the following type of entry will be displayed with the words and background colour reversed, for example:

> **Q4 165001 (0478) DESCRIPTION REPEAT**

The following entries will also have the colours reversed on the screen:

- the train reporting number of a call where the train reporting number has been cancelled within the last 20 minutes
- the signal number if the driver is calling from outside your area of control.

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signaller

To cancel an entry from the trains calling queue, using the keyboard (see section 3.3 for keyboard layout), you must:

• press the **CNCL** key

• press the **Q SEL** or **Q** key (as appropriate)

• enter the queue number

• press the **ENTER** key.

Train instruction list

The train instruction list shows any call in progress at the bottom of the list. Previously completed non-speech messages are kept until you cancel them.

When you make a call, the keyboard entries appear initially at the lower left hand side of the screen and then transfer to the train instruction list when the operation is completed.

To cancel an entry from the train instruction list, using the keyboard, you must:

• press the **CNCL** key

• enter the list number

• press the **ENTER** key.

'Call technician' alarm

The VDU will display a 'call technician' alarm when a fault occurs. To acknowledge this alarm, using the keyboard, you must press the **ENTER** key.

The audible alarm will be cancelled but the fault indication will remain. You must not cancel the fault indication until the technician tells you the fault has been rectified. To cancel the fault indication, using the keyboard, you must:

• press the **CNCL** key

• enter the alarm code

• press the **ENTER** key.

Emergency call

When a driver operates the emergency button in the cab, **EMERGENCY** will be displayed on your screen immediately above the trains calling queue.

signaller

When you answer the emergency call, the word **EMERGENCY** will transfer to the right hand side of the screen, where it will be displayed with the train reporting number and signal number, if they are available.

However, the train and signal number will not be displayed until you have acknowledged the call.

Train list

You can display a list of all trains that are set up in your area of control by using the keyboard key marked **TRAIN LIST**.

If the number of trains exceeds the display capacity of the VDU, each press of **TRAIN LIST** will display further trains that are set up in your area.

The train list is not updated while it is displayed. To get an updated list, using the keyboard, you must:

• press the **CNCL LIST**

• press the **TRAIN LIST** key.

You can cancel any train that is in the train list. To do this, using the keyboard, you must:

• press the **CNCL** key

• enter the list number

• press the **ENTER** key; **ARE YOU SURE (Y/N)** will then be displayed

• press the **Y** key

• press the **ENTER** key.

You must then press **CNCL LIST** to return to the normal display.
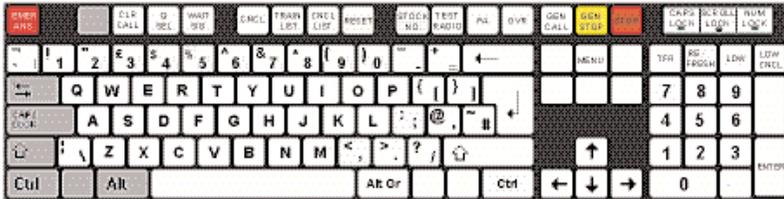
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3.3 Keyboard

signaller

The keyboard is used to enable contact with drivers via speech calls and to send general calls and preset text messages.

You can also use it to make on-train announcements over a train's public address equipment.

Example of the signaller's CSR keyboard

The keyboard has the following special functions: **signaller**

Key	Full title	Function
CLR CALL	Clear call	Use this key to close down a call.
CNCL	Cancel	Use this key to cancel a line in a VDU list.
LDW CNCL	Cancel dual working	Use this key to separate control of two or more signalling areas. This also cancels call transfer from a box which has closed to one that is open.
CNCL LIST	Cancel list	Use this key to cancel a train list and restore the normal display.
DVR or **DVC**	Driver	Use this key to call a driver.
EMER ANS	Emergency answer	Use this red key to answer an emergency call.
ENTER	Enter	Use this key to start a call sequence or to restart a call sequence that resulted in a 'not answering' response.
GEN CALL	General call	Use this key to broadcast a message to all CSR set up trains in your area of control.
GEN STOP	General stop	Use this yellow key to send a STOP message to all trains with CSR set up in your area of control.

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signaller

KEY	Full title	Function
LDW	Dual control	Use this key to merge two or more signalling control areas.
PA	Public address	Use this key to make an announcement direct to passengers on a train.
Q SEL	Queue select	Use this key to select a call from the trains calling list.
RE FRESH	Refresh	Use this key to restore the normal VDU display.
RESET	Reset	Use this key to cancel an incorrectly keyed entry.
STOCK NO	Stock number	Use this key when you need to call a driver using the traction unit number.
STOP	Stop	Use this red key to send a **STOP** instruction to a specified train radio.
TEST RADIO	Test radio	Use this key to send a radio test to a train radio.
TRAIN LIST	Train list	Use this key to display a list of train reporting numbers and traction unit numbers of all trains set up in your area of control.
WAIT SIG	Wait at signal	Use this key to send a **WAIT** instruction in response to the driver of a train who has sent you a **STANDING AT SIGNAL** message.

If you make an error while using the keyboard, you can correct it by using the **BACKSPACE** key (left facing arrow towards the top of the keyboard).

You can cancel an entry sequence at any time before pressing the **ENTER** key, by pressing the **RESET** key. This will restore the keyboard to its initial state.

You must complete a keyboard entry within 10 seconds, otherwise **INPUT TIMED OUT** will be displayed and the entry will be ignored. On restarting the entry, the previous keyboard entry will be deleted automatically.

signaller

3.4 Audio equipment

Telephone handset

You must use the telephone handset for speech calls using CSR. You must press the 'push to talk' button, where there is one, for the driver (or passengers during PA call) to hear you.

signaller

When you replace the telephone handset in its holder, the call in progress will be ended. This is an alternative to using the **CLR CALL** key.

Loudspeaker

The loudspeaker will sound an alert tone when any one of the following applies:

• There is an incoming **EMERGENCY** message.

• There is an incoming call request or text message from a driver.

• A **CALL TECHNICIAN** message appears on the VDU.

• Any warning message such as **DESCRIPTION REPEAT; CHANGE AREA FAIL; LDW REQUEST** or **LDW CANCEL** appears on the VDU.

You may press the **ENTER** key or any other function key to silence the tone.

The loudspeaker will allow you to hear speech from an incoming call until you lift the telephone handset.

You will also hear the conversation when you have established a call between a driver and a telephone network extension. This is so you know when the call has been completed and you can disconnect the call.

4.1 Radio test

driver

You must test the CSR cab equipment before the train leaves a depot or siding. To do this you must:

1. Insert the master key and move the switch away from 'OFF'.

2. Press the **RADIO ON** button, holding it in for at least 2 seconds. **RADIO LOST** or **AREA NOT SET** will be displayed and an alert tone will be heard.

3. Press the **BLANK** button, where provided on the radio, and check the traction unit number displayed matches the actual traction unit number.

4. Press the **LT** button and check that all lamps and display segments light up.

5. Press the **AR** button **ENTER AREA** will be displayed.

6. Enter the two-digit area code covering your location.

7. Press the **✱** button.

The display should then change to **WAIT**. This will then be replaced by the area code on the left hand side of the display.

If after approximately 25 seconds, instead of the area code being displayed, **RADIO LOST** or **CHECK AREA** appears and an alert sounds, repeat steps 5 to 7, using the correct area code.

When the area code is displayed, you must:

8. Press the **T** button, **TEST** should then be displayed.

9. If the CSR system is being used, **BUSY** will be displayed. You may need to wait a few moments.

10. If **TEST OK** is then displayed (this will be displayed for about 5 seconds), the radio is in full working order. If **TEST FAIL** is displayed, press the **#** button to clear the display and then repeat the test from step 8.

If this further test also displays **TEST FAIL**, you must press the **#** button and treat the CSR radio as defective. You must contact the signaller by another means.

driver

If you need to test a cab radio, you must:

signaller

• press the **TEST RADIO** key on the keyboard

• enter the train reporting number of the train concerned, or press the **STOCK NO** key and enter the six-digit traction unit number

• press the **ENTER** key.

If the train concerned is not in your area, or the train radio has failed or is not switched on, **NOT ANSWERED** or **NOT IN SYSTEM** will be displayed on your VDU. You can repeat the test call by pressing the **ENTER** key again.

If the cab radio is working correctly, **TEST OK** will be displayed on the right hand side of the VDU.

4.2 CSR set up - general

The procedure shown in section 4.3 must be carried out before the start of each journey and when it has been necessary to change cabs during a journey. It must also be carried out each time the master switch has been moved to "OFF' and then away from 'OFF' (for example, when changing drivers).

driver, signaller

To fully set up CSR the train must be on the approach side of the signal and must not proceed until the train reporting number is correctly displayed on the train radio.

driver

The full set up procedure must also be carried out after passing through an area affected by a train describer equipment failure.

driver, signaller

driver   Before you can correctly set up the CSR, the signaller must have correctly entered a valid train reporting number into the train describer equipment.

Where two or more trains are sharing a platform, and your train is not the first to depart, you must not set up CSR until any train in front of your train has departed and the platform signal has returned to danger.

signaller   You must enter the correct train reporting number into the train describer berth where the train is standing, before the driver can set up the CSR correctly.

Where the train reporting number changes during the journey, you must enter the new train reporting number. This will automatically update the train radio.

If a train reporting number is not available to allow the set up procedure to be completed, you must record the 6 digit traction unit number so that you can call the driver if you need to. You will find the traction unit number in the 'trains calling' queue or train list.

driver   At certain locations the train reporting number is changed during the journey. When the signaller enters the new train reporting number into the train describer equipment the radio display will be automatically updated. Although you will hear an alert tone you do not need to take any action.

4.3 Set up procedure

To set up the CSR, you must: **driver**

• press the **AR** button on

• enter the correct area code

• press the ✱ button

• press the **SU** button, **ENTER SIG NO.** should then be displayed

• enter the correct four-digit signal number (this may need you to add a leading zero or use an alias number, this will be shown in local instructions)

• press the ✱ button, **WAIT** should then be displayed.

After a short delay, the train reporting number should replace the word **WAIT** in the display. This confirms the radio is set up correctly. If the set up does not complete successfully, the signaller will contact you.

If the radio correctly sets up but displays the wrong train reporting number, you must request a speech call with the signaller. To do this you must:

• press the **C** button and wait for the signaller to answer

• tell the signaller the correct reporting number for your train.

You must make sure the correct train reporting number has been   **signaller**
entered into the train describer berth at the signal where the CSR
is being set up.

Normally, during the time the driver is setting up the CSR, there
will be no message relating to this on your VDU.

signaller

If, while the driver is setting up the cab radio, **NO DESCRIPTION** is displayed on your VDU, you must check that you have entered the correct train reporting number and that the driver has entered the correct signal or alias number.

If necessary, you must call the driver using the six-digit traction unit number and arrange for the driver to correctly input the signal or alias number. You must:

• Press the **Q SEL** or **Q** key (as appropriate)

• enter the queue number for the train concerned

• press the **ENTER** key.

If the train reporting number is now available, the message will transfer to the right hand side of the VDU and the driver's cab radio set up procedure is complete.

If **NO DESCRIPTION** is still shown, the driver will request a speech call with you.

Starting from depots or sidings

driver

Where the train starts from a depot or siding, it may not be possible to fully set up the CSR. If full set up is not possible, you must partially set up the CSR before departing the exit signal.

To do this you must press the **AR** button and enter the correct area code followed by the **∗** button. This will allow emergency messages to be exchanged, along with some other types of message.

You must carry out the full set up procedure at the next suitable location.

5.1 Signaller calling driver

When it is necessary for you to talk to a driver, you must:

signaller

- press the **DVR** key

- enter the train reporting number, or press the **STOCK NO**. key and enter the six-digit train unit number

- press the **ENTER** key.

If there is no answer, **NOT ANSWERING** will be displayed. You can repeat the call by pressing the **ENTER** key again.

When the driver answers your call, the train details including the train's last reported position, will transfer to the right hand side of the VDU, the speech circuit is now open. You must lift the handset, and press the 'push to talk' button where there is one, to talk to the driver.

When it is necessary for the signaller to talk to you, **SPEAK** will appear and will be flashing on the radio display. You may also hear the signaller's speech from the loudspeaker.

driver

To answer the call you must lift the handset and press the **SP** button on the radio, the flashing **SPEAK** on the radio display will change to being steady.

When you have finished the conversation, you must replace the handset. **SPEAK** will be replaced in the radio display by the area code and the train reporting number.

When you have completed the call to the driver, you can clear the call by either placing the handset in its holder or by pressing the **CLR CALL** key on your keyboard.

signaller

signaller   If the message **NOT IN SYSTEM** is displayed on your VDU when you try to call a driver, this could mean that the driver has not set up the cab radio correctly. You should make a general call and request the driver concerned to call in.

5.2 Driver calling signaller

driver   It is important that you check the radio is displaying the correct area code so that you talk to the correct signaller.

When it is necessary for you to call the signaller, you must press the **C** button on the radio, **CALL** will then be displayed.

If the system is in use, **BUSY** will be displayed instead. When the system is again free, **BUSY** will be replaced with your train reporting number.

If **FAIL** is displayed, you must press the **#** button, and then press the C button again.

When your call is successful, **CALL SENT** will be displayed, you must wait for the signaller to answer your call.

signaller   When a driver requests a call, the train details including its last reported location will be displayed along with the word **DRIVER** on the VDU 'trains calling' queue.

To answer the call, you must lift the handset and:

• press the **Q SEL** or **Q** key (as appropriate)

• type the queue number of the train concerned

• press the **ENTER** key.

If you do not enter the queue number, the first entry in the 'trains calling' queue will be selected.

driver   When the signaller opens the speech circuit, an alert tone will sound and the word **SPEAK** will flash in the radio display. When you lift the handset you must press the **SP** button on the radio, **SPEAK** will then stop flashing and you can then talk with the signaller.

When you have finished the conversation, you must replace the handset. **SPEAK** will be replaced in the radio display by the area code and the train reporting number.

<div align="right">**driver**</div>

When you and the driver have completed the call, you can clear the call by either placing the handset in its holder or by pressing the **CLR CALL** key on your keyboard.

<div align="right">**signaller**</div>

When you have pressed the **C** button but the need for the call no longer applies, you can cancel the call request. To do this you must press the **CC** button on your radio, **CANCEL** should then be displayed.

<div align="right">**driver**</div>

If **BUSY** is displayed the system is in use. Your cancel message will be acted upon when the system becomes free.

If **FAIL** is displayed your cancel message has failed. You must press the **#** button and then press the **CC** button again.

When the cancel message has been successful, **CANCEL** will be replaced on the radio display by the area code and the train reporting number.

If a driver cancels a call, the entry will be deleted from the 'trains calling' queue.

<div align="right">**signaller**</div>

A driver cannot cancel an emergency call.

<div align="right">*i*</div>

5.3 Driver making a call to an internal railway telephone

If it is necessary for you to talk to someone on an internal railway telephone for operational reasons, you must request a call as shown in section 5.2.

<div align="right">**driver**</div>

You must then tell the signaller the extension number you wish to be connected to and ask to be connected.

signaller To connect a driver to an internal telephone extension, you must:

- enter **HOLD** or select 'Telephone/PABX', **PHONE** appears in the status box on the VDU

- dial the requested extension number.

When the call is answered, enter **CONNECT** or where provided, operate the switch to the Connect position and advise the driver and the person being called that the call is now connected.

You will hear the conversation in the handset. If you replace the handset the conversation will be heard over the loudspeaker.

driver When you have finished the conversation, you must replace the handset in its receiver.

signaller When you are sure the conversation is completed, you must press the **CLR CALL** key or select 'Radio/Normal'.

If for some reason the call could not be connected to the required telephone extension, you must select 'Radio/Normal' and tell the driver the call could not be connected.

i Remember there is a six minute maximum time for each call. If necessary, the signaller can redial the extension number and then call the driver back.

5.4 Signaller calling the driver of a train going in the wrong direction

When a train is making a wrong-direction movement, for example, during single line working, the CSR equipment will remain set up for approximately 20 minutes.

**signaller,
driver**

You will still be able to use the train reporting number to make a call to the driver even though the train description does not move with the train's progress.

signaller

When the train returns to moving in the right direction, you must insert the train reporting number into the correct train describer berth.

However, if the 20 minute limit is exceeded, it will be necessary for you to make a general call and ask the driver to call in. You must then ask the driver to carry out the set up procedure at the next suitable signal beyond the point where normal working resumes.

You must carry out the CSR set up procedure at the next signal beyond the point where normal working resumes if the signaller asks you to.

driver

5.5 Signaller making announcements directly to passengers using the public address system

If it is necessary for you to give information to the passengers on a train as shown in section 10 of these instructions, you must:

signaller

• press the **PA** key on the keyboard

• type the train reporting number, or press the **STOCK NO** key and type the six-digit traction unit number, for the train concerned

• press the **ENTER** key.

signaller When the call to the PA system is established, the VDU entry will transfer to the right hand side of the screen and the speech circuit will open. You must lift the handset, press the 'push to talk' button where there is one, and talk. Your message will be heard by the the passengers on the train concerned.

The call will be ended when you replace the handset or press the **CLR CALL** key on the keyboard.

driver You will be able to hear on the loudspeaker any call the signaller makes to the public address system on the train.

5.6 Passing a signal at danger

signaller When a train is to pass a signal at danger, it may be necessary for you to manually interpose the correct train reporting number so that the CSR system will update the location of the train.

5.7 Providing assistance to a failed train

driver If a failed train is being assisted, both drivers must make sure that CSR is used only in the cab from which the train is being driven.

These instructions do not replace the requirements shown in Rule Book module M1 regarding emergency protection or module TW1 section 20, which must not be delayed waiting for the signaller to answer.

i

The signaller must carry out the instructions shown in the relevant train signalling regulation 4 when an emergency call is received.

6.1 Emergency call - driver to signaller

You must use the emergency call facility **only** in one of the following circumstances:

driver

• When it is necessary to give immediate advice of the need to stop or caution trains in connection with an accident, obstruction or other exceptional incident.

• During training or assessment under the conditions shown in local instructions.

When it is necessary for you to make an emergency call to the signaller you must press the **EM** button on the radio. **EMERG** or **EMERGENCY** will be displayed on the radio.

If after 30 seconds the call times out, you must press the **EM** button again.

When the driver of a train in your area of control operates the **EM** button on the CSR radio, **EMERGENCY** will be displayed in the top left corner of the CSR VDU and an audible alarm will be sounded.

signaller

signaller   You must immediately press the **EMER ANS** key on the CSR keyboard. This will automatically close any CSR call you are currently making.

EMERGENCY will then be transferred to the right hand side of the VDU and alongside it will be displayed the train reporting number and the word **DRIVER**. If the system fails to identify the train calling details, a speech call will still be established.

driver   When the signaller opens the speech circuit, **EMERG** will be replaced by **SPEAK** and an alert tone will sound. You may then speak to the signaller, you do not need to press the **SP** button.

signaller   You must replace the handset or press the **CLR CALL** key when the conversation is completed.

6.2 Signaller sending an individual STOP text message

signaller   To send a 'STOP' text message to one train you must:

- press the **STOP** key on the keyboard
- enter the train reporting number, or press **STOCK NO** and type the six-digit traction unit number
- press the **ENTER** key.

The **STOP** instruction will transfer to the right hand side of the VDU.

If **NOT ANSWERING** displays on the VDU, you can repeat the 'STOP' text message by again pressing the **ENTER** key.

If you receive a 'STOP' text message, a flashing **STOP** will appear in the radio display and an alert tone will sound.

driver

You must immediately bring your train to a stand and then press the **ST** button to acknowledge the "STOP' text message. The flashing **STOP** will then become steady in the radio display. You must wait for the signaller to contact you. You must not move the train without permission from the signaller.

When the driver has acknowledged the 'STOP' text message, **ACKNOWLEDGE** will appear on the right hand side of the VDU next to the **STOP** instruction. You must then contact the driver to explain why you sent the 'STOP' text message.

signaller

To clear the **STOP** instruction from the display you must press the **#** button. **STOP** will be replaced by the area code and the train reporting number.

driver

6.3 Signaller sending a general STOP text message

To send a general 'STOP' text message to all CSR set up trains, in a specified area as shown in local instructions, you must:

signaller

• press the GEN STOP key on the keyboard. **GEN STOP** will be displayed on the VDU

• press the **ENTER** key; **ARE YOU SURE (Y/N)** will then be displayed

• press the **Y** key

• press the **ENTER** key.

The word **CALLING** will be displayed and will be flashing. **GEN STOP** will then transfer to the right hand side of the VDU.

Some types of CSR equipment will not display the **ARE YOU SURE (Y/N)** message, in this case when the **ENTER** key is pressed the general 'STOP' text message will be sent.

i

driver   If you receive a general 'STOP' text message, a flashing **GEN STOP** will appear in the radio display and an alert tone will sound.

You must immediately bring your train to a stand and then press the **ST** button to acknowledge the message. The **GEN STOP** text message will then become steady in the radio display. You must wait for the signaller to contact you. You must not move the train without permission from the signaller.

signaller   When each driver has acknowledged the general 'STOP' text message, you must explain why the message was sent. The general call facility may be used to do this.

driver   To clear the **GEN STOP** instruction from the display you must press the **#** button. **GEN STOP** will be replaced by the area code and the train reporting number.

6.4 Automatic warning system (AWS) false emergency tone detection

signaller   All radio calls, except for the emergency call, are set up using radio data telegrams. The emergency call is set up by the CSR equipment detecting an emergency tone transmitted by the train radio.

This emergency tone can also be detected during a speech call when the AWS warning tone is sounded in the cab for more than three seconds.

You must answer the emergency call, but in this case there will be no train information displayed on the VDU, neither will any audio communication be established.

When you have established that there is no emergency, you must cancel the emergency call by pressing the **CLR CALL** key. You must report the false emergency call to Fault Control.

7.1 Making general calls

When it is necessary to give information to the driver of each train in your area of control, you can use the general call facility of the CSR system. To use this you must:

signaller

• press the **GEN CALL** key

• press the **ENTER** key.

One of the following will then be displayed on the right hand side of the VDU:

• **GENERAL AUTO**

• **GENERAL MAN OP GROUP NO.**

If **GENERAL AUTO** is displayed, you must make your announcement using the handset. You will only have 15 seconds to do this. A countdown timer is displayed.

Your announcement will broadcast as you speak, and will then be repeated via all of the radio groups. You will hear these repeat announcements over the loudspeaker.

If **GENERAL MAN OP GROUP NO.** is displayed, you must make your announcement using the handset. You will only have 15 seconds to do this. A count down timer is displayed.

At the end of the first count down another will start again. You must again repeat your message. You must do this for each countdown that is displayed. However, this will not happen more than three times.

When the signaller makes a general call, **GEN CALL** will be displayed on the radio. You must listen to the general call and take notice of what the signaller is announcing. It is not necessary for you to speak to the signaller unless the signaller asks you to.

driver

7.2 General call - emergencies

signaller   If you need to broadcast emergency information using the general call facility, you may do this at any time. You must start each message with the following:

"This is an emergency general call"

You must then state the message.

7.3 General call - advisory

signaller   Advisory messages must only be given under the situations as shown below.

To advise drivers approaching an area affected by a CSR system failure

You must use the following advisory message:

"This is an advisory general call. There is currently a CSR system failure within area................ drivers do not need to acknowledge this call".

To advise drivers approaching an area affected by a blanket speed restriction

You must use the following advisory message:

"This is an advisory general call. This is confirmation of a blanket speed restriction in force between............ and .... of .... mph. Drivers do not need to acknowledge this call".

Or

"This is an advisory general call. The blanket speed restriction in force between............ and .... of .... mph, to be lifted at ....hours has now been withdrawn. Drivers do not need to acknowledge this call".

To advise drivers approaching an area affected by exceptional railhead conditions outside known sites

You must use the following advisory message: **signaller**

"This is an advisory general call. Due to poor railhead conditions between............ and .... drivers are reminded to drive according to the prevailing conditions. Drivers do not need to acknowledge this call".

To advise drivers approaching an area affected by infrastructure failures or incidents

You must use the following advisory message:

"This is an advisory general call. Due to operating difficulties between............ and .... you may experience delay. Drivers do not need to acknowledge this call".

7.4 Failure of recording equipment affecting a general call

If the recording equipment has failed, you must repeat the general   **signaller**
call over each group of radio transmitters in turn.

8.1 Passing a channel change marker

driver

When a train passes a channel change marker the CSR on-train equipment should automatically change to the new area channel. The train radio will confirm that this has happened and the radio will then display the new area code.

signaller

If on-train CSR equipment fails to automatically change when the train passes a channel change marker you will be alerted to this by an audible alarm and the following type of message being displayed on the CSR VDU.

> **1R22 0029 AREA CHANGE FAIL**

You must call the train concerned and ask the driver if the train radio did automatically change to the new area channel when the train passed the channel change marker.

If the train radio did change area

driver

If the train radio automatically changed correctly, there could be a fault with the train radio. You must report the failure as shown in your train operating company instructions.

If the train radio did not change area

signaller

If the train radio did not change automatically, you must record the six-digit train unit number and report the failure to Fault Control.

i

The process of calling the train should automatically drag the train's details into the new area causing the train radio to a change to the new area code.

Uncontrolled When Printed

8.2 Changing the area code manually

If the area code does not change automatically when in the area of the lineside channel change marker, you must as soon as possible without causing yourself distraction, input the correct area code manually as follows:

driver

• press the **AR** button

• enter the two-digit area code

• press the ✱ button.

If the radio is not set to the new area code and the train moves out of radio coverage, **RADIO LOST** will be displayed on the radio and an audible alarm will sound to remind you to manually change the area code.

8.3 Receiving an 'out of area' call

An 'out of area' call is usually caused by the driver manually inserting an incorrect area code, or by the radio failing to change area automatically.

signaller

When you receive an 'out of area' call the VDU will display the call in the trains calling list as normal but the signal number will be shown with the text and background colours reversed.

You can either:

• call the driver in the normal manner and tell the driver to change the area code manually to the correct area and then to request a call to the correct signaller, or

• not answer the call yourself but tell the correct signaller and request that signaller to call the train concerned. The correct signaller calling the train will automatically reset the train radio to the correct area code.

i

These instructions supplement those shown in Rule Book module S4.

driver

When your train has stopped at a signal at danger, you must press the **SG** button on the radio, the display will show **AT SIG**.

signaller

When the driver presses the **SG** button on the cab radio, the last reported location of the train and the message **STANDING AT SIGNAL** will be added to the 'trains calling' queue. If you do not need to speak to the driver you must send the 'wait at signal' text message to the driver. To do this you must:

• press the **WAIT SIG** key

• press the **Q SEL** key or the **Q** key

• type the queue number of the train concerned

• press the **ENTER** key.

If you need to speak to the driver, you must:

• press the **Q SEL** key or the **Q** key

• type the queue number of the train concerned

• press the **ENTER** key.

driver

If the signaller needs to speak to you, the signaller will call your train in the normal manner. If the signaller does not need to speak to you but wants you to wait for the signal to change, you will receive a 'wait at signal' text message. In this case, the **AT SIG** display will be replaced by the area code, the train reporting number and the word **WAIT**.

If the signal does not change within five minutes you must press the **SG** button again.

To clear the **WAIT** message from the display you must press the **#** button.

Uncontrolled When Printed

If the master switch is away from the off position but not in the neutral position and pressure is released from the DSD pedal or holdover button for a period in excess of 30 seconds an alert tone will sound and **DSD** will show flashing in the radio display.

driver

If the DSD pedal or holdover button is not operated within the next 30 seconds, the alert tone will stop, the flashing **DSD** will become steady and an alarm message will automatically be sent to the controlling signaller.

If **DSD ALARM** becomes displayed next to a train reporting number and last reported position in the 'trains calling' queue, you must immediately try to contact the driver by calling the train radio.

signaller

If you are unable to contact the driver you must try to find out what has happened. To do this you must, where practicable, arrange for a responsible person to be sent to the train or you can ask the driver of a train on an adjacent line to investigate.

You should use the PA system to keep passengers on the train informed about what is happening.

> **i** These instructions supplement those shown in Rule Book module TW1 and Rule Book module TW5.

11.1 Failure of cab radio equipment

driver When any indication lamps on the radio or segments of the radio display fail you must report this as shown in your train operating company instructions. You do not need to treat the radio as defective.

Certain faults with the CSR cab equipment will not result in loss of communications. If such a fault does occur, you must tell the signaller. You must then act in accordance with the instructions the signaller will give you.

signaller If a driver tells you about a failure of the CSR cab equipment, you must tell Operations Control, who will liaise with the train operating company concerned. You must then pass on the instructions given by Operations Control to the driver.

driver Operations Control and the train operating company control will agree how the train with the radio failure will be dealt with.

If it is agreed that the train can be worked forward with a fully defective radio, you must, if it is necessary to speak to the signaller, use signal post telephones or other lineside telephones.

Unless authorised, you must not use a mobile telephone as a substitute for a defective CSR cab radio when working a CSR designated service within a CSR fitted area.

You must report and record all CSR cab equipment faults as shown in your train operating company instructions.

Uncontrolled When Printed

11.2 Failure of lineside radio equipment

When there is a complete or partial failure of the CSR lineside equipment, trains may enter service and continue in service.

driver, signaller

Operations Control and the train operator's control will arrange for the method of working to be reviewed by the relevant on-call managers if a failure lasts, or is expected to last, longer than two hours.

The person responsible for maintaining the equipment will tell you the extent of the failure and whether any back up is or will be available.

signaller

During a failure of CSR lineside equipment you must use signal post telephones or other lineside telephones or NRN if available if it is necessary to speak to the signaller.

driver

You must record the details of a failure of CSR lineside equipment in the Train Register and report the failure to Operations Control.

signaller

If there is a failure that affects a radio base station, you may experience difficulty in sending and receiving messages in the area concerned.

If there is a failure between the processors at adjacent signal boxes, or if there is a failure of the train describers, you must make frequent general calls to let all drivers know they need to set up the cab radio at the first suitable point beyond the affected area.

You must tell any other signaller involved about the CSR failure, who must also carry out these instructions.

Partial system failure

If the CSR lineside equipment throughout a geographical area has partially failed, it may still be possible for you to make a call using the traction unit number of the train concerned.

signaller

signaller   You must ask Operations Control to provide a list of traction unit numbers matched with train reporting numbers.

Complete system failure

signaller in area adjacent to failed area   If there is a complete failure of CSR lineside equipment throughout a geographical area, you must broadcast frequent general calls to advise drivers:

- there is a CSR system failure

- the limits of the area that has failed

- to set up the cab radio at a suitable location beyond the affected area.

signaller   Where trains normally set up the CSR cab equipment in the area that has failed, you must make alternative arrangements to make sure the driver of each train starting its journey is made aware of the system failure.

You may need to arrange for a competent person to tell each driver, or where possible, get a signaller in another area to make general calls so drivers are aware of the system failure in your area.

11.3 Partial set up after passing an area affected by a radio equipment failure

driver   If, after passing through an area affected by a CSR lineside equipment failure, there is no booked stopping point with a suitable signal berth to allow a full set up of the CSR cab radio, you should attempt to gain a partial set up.

Partial set up is also called 'comfort mode'.

To partially set up the cab radio, you must make sure the radio is switched on and then:

driver

• press the **AR** button

• press the **✱** button

• enter the correct two-digit area code.

You must always observe your train operating company driving instructions when making any changes to the radio while the train is moving. You must not let yourself become distracted.

If necessary, you must wait until the next booked stopping point and then carry out either a full or partial set up there.

Partial set up to the area code will restore the ability to make and receive emergency calls and certain speech calls only. You must make sure the signaller knows the 6-digit traction unit number of your train.

Until the radio can be fully set up at a recognised signal, the train radio will not update the train's position to the signaller. You must take extra care to identify your train and its location in any call.

Whilst in partial set up you must manually change the area code whenever the train passes a lineside area channel change marker.

During a failure of CSR, or when a train is not fully set up, you must take extra care to identify the train's identity and its location whenever a CSR call is made.

signaller