Ref	**NR/SP/SIG/10024**
Issue	4
Date	August 2004

Signallers Operating Guide for the use of IECC Signalling Workstation (formerly RT/E/P/10024)

This temporary front sheet facilitates change to the new Network Rail Standards referencing nomenclature.

The Ref above will be formally allocated to this standard when it is next changed in the meantime the contents, date and issue number of this Network Rail Standard are UNCHANGED and with immediate effect it should be referred to as "(new ref) formerly (old ref)".

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Company Procedure

Signaller's Operating Guide for the Use of the IECC Signalling Workstation

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3	August 2003	Incorporates new features and amended and additional GPVDU messages as defined in RT/E/S/17504. Reformatted to Network Rail standard.
4	August 2004	Section 6.2.5 amended to include description of signal identification and revised description of flashing red aspect on signalling display. Sections 8.74.2, 8.75.2, 8.76.2 and 8.77.2 amended with revised descriptions of signal identification. Section 11 amended to include examples of signal and detail view identities.

Implementation

The requirements specified in this document shall be enforced from August 2004.

Compliance

The requirements of this procedure are mandatory and apply to all new IECC schemes when design is started after 1st October 2004 and the upgrading of existing IECC schemes.

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1 PURPOSE

An IECC signalling workstation, usually known as a signaller's workstation, provides facilities for the control of signalling and train movements on a section of railway. Indications of the state of the railway are provided by Visual Display Units, and controls are operated by means of trackerball and/or keyboard commands.

In most cases Automatic Route Setting (ARS) is provided, enabling regular timetabled train movements to be controlled automatically with the minimum of intervention by the signaller.

In IECC Upgrade 003 (or later), ARS is also used to perform SPAD detection. The part of ARS that performs SPAD detection is known as the Subsystem for SPAD Detection (SSD).

These instructions describe the operation of the various facilities available on the signaller's workstation. Features specific to IECC Upgrade 001 (or later) are identified through use of *italic* text.

Some of the facilities described are not yet available with the current version of the IECC. Such facilities are identified through use of <u>underlined</u> text.

All examples given are fictitious.

2 SCOPE

This procedure is applicable to the format of information displayed on, and the commands available at, an IECC Signalling Workstation.

3 REFERENCE DOCUMENTATION

None.

4 DEFINITIONS

ACI	Automatic Code Insertion
ARS	Automatic Routesetting Subsystem
CCTV	Closed Circuit Television
CRT	Cathode Ray Tube
DIS	Flexible Display Subsystem
EFA	Equipment Fault Alarm
IECC	Integrated Electronic Control Centre
PSM	PC SPAD Monitor

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SDS	Signalling Display Subsystem
SGRC	Signal Group Replacement Control
SPAD	Signal Passed At Danger
SSD	Subsystem For SPAD Detection
SSI	Solid State Interlocking
TD	Train Describer or Train Description
TFT	Thin Film Transistor
VDU	Visual Display Unit

5 GENERAL DESCRIPTION

The Signalling Control Centre is equipped with one or more signallers' workstations and, usually, a supervisor's and a train announcer's workstation. Other facilities, such as control area maps, will be provided at convenient points in the control room.

5.1 The Signaller's Workstation

The Signaller's Workstation is the means by which the state of the railway is communicated to the signaller and for enabling him to control operations within his area. The number of workstations provided is dependent on the size and complexity of the area controlled by the Signalling Control Centre.

Each workstation has the following facilities.

5.1.1 Signalling Visual Display Units

A number of Visual Display Units (VDUs), usually known as display screens, are mounted on the rear of the workstation. One or more will display the total area of control as an overview, presenting all the major features of operation. Additionally, detail displays of smaller areas may be called up on other screens when specific, more detailed, activities are necessary.

All signalling display screens will show the current state of the railway in the area covered on the understanding that a confirmation indication on each of the display screens continues to flash.

A "cross-hairs" cursor will be present on one of the signalling display screens. Its position will be determined by the signaller through his/her controls.

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5.1.2 General Purpose Display

One screen will present the General Purpose Display.

It will provide, in text form, messages in response to the signaller's actions and also alarms relating to the various systems under his control.

Train Describer maps can also be displayed.

5.1.3 The Trackerball and Pushbuttons

The Trackerball, mounted in the desk, is used to move the cursor around the signalling display screens. Rolling it in any direction will cause the cursor to follow in that direction.

The control pushbuttons enable the signaller to initiate commands associated with the position of the cursor. The pushbuttons are entitled:

Set

Cancel

N (Normal)

C (Centre)

R (Reverse)

The majority of signalling controls may be operated through these facilities.

5.1.4 The Keyboard

The Keyboard enables the signaller to initiate commands and queries for signalling, train describer, automatic route setting and SPAD alarm[1] activities. It also enables the signaller to respond to alarms generated within these systems.

5.1.5 Emergency Signals On Control

5.1.5.1 Solid State Interlocking (SSI) Areas

A pushbutton will be provided for each SSI area to allow all signals to be replaced to danger in emergency, independently of the signalling display screens. Pressing the pushbutton will cause all controlled signals, and all automatic signals with an emergency replacement facility, to be replaced

[1] Upgrade 003 or later

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to red within the designated area. The signals will remain at red until routes are set from them or emergency replacement facilities cancelled.

Note that any automatic signals (without an emergency replacement facility) directly controlled by the SSI will also be replaced to red when the button is pressed, but will clear again if conditions permit when the button is released. The above represents the extent of changes occurring when this control is used.

5.1.5.2 Route Relay Interlocking (RRI) Areas

A switch will be provided for each relay interlocking. Turning the switch to the "signals on" position will cause all controlled signals to be replaced to red.

(Automatic signals with an emergency replacement facility will also be replaced to red if the replacement facility is effected through the same remote control system.) The signals will remain at red until the switch is restored to the "normal" position.

5.1.6 PC SPAD Monitor

The PC SPAD Monitor (PSM) is an interim solution to the detection of SPADs prior to the introduction of the IECC SPAD Alarm. The PSM has a display, alarm unit and command unit which are installed at each signalling workstation. The command unit enables the signaller to respond to SPAD alarms generated by the PSM. The SPAD alarm facility of the PSM, including the display, audible alarm and command unit, is disabled when the IECC SPAD Alarm[1] is fitted.

5.1.7 Other Facilities

Where CCTV supervised level crossings exist, separate VDUs (and possibly controls) will be provided in an appropriate position on the workstation.

Telephone concentrator facilities will also be provided.

5.2 Supervisor's Workstation

When provided, this workstation provides VDUs showing the overview displays for the whole signalling centre. No control facilities are provided but communication facilities will be available.

[1] Upgrade 003 or later

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5.3 Train Announcer's Workstation

When provided, this workstation provides VDUs showing the overview displays of the station areas only. No control facilities are provided but communication facilities will be available.

5.4 Plans and Other Documents

A map of the total area of control (sometimes referred to as Static Boards) will be provided to enable some control of train movements to be maintained in the rare event of total loss of electronic control.

Plans detailing Automatic Route Setting Subareas, Traction Isolation Sections, Gradients, etc. will be provided. Tables or route cards for the implementation of Rule D3.1 will also be available.

6 DISPLAYS

6.1 General

6.1.1 Monitors

The VDUs provided are either 20 inch high-resolution CRT or 18.1 inch TFT flat screen colour monitors.

6.1.2 On/Off Switch

Each monitor has an On/Off switch. It should not be necessary to switch off any monitor during normal operation. A monitor should only be switched off if it appears to be faulty, e.g. no stable display available.

6.1.3 Brightness and Contrast Controls

Brightness, contrast and possibly other controls are provided which may be adjusted to individual taste but it is recommended that the display screen is made only as bright as necessary to adequately view the details.

6.1.4 De-Gauss Button

Each CRT monitor has a De-Gauss button. Over a period of time the colours displayed on the display screens may change slightly. Should this occur, the original colours can be restored by pressing and releasing this button.

NB Some CRT monitors currently in use do not provide this facility. Under these circumstances, the resident Maintenance Technician should be asked to adjust the monitors as necessary.

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6.1.5 Flexibility

It is possible to call up any one of a maximum of 8 signalling displays onto any signalling screen (except that provided for the General Purpose display). The method is described in section 7.4.

6.1.6 Types Of Signalling Display

There are two types of signalling display; overviews, giving a simplified display of the whole area of control, and detail views, giving full information about a smaller area.

6.2 Overview Displays

6.2.1 Track Layout

The background to all displays is either black or grey. The track layout is shown as continuous grey lines, including points and crossings. Non track-circuited lines or lines not controlled by the workstation are shown as grey outline only. Note the grey background is distinguishable from the grey used to display the track layout and other signalling elements.

6.2.2 Route Set

Generally when a route is set, *the entrance signal post becomes white*[1], the section of line concerned becomes white and the lie of points within the route is shown by the continuity of the white line. Direction arrows are shown where this is appropriate.

6.2.3 Passage of Train

The passage of a train is shown by the white line changing to red, section by section, as track circuits become occupied. As the track circuits clear behind the train, the line reverts to grey if the route has been cancelled or to white if the route remains set. *The entrance signal post will revert to grey if the route is cancelled*[1].

6.2.4 Points Out of Correspondence

Points that are out of correspondence are displayed as a flashing grey symbol at the tip of the points concerned.

[1] Upgrade 001 or later

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6.2.5 Signals

Signals are shown by symbols in the appropriate positions on the signalling display.

Controlled signals are shown with their current aspect, red, yellow, double yellow or green. Flashing aspects are also shown. A signal with a failed lamp will be displayed in grey with a black centre to the aspect when that aspect should be showing.

A flashing red aspect is shown on the signalling display when a route has been cancelled and is timing out. In such circumstances the actual signal head shows steady red.

Non-controlled Automatic and Semi-Automatic signal symbols are shown with a grey aspect. If an emergency replacement facility is used, the relevant automatic signal symbol shows a red aspect (assuming this is shown on the actual signal head).

If a signal is controlled or supervised by another workstation, Signalling Control Centre or Signalbox, it is generally shown with a grey aspect and, where applicable, a prefix code identifying the controlling point. However, in some instances such signals are shown with their actual aspect.

Signals are identified by the signal number only, i.e. the signal box / locality code prefix is not shown or used in commands.

The actual aspects of repeating (distant) signals to controlled signals will be shown and the letter R displayed alongside the symbol.

Banner repeater signals will be shown as a signal post and adjacent letter B.

Emergency replacement facilities for automatic signals and automatic working facilities for controlled signals are displayed.

Ground position light signals are not shown on the overview display.

Grey, yellow or white triangular exit symbols are shown at places where no signal exists at the termination of a route, e.g. buffer stops (grey), or where separate exits are required for different classes of route (yellow or white), or where the exit signal is on another display (grey).

When a route is set from a controlled signal, the signal post will be displayed in white. When the route is cancelled (for any reason), the signal post will revert to grey.[1]

[1] Upgrade 001 or later

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6.2.6 Train Descriptions

Train descriptions are displayed in "berths" within each signal section, generally moving from the berth associated with one signal section to the next berth when the head of the train to which they apply passes beyond that signal section. When the train is controlled by ARS, the description is shown in cyan (light blue).

Non-ARS train descriptions are shown in pink and descriptions of trains running to a contingency plan or to a special timing pattern, are shown in stone.

6.2.7 General Features Displayed

Geographical features of the railway, including station platforms, level crossings, tunnels, viaducts and significant bridges are shown.

6.2.8 Soft Keys

A row of "soft keys" are displayed across the bottom of the signalling display screens. Their use will be described in the appropriate sections.

6.2.9 Update Confirmation Indicator

A white equals sign in the bottom left hand corner of each signalling display screen will normally flash continually providing that the display is being correctly updated. If this ceases to flash, it should be recognised that the information displayed on the screen may no longer correctly represent the current conditions.

6.2.10 SPAD Detection Indicator[1]

A "baton" adjacent to the Update Confirmation Character will normally rotate providing that SPAD detection is available[1]. If the baton ceases to rotate, it should be recognised that SPAD detection is not available.

6.3 Detail Displays

6.3.1 Information Displayed

Each detail display shows a section from one of the overview displays and includes further information as follows:

Ground position light signals are shown, displaying a red aspect (or yellow if appropriate) when "on" and white when "off".

[1] Update 003 or later

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Track circuits are shown individually.

Positions of overlaps are shown.

The current lie of points is always shown.

Any individual point request (equivalent to setting by point key) is displayed as N or R adjacent to the points concerned.

6.3.2 Call-Up Information

Information not normally displayed, that can be called up when required, includes signal, point and track circuit identities.

6.4 Terminology - Circles and Roundels

Throughout the following sections, the term "circle" is used to denote a symbol showing only a circular outline of the specified colour, the centre of the circle being black (or the background colour of the display); the term "roundel" denotes a solid (filled) circular symbol of the specified colour.

7 OPERATING THE WORKSTATION

The following sections describe the actions necessary, using the workstation, to perform each function associated with operating the railway.

There are two means for communicating commands.

7.1 Using the Trackerball and Cursor

Commands using the trackerball and trackerball buttons will usually include the following actions:

MOVE CURSOR

The trackerball should be rolled to move the cursor in the required direction to position the cursor over the symbol specified in the command. Slow movement of the trackerball will allow accurate positioning of the cursor whilst fast movement of the trackerball will cause the cursor to traverse greater distances rapidly and move between display screens.

PRESS

Once the cursor is correctly positioned, it will be necessary to press one of the buttons associated with the trackerball. These buttons are:

"Set" button

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"Can" button

"N" button

"C" button

"R" button

If the command is valid, it will be actioned as described, otherwise there will be no response to that button being pressed.

7.2 Using the Keyboard

The keyboard provided has four groups of keys. The central group resemble a standard typewriter "QWERTY" keyboard. The other three groups are known as function keys and control functions related to signalling (top group, coloured red), automatic route setting (left-hand group, coloured yellow), train describer and alarms (right-hand group, coloured green and white respectively).

A set of ungrouped keys (coloured white or red according to purpose) are used for functions relating to the SPAD alarm[1].

In the following description of commands, use of the keyboard will be shown by the instruction:

TYPE

Each key pressed will be echoed as a white character in the second line of the input window of the General Purpose Display screen.

When a specific identity (e.g. signal, route, point numbers, etc.) must be typed, it will be shown as a name enclosed in round brackets, and the significance of the name will be explained following the generalised command.

Where a comma is shown in a TYPE command, either a comma or a space must be entered; whichever is entered, it will be echoed on the screen as a space.

Function keys will be shown in square brackets, (e.g. [SET]), and will be echoed on the screen as the letters engraved on the key.

Entry of the final function key will automatically cause the command to be actioned. A correct command entry will scroll up to the first line of the input window, changing colour from white according to the nature of the command as follows:

Signalling	Red

[1] Upgrade 003 or later

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Train Describer	Green
Automatic Route Setting	Yellow
SPAD Alarm[1]	Yellow

An invalid command will remain white, scroll up to the first line and the part in error will flash. A message will appear in the third line stating the nature of the error. A revised command may then be typed into the second line.

Once a command has been correctly entered, it will remain in the input window until the next command is completed.

The operator may correct any error made prior to entering the final function key by repeatedly using the [DEL] key to delete in turn each of the characters entered since the error. The correct entry may then be typed.

A typical example of each TYPE function will be given, showing precisely the entries that are required.

7.3 Moving the Cursor between Screens

Moving the cursor between signalling display screens may be achieved using the following methods.

7.3.1 Trackerball Method 1

The cursor may be moved sideways from screen to screen by moving it to the side of its current screen and then continuing the rolling action; it will then jump to the adjacent screen. Moving left from the far left-hand screen will cause the cursor to move onto the far right-hand screen and vice versa.

7.3.2 Trackerball Method 2

This method is not available on Signalling Workstations fitted with the SPAD Alarm[1].

MOVE CURSOR	to the soft key with the name of the screen to which it is to be moved, e.g. SC1.
PRESS	"Set" button.

The cursor will move directly to the same position on the screen requested.

[1] Upgrade 003 or later

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The signalling display screens are numbered consecutively from left to right commencing from number 1 at the left-hand end.

7.3.3 Keyboard Method

TYPE (number)[SCR]

(number) = Reference number of screen

e.g. 1[SCR] will move the cursor straight to Screen 1.

The cursor will move directly to the same position on the screen requested.

The signalling display screens are numbered consecutively from left to right commencing from number 1 at the left-hand end.

7.4 Changing Signalling Displays

Selecting the signalling display to be shown on a particular screen may be achieved using the following methods.

7.4.1 Trackerball Method

MOVE CURSOR to the screen on which the view is to be changed.

MOVE CURSOR to the "soft key" (labelled VW1, VW2, etc.) for view required.

PRESS "Set" button.

The view requested will replace that previously shown.

7.4.2 Keyboard Method

TYPE (number)[SCR]

(number) = Reference number of screen

TYPE (view)[VIEW]

(view) = View Identity

e.g. 1[SCR] followed by 1[VIEW] requests the cursor to be displayed on Screen 1 with Signalling View 1 replacing the existing display on that screen.

The view requested will replace that previously shown.

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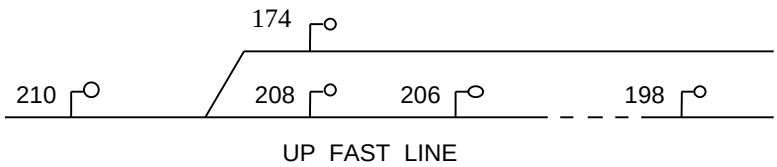
8 SIGNALLING COMMANDS

8.1 Setting a Route

A route may be set by the following methods, using the overview display or detail display for main routes or the detail displays only for shunt routes.

The following diagram applies to the examples given in sections 8.1 and 8.2:



8.1.1 Trackerball Method

MOVE CURSOR to entrance signal symbol.

PRESS "Set" button.

Track symbol in advance of signal flashes white.

MOVE CURSOR to exit signal symbol, or triangular exit symbol, as appropriate.

PRESS "Set" button.

Flashing symbol is extinguished, track symbols along line of route change to white "route set" indication, points flash until detected in their correct positions whence they become steady, *the entrance signal's post becomes white*[1], and the signal's indication clears when appropriate.

8.1.2 Keyboard Method 1

TYPE S(ent),S(exit)[SET]

or

TYPE S(ent),N(exit)[SET]

S denotes Signal request

N denotes "Button" request (i.e. Exit Triangle)

[1] Upgrade 001 or later

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(ent) = Entrance Signal Identity

(exit) = Exit Identity (Signal or Triangle)

e.g. S210,S208[SET] requests route from 210 signal to 208 signal.

Track symbols along line of route change to white "route set" indication, points flash until they are detected in their correct positions whence they become steady, *the entrance signal's post becomes white*[1], and the signal's indication clears when appropriate.

If two genuine signal numbers are entered for (ent) and (exit) but there is no route between them the following message will appear in the Signalling Output window of the General Purpose Display screen:

INVALID ROUTE, COMMAND IGNORED

8.1.3 Keyboard Method 2

TYPE R(route)[SET]

R denotes Route request

(route) = Route Identity

e.g. R210BM[SET] requests route from 210 signal to 208 signal.

(The letters BM identifies the particular route and class of route from 210 signal, as defined in the list of routes).

Track symbols along line of route change to white "route set" indication, points flash until they are detected in their correct positions when they become steady, *the entrance signal's post becomes white*[1], and the signal's indication clears when appropriate.

8.2 Setting a Long Route

Where a sequence of consecutive main routes will need to be set at frequent intervals, a facility may be provided to enable this to be done as if setting one route. A long route may be set by the following methods, using the overview displays or detail display.

8.2.1 Trackerball Method

MOVE CURSOR to entrance signal symbol.

[1] Upgrade 001 or later

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PRESS "Set" button.

Track symbol in advance of signal flashes white.

MOVE CURSOR to final exit signal symbol, or triangular exit symbol as appropriate.

PRESS "Set" button.

Flashing symbol is extinguished, track symbols for each section of route change to white "route set" indication, points flash until they are detected in their correct positions whence they become steady, *the entrance signals' posts become white*[1], and the signals' indications clear when appropriate.

8.2.2 Keyboard Method 1

TYPE S(ent),S(exit)[SET]

or

TYPE S(ent),N(exit)[SET]

S denotes Signal request

N denotes "Button" request (i.e. Exit Triangle)

(ent) = Entrance Signal Identity

(exit)= Final Exit Identity (Signal or Triangle)

e.g. S210,S198[SET] requests routes from 210 signal to 208 signal, 208 signal to 206 signal, etc., to 198 signal.

Track symbols for each section of route change to white "route set" indication, points flash until they are detected in their correct positions whence they become steady, *the entrance signals' posts become white*[1] and the signals' indications clear when appropriate.

If two genuine signal numbers are entered for (ent) and (exit) but there is no route between them the following message will appear in the Signalling Output window of the General Purpose Display screen:

INVALID ROUTE, COMMAND IGNORED

[1] Upgrade 001 or later

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8.2.3 Keyboard Method 2

TYPE R(route)[SET]

R denotes Route request

(route) = Route Identity

e.g. R210UF[SET] requests long route from 210 signal to 198 signal.

(The letters UF identify a specific long route, in this case along the Up Fast line from 210 signal, as defined in the list of routes).

Track symbols for each section of route change to white "route set" indication, points flash until they are detected in their correct positions when they become steady, *the entrance signals' posts become white*[1], and the signals' indications clear when appropriate.

8.3 Setting a Route Where Alternative Routes Exist

Where alternative routes exist between an entrance and an exit, the route to be used is often determined automatically by the interlocking. However, manual selection will sometimes be permitted and, in this case, a route may be set by the following methods, using the overview displays or detail displays for main routes or the detail display only for shunt routes.

8.3.1 Trackerball Method

MOVE CURSOR to entrance signal symbol.

PRESS "Set" button.

Track symbol in advance of signal flashes white.

MOVE CURSOR to appropriate intermediate triangular symbol.

PRESS "Set" button.

MOVE CURSOR to exit signal symbol or triangular exit symbol as appropriate.

PRESS "Set" button.

Flashing symbol is extinguished, track symbols along line of route change to white "route set" indication, points flash until they are detected in their correct

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positions when they become steady, *the entrance signal's post becomes white*[1] and the signal's indication clears when appropriate.

8.3.2 Keyboard Method 1

TYPE S(ent),N(int),S(exit)[SET]

or

TYPE S(ent),N(int),N(exit)[SET]

S denotes Signal request

N denotes "Button" request (i.e. intermediate or exit triangle)

(ent) = Entrance Signal Identity

(int) = Intermediate Triangle Identity

(exit) = Exit Identity (Signal or Triangle)

e.g. S210,NA,S208[SET] requests route from 210 signal to 208 signal via A.

Track symbols along line of route change to white "route set" indication, points flash until they are detected in their correct positions when they become steady, *the entrance signal's post becomes white*[1] and the signal's indication clears when appropriate.

8.3.3 Keyboard Method 2

TYPE R(route)[SET]

R denotes Route request

(route) = Route Identity

e.g. R210B1[SET] requests route from 210 signal to 208 signal via A.

(The characters B1 identify the particular route from 210 signal, as defined in the list of routes.)

Track symbols along line of route change to white "route set" indication, points flash until they are detected in their correct positions when they become steady,

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the entrance signal's post becomes white[1] and the signal's indication clears when appropriate.

8.4 Cancelling a Route

Routes will normally be cancelled automatically by Train Operated Route Release after the passage of a train. When it is necessary to cancel a route manually, this may be done by the following methods, using the overview displays or detail displays for main routes or the detail displays only for shunt routes.

8.4.1 Trackerball Method

MOVE CURSOR to entrance signal symbol.

PRESS "Can" button.

The route will be released when it is safe to do so, either before or after the passage of a train as appropriate, and track symbols along the line of route will revert to grey, *as will the entrance signal's post*[1].

8.4.2 Keyboard Method 1

TYPE S(ent)[CAN]

S denotes Signal request

(ent) = Entrance Signal Identity

e.g. S210[CAN] cancels route from 210 signal.

The route will be released when it is safe to do so, either before or after the passage of a train as appropriate, and track symbols along the line of route will revert to grey, *as will the entrance signal's post* [1].

8.4.3 Keyboard Method 2

TYPE R(route)[CAN]

R denotes Route request

(route) = Route Identity

e.g. R210[CAN] cancels route from 210 signal.

[1] Upgrade 001 or later

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The route will be released when it is safe to do so, either before or after the passage of a train as appropriate, and track symbols along the line of route will revert to grey, *as will the entrance signal's post*[1].

8.5 Controlled Signal, Setting Automatic Working Facility

A controlled signal may be set to work automatically by the following methods, using the overview display or detail display.

The route concerned must have been already set and be permitted to work automatically.

8.5.1 Trackerball Method

MOVE CURSOR to blue "A" circle adjacent to signal symbol.

PRESS "Set" button.

Circle will change to blue roundel and the signal will operate automatically.

8.5.2 Keyboard Method

TYPE A(ent)[SET]

A denotes Automatic Working Facility request

(ent) = Entrance Signal Identity

e.g. A210[SET] establishes automatic working of route from 210 signal.

The appropriate "A" circle will change to a blue roundel and the associated signal will operate automatically.

8.6 Control Signal, Cancelling Automatic Working Facility

Cancellation of automatic working of a controlled signal may be achieved by the following methods, using the overview display or detail display.

Automatic working is also cancelled when the route is cancelled manually.

8.6.1 Trackerball Method

MOVE CURSOR to blue "A" roundel adjacent to signal symbol.

PRESS "Can" button.

[1] Upgrade 001 or later

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Roundel will revert to blue circle and signal will operate once only for each occasion of setting.

8.6.2 Keyboard Method

TYPE A(ent)[CAN]

A denotes Automatic Working Facility request

(ent) = Entrance Signal Identity

e.g. A210[CAN] cancels automatic working of route from 210 signal.

The appropriate "A" roundel will revert to a blue circle and the signal will operate once only for each occasion of setting.

8.7 Automatic Signal, Operating Emergency Replacement

An automatic signal with emergency replacement facility may be replaced to danger by the following methods, using the overview display or detail display.

8.7.1 Trackerball Method

MOVE CURSOR to dark red "E" or "R" circle adjacent to signal symbol.

PRESS "Can" button.

Signal aspect will change to red to indicate that emergency replacement command has been issued and the appropriate "E" or "R" circle will change to a dark red roundel.

8.7.2 Keyboard Method

TYPE E(sig)[CAN]

E denotes Emergency Replacement Facility request

(sig) = Signal Identity

e.g. E173[CAN] issues command for 173 signal to be restored to red.

Signal aspect will change to red to indicate that emergency replacement command has been issued and the appropriate "E" or "R" circle will change to a dark red roundel.

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