Train warning systems (AWS and TPWS) and reporting signalling failures and irregularities
You will need this module if you carry out the duties of a:

- signaller
- driver
- shunter
- guard
- signalling technician.

**Conventions used in this module**

A black line in the margin indicates a change to that rule and is shown when published in the module for the first time.

Green text in the margin indicates who is responsible for carrying out the Rule.

A white i in a blue box indicates that there is information provided at the bottom of the page.

A rule printed inside a red box is considered to be critical and is therefore emphasised in this way.
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   1.2 Driving cab equipment
   1.3 AWS indications and their meanings
   1.4 Areas where AWS is not provided
   1.5 AWS suppression and AWS cancelling indicators

2 Train protection and warning system (TPWS)
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   2.3 TPWS operation when approaching buffer stops
   2.4 Temporary isolation of TPWS train equipment
   2.5 TPWS train stop override
   2.6 If the TPWS activates where there is no lineside TPWS equipment

3 Reporting signalling failures and irregularities
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   3.7 AWS and TPWS failures
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1

Automatic warning system (AWS)

The people responsible: driver, signaller

The automatic warning system (AWS) does not relieve you of your responsibility for observing signals and speed restrictions.

1.1 Track equipment

An AWS magnet is normally provided 183 metres (200 yards) on the approach to:

• a signal, or
• a warning board or indicator.

At certain locations the AWS equipment is provided beyond a signal (for example, the signal where a line not fitted with AWS joins a line fitted with AWS).

The details of lines equipped with AWS are in Table A of the Sectional Appendix.
1.2 Driving cab equipment

The equipment in the cab consists of both audible and visual indications.

The visual indications are either:

- [ Illustration of clear indication ]
  Meaning: clear
- [ Illustration of warning indication ]
  Meaning: warning

The audible indication is either:

- a bell (clear), or
- a horn (warning).

1.3 AWS indications and their meanings

a) Warning indications

You will receive a warning indication (horn) in the driving cab when you approach a:

- colour light signal displaying a double yellow or single yellow (steady or flashing) or red aspect
- semaphore distant signal displaying a caution indication
- warning indicator provided for a permissible speed
- warning board provided for an automatic barrier crossing locally monitored (ABCL) or automatic open crossing locally monitored (AOCL) crossing
- warning board, cancelling indicator or emergency indicator for a temporary or emergency speed restriction
- cancelling indicator for an AWS indication which does not apply to your train.

You will also receive a warning indication when you pass over an AWS test inductor.
b) Cancelling an AWS warning indication

You must immediately cancel each warning indication and either:

• obey the signal aspect or indication, or
• control the speed of the train to comply with the warning board, emergency indicator or other indicator.

If you do not immediately cancel the AWS warning indication, the brakes will be automatically applied. In this case you must:

• make sure the train comes to a stand
• tell the signaller what has happened.

If you are both sure that lineside TPWS equipment did not cause the brake application, the train can proceed normally.

c) Clear indications

You will receive a clear indication (bell) in the driving cab when you approach:

• a colour light signal showing a green aspect, or
• a semaphore distant signal displaying a clear indication.

You do not have to cancel a clear indication.
d) **AWS warning when a semaphore distant signal shows clear**

You must treat a semaphore distant signal as being at caution if you receive an AWS warning indication when the signal is showing a clear indication.

**Exceptions.** You do not need to treat the signal as being at caution if:

- the signal changes to a clear indication after the train has passed over the AWS magnet
- a warning board or emergency indicator is positioned at the signal
- a directing distant signal is cleared for a diverging route.

e) **AWS warning when there is no AWS track equipment**

If you receive an AWS warning indication and you are certain that the train has not passed over any AWS track equipment, you must:

- proceed normally, and
- report this to the signaller at the earliest opportunity.
1.4 Areas where AWS is not provided

How areas are identified

In some AWS fitted areas AWS equipment is not provided throughout. These areas are identified with the following signs.

Where AWS is not provided at a station on a line equipped with AWS

Start of AWS gap

End of AWS gap

Where AWS is not provided in the wrong direction on a bi-directional line

Start of the relevant section of line concerned

End of the section - normal arrangements resume

If a wrong direction movement approaches a temporary or emergency speed restriction, AWS will be provided.
1.5 AWS suppression and AWS cancelling indicators

On single and bi-directional lines, the AWS magnet will normally be suppressed for movements for which it does not apply. This means the AWS will not operate for movements for which it does not apply.

However, there are some locations where the AWS magnet is not suppressed. In these cases a cancelling indicator is provided to tell you that the AWS warning indication does not apply to trains travelling in that direction.

The indicators look like this:

- Where the AWS magnet is permanently installed.

- Where the AWS magnet is provided in connection with a temporary or emergency speed restriction.

The cancelling indicator is normally positioned 183 metres (200 yards) after passing the AWS warning indication for the signal or warning board or indicator concerned.
Train protection and warning system (TPWS)

The people responsible: driver, signaller

The train protection and warning system (TPWS) does not relieve you of your responsibility for observing signals and speed restrictions.

2.1 Where the system is located and what it does

TPWS is provided at certain signals, speed restrictions and buffer stops. The purpose of TPWS is to stop a train which has:

• passed a signal at danger without authority
• approached a signal at danger too fast
• approached a reduction in permissible speed too fast
• approached buffer stops too fast.

2.2 TPWS operation other than approaching buffer stops

When an automatic brake application is initiated as a result of the operation of TPWS, you must:

• acknowledge the TPWS brake demand
• make sure the train comes to a stand
• immediately tell the signaller what has happened
• carry out the instructions you are given by the signaller
• not make any further movement of the train until instructed.
Train warning systems (AWS and TPWS) and reporting signalling failures and irregularities

You must carry out the instructions shown in regulation 15 of module TS1 General signalling regulations and Part B section 34 of module TW5 Preparation and movement of trains: Defective or isolated vehicles and on-train equipment.

2.3 TPWS operation when approaching buffer stops

When an automatic brake application is initiated as a result of the operation of TPWS when approaching buffer stops, you must:

• acknowledge the TPWS brake demand
• after the train has come to a stand, move forward to the normal stopping point if it is safe to do so
• tell the signaller what has happened
• carry out the instructions you are given by the signaller.

You must carry out the instructions shown in regulation 15 of module TS1 General signalling regulations and Part B section 34 of module TW5 Preparation and movement of trains: Defective or isolated vehicles and on-train equipment.

2.4 Temporary isolation of TPWS train equipment

You must isolate TPWS equipment only when:

• you are authorised according to the rules and regulations
• you are specifically authorised due to a TPWS fault.

If you isolate the AWS, the TPWS will be isolated automatically, but if TPWS is isolated, this will not affect the AWS.
2.5 TPWS train stop override

You must use the TPWS override only when authorised in the rules and regulations.

2.6 If the TPWS activates where there is no lineside TPWS equipment

If the TPWS activates when it should not, you must:

• make sure the train comes to a stand
• acknowledge the TPWS brake demand
• tell the signaller what has happened.

If you are both sure that lineside TPWS equipment did not cause the brake application, the train can proceed normally.

If multiple TPWS activations occur during the journey, and you are both sure that lineside TPWS equipment did not activate the TPWS equipment on the train. You must:

• isolate the TPWS equipment
• carry out the instructions in Part B section 34 of module TW5 *Preparation and movement of trains: Defective or isolated vehicles and on-train equipment*. 

*driver, signaller*
3 Reporting signalling failures and irregularities

*The people responsible: driver, guard, shunter and signalling technician*

### 3.1 Signalling equipment

**driver**

You must tell the signaller **immediately**, stopping the train specially if necessary, if you become aware of a signalling failure or irregularity on any line. This may include:

- the failure in the working of a signal
- an irregularity in the working of a signal
- an irregular aspect sequence
- no signal shown when there should be one
- the aspect of a colour light signal not being clear or obvious
- a semaphore signal not showing correctly
- a white light showing instead of a red, yellow or green
- a signal or associated indicator difficult to see because of sunlight, streetlights or light reflections
- a signal difficult to see because of trees, foliage or other obstructions.

However, if you see any failures or irregularities of the following signals which apply to another line:

- a position-light signal
- a subsidiary signal
- a shunting signal

you must tell the signaller at the **first opportunity** without causing delay. However, you do not need to stop the train specially to do this.
3.2 Boards and indicators

You must tell the signaller at the first opportunity if any of the following is missing, or unlit when it should be lit:

- a limit of shunt signal or indicator
- a stop board
- a marker board.

You do not need to stop the train specially to do this.

3.3 Signals difficult to see because of sunlight, streetlights or light reflections

If a signal is difficult to see because of sunlight, streetlights or light reflections, you must tell the signaller immediately stopping the train specially if necessary.

If a driver reports that a signal is difficult to see because of sunlight, streetlights or light reflections, you must:

- tell Operations Control who will arrange for the signalling technician to check the sighting of the signal
- tell the driver of the next approaching train what has happened
- instruct that driver to report the state of the signal
- signal the train in the normal way.

If the driver you have instructed to check the signal reports to you that the signal is not difficult to see, you may signal the following trains in the normal way.

However, if that driver reports that the signal is difficult to see because of sunlight, streetlights or light reflections, you must treat the signal as defective and carry out the instructions in module T1A Work on signalling equipment and module T1B Movement of trains during failure of, or when working on, signalling equipment.
3.4 **Signals becoming difficult to see**

**driver**
If a signal is **becoming** difficult to see because of trees, foliage or other obstructions, you must tell the signaller at the first convenient opportunity. You do not need to stop the train specially to do this.

**signaller**
You must tell Operations Control but you do not need to treat the signal as being defective.

3.5 **Shunting movements**

**guard, shunter**
If you become aware of signalling failures or irregularities described in 3.1 or 3.2 when you are shunting, you must immediately tell the driver. The driver will then tell the signaller. You do not need to tell the signaller.

3.6 **Signaller’s actions**

**signaller**
If you are told about signalling failures or irregularities described in 3.1 of this module, you must:

- carry out the instructions in module T1A *Work on signalling equipment* and module T1B *Movement of trains during failure of, or when working on, signalling equipment*
- carry out the instructions in section 3.8.a) of this module.

3.7 **AWS and TPWS failures**

**driver**
You must carry out the instructions in Part B sections 4, 5 and 34 of module TW5 *Preparation and movement of trains: Defective or isolated vehicles and on-train equipment* (whichever is appropriate).

**driver, signaller**
You must fill in form RT3185 (see section 3.8) giving details of the failure and the correct fault code.
3.8 Form RT3185 Reporting a Signal/AWS/TPWS/ATP/TVM Failure or Irregularity

a) Completing form RT3185

You must both carry out the following instructions when a signal, AWS, TPWS, ATP/TVM failure has been reported as shown in:

- section 1 of this module for AWS faults
- section 2 of this module for TPWS faults
- section 3 of this module for signalling faults
- local ATP/TVM instructions.

You must both immediately complete form RT3185 with all the details of the failure or irregularity (see pages 17 and 18 for example) and either send or hand the form in as shown in the instructions on the form.

b) Exceptions

You need not complete form RT3185 if:

- the fault is clearly a right-side failure, or
- you can explain the failure or irregularity to be a right-side failure and you are fully aware of the circumstances of the failure.

However, you must tell Operations Control about the details of the failure or irregularity and make a suitable entry in the Train Register.
Train warning systems (AWS and TPWS) and reporting signalling failures and irregularities

You need not immediately complete form RT3185 if the signaller:

- can tell you the fault or irregularity is clearly a right-side failure, or
- can explain why it is a right-side failure and can confirm the circumstances of the failure.

However, you must complete RT3185 at the first convenient opportunity without causing delay and hand it in to the person shown in your company’s instructions before leaving duty.

c) AWS faults

You must immediately complete form RT3185 if the fault is a code 5 or 7.

For all other faults, you must carry out the instructions in section 3.8 b) of this section.

In both cases, you must make sure the correct code is entered in part 4 of form RT3185.

3.9 Investigating the failure or irregularity

If you receive a verbal report or a completed form RT3185, you must investigate the failure or irregularity to the appropriate level as shown in the Network Rail Signalling Maintenance Testing Handbook.

If you are required to provide a report so that a reply can be given to the driver, you must make sure, when writing your report, you detail the results of your investigation. You must send the report as shown in local instructions.
Example of Form RT3185 (Side 1)

RT3185
February 2005 (Side 1 of 2)

REPORTING A SIGNAL/AWS/TPWS/ATP/TVM
FAILURE OR IRREGULARITY

For use by Drivers in all cases of Signal, AWS or TPWS Irregularities and Signallers when the following is reported:- A wrong side signalling failure, an alleged wrong side signalling failure, a signal irregularity which is required to be reported immediately by the Driver in accordance with module S3 section 3.1 unless the fault is clearly right side or the Signaller can explain the failure or irregularity and can confirm his/her awareness of the circumstances, Rule Book module S3 section 2, module TWS Part B sections 5.5 and 34 and local ATP/TVM instructions.

Part 1 General Information (To be completed in all circumstances)

<table>
<thead>
<tr>
<th>Date</th>
<th>. . . . . . .</th>
<th>Time of incident</th>
<th>. . . . . .</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drivers details</td>
<td>Name</td>
<td>. . . . . . .</td>
<td>Company and home depot</td>
</tr>
<tr>
<td>Reported to</td>
<td>. . . . . . .</td>
<td>Time Reported</td>
<td>. . . . . . .</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Signaller details</th>
<th>Name</th>
<th>. . . . . . .</th>
<th>Signal Box</th>
<th>. . . . . .</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Driver reports circumstances</th>
<th>Driver of Train No.</th>
<th>. . . . . . .</th>
</tr>
</thead>
</table>

Details of the train involved

<table>
<thead>
<tr>
<th>From</th>
<th>. . . . . . .</th>
<th>To</th>
<th>. . . . . . .</th>
</tr>
</thead>
</table>

Tick appropriate box

- [ ] Signalling Irregularity
- [ ] TPWS Irregularity
- [ ] TPWS activation

Tick appropriate box

Approaching Signal No. . . . . . . at . . . . . . on the . . . . line

<table>
<thead>
<tr>
<th>Location</th>
<th>(Vehicles)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Speed restriction</th>
<th>. . . . . . .</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Buffer Stops</th>
<th>. . . . . . .</th>
</tr>
</thead>
</table>

Details of the rolling stock involved

<table>
<thead>
<tr>
<th>Traction unit No.</th>
<th>. . . . . . .</th>
<th>Vehicle/Cab No. in use</th>
<th>. . . . . . .</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Signal at signal box has been passed or Danger Driver have you passed a signal at Danger?</th>
<th>. . . . . . .</th>
<th>YES</th>
<th>. . . . . . .</th>
<th>NO</th>
</tr>
</thead>
</table>

PART 2 Report of Signal Imperfectly Shown or Not Shown

Tick the relevant box(es) - Detail the relevant answer

1. [ ] Signal not lit

2. [ ] Signal obscured by foliage/bright sunlight/reflective sign [describe as required]

3. [ ] Other [describe as required]

<table>
<thead>
<tr>
<th>Driver gives further details of the irregularity, if necessary</th>
<th>. . . . . . .</th>
</tr>
</thead>
</table>

(End of Page 1 of 2)
Example of Form RT3185 (Side 2)

RT3185
February 2005 (Side 2 of 2)

PART 3 Report or Irregular Signal Aspect

Driver raises the relevant signal(s) - Tick the appropriate box(es)

- Signal reverted to a more restrictive aspect
- Aspects changed randomly
- Aspect failed (permanent light signal)
- Signal showing more than one aspect together

Driver give further details of the irregularity if necessary

Specific details of the irregular sequence

Did the aspect/indication change on approach? YES NO
Were there any trains on adjacent line(s)? YES NO

PART 4 Report of AWS/TPWS/TVM Irregularity or Failure

Driver quotes the relevant detail(s) - Circle the relevant element

The following fault code was received

<table>
<thead>
<tr>
<th>Required Indication</th>
<th>Actual Indication</th>
<th>Fault Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clear</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Horn &amp; Bell</td>
<td>Bell</td>
<td>8</td>
</tr>
<tr>
<td>Horn instead of Bell</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Bell</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bell &amp; Horn</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bell instead of Horn</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brake without horn</td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Details of the post incident incident

Was AWS isolated as a result of this incident? YES NO
Was TPWS isolated as a result of this incident? YES NO

PART 5 Report of Activation of TPWS

Details of the brake action

Where did the brakes apply?

- Overspeed Sensor before the signal
- Train Stop at a signal applicable to the reverse direction
- Train Stop at the signal
- Overspeed Sensor on the approach to buffer stops
- Elsewhere

At what speed were you approaching the location? mph / kmph

PART 6 Other details to be completed by the Driver

Give as much detail as possible - continue on a separate sheet if necessary

Drivers - this form must be handed in accordance with your company instructions
Signalers - this form must now be sent to the Zone Control

(End of Page 2 of 2)