

Information for users

The following document:

NR/L3/OCS/043/5.2
Issue 4

has had changes made to it, most recently, with effect from **16 June 2014**.

Instructions for use

It is essential that you first read and understand each letter of instruction pertaining to the standard before proceeding to use the standard. You must then apply the requirements of each letter to the standard.

NR/BS/LI/296	Issue 2	16 June 2014	Proceed to letter ►
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PROCEDURE FOR THE PLANNED RESPONSE TO GSM-R SYSTEM FAILURES

1 PURPOSE

- 1.1 This Instruction defines the actions required to be taken by Route Operations Control in respect of GSM-R system failures and planned outages. In areas signalled using ERTMS Level 2, a failure of GSM-R may affect data messages required by the signalling system as well as voice communications.

This Instruction has been developed to check that Contingency Plans are in place to:

- mitigate any potential impact to trains services resulting from a GSM-R system failure / outage
- check contingency arrangements are implemented in a consistent manner

2 SCOPE

- 2.1 The scope of this procedure excludes contingency plans for GSM-R cab mobile radio failures. Arrangements for train radio failures are included in train operator specific contingency plans for defective on train equipment produced in accordance with Railway Group Standard GO/RT3437.

This procedure also excludes arrangements for dealing with the failure of GSM-R trackside radio infrastructure or systems in areas where train detection is provided by axle counters and IVRS radio.

3 REFERENCE DOCUMENTATION

GO/RT3209	Format and Content of the Weekly Operating Notice, Issue 4, August 2001
GO/RT3437	Defective On-Train Equipment, Issue 4, December 2004
RSSB-GSM-R-OC	UK Application of GSM-R: The Operational Concept, Issue 01, 14 December 2006
NS-GSM-R-OPS-0514	UK Application of GSM-R: Procedures for the use of the GSM-R Cab Radio
(TBC)	UK Application of GSM-R: Procedures for the use of the GSM-R Fixed Terminal
GE/RT8000	Rule Book

4 RESPONSIBILITIES

- 4.1 Network Rail Route – Current Operations Manager shall:

- Brief Operations Control staff on the content of GSM-R contingency plans.
- Arrange for competence of Operations Control staff to be maintained in the application of GSM-R contingency plans.
- Monitor the effectiveness of GSM-R contingency plans.
- Compile and discuss Information related to the monitoring of the GSM-R system (including trends), and corrective actions with the train operating companies / industry stakeholders at regular liaison meetings.

- 4.2 Network Rail Route – Route Control Manager shall:

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- On receipt of advice of a GSM-R system or partial system failure, ascertain the impact if any on train operations and take the appropriate mitigating action.
- Log the details of the failure and advise the TEC if advice of the failure was received from a third party.
- Advise all relevant stakeholders of the nature of the failure, the effect of the failure and likely duration.
- Where the failure is likely to be ongoing for an extended period, arrange for signallers to make general broadcast calls, advise train operators so they can inform drivers by special advice or notice.
- Agree contingency / service recovery arrangements with the train operating companies.
- Advise all stakeholders when the fault has been rectified and normal working can be resumed.

4.3 Train Operators – Control Manager shall:

- On receipt of advice of a GSM-R system or partial system failure, ascertain the impact if any on train operations.
- Log the details of the failure and advise the Network Rail Route Control Manager immediately.
- In agreement with the Network Rail Route Control manager advise the relevant stakeholders of the nature of the failure, the effect of the failure and likely duration.
- On advice being received of a prolonged GSM-R failure, arrange for train crews to be advised at the signing on point and for late notices to be issued / displayed.
- Advise all stakeholders when the fault has been rectified and normal working can be resumed, arranging for late notices to be withdrawn where appropriate.

5 PROCEDURE

5.1 Application of contingency plans during GSM-R infrastructure failures

Arrangements for the reporting of defective GSM-R trackside equipment and systems are set out in the GSM-R cab radio and fixed terminal user procedures.

On becoming aware that GSM-R trackside equipment or systems have failed, the Control manager shall implement the applicable GSM-R contingency plan contained in this procedure.

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5.2 Application of contingency plans during planned interruption of GSM-R coverage or other systems

If any of the following work is to take place which shall result in the interruption of GSM-R coverage or the normal operation of the system, the work shall be agreed in advance with the Network Rail Operations Manager and relevant train operators.

Full details shall be published in the Weekly Operating Notice as follows:

- availability of new fixed terminal software for download
- installation of new cab radio software
- bringing into use of radio base stations
- alteration of radio base stations or cell areas
- removal of radio base stations or cell areas
- alteration to the method of working using GSM-R at any of the following locations:
 - a) signal boxes
 - b) Operations Control offices
 - c) Electrical Control Rooms (ECRs)

In exceptional circumstances or in an emergency, the Network Rail Operations Manager can authorise work to take place if the details have not been published in the Weekly Operating Notice providing all relevant stakeholders have been advised.

5.3 Format and content to be used for Contingency Plans

The Contingency Plans for SPECIFIC types of failure are contained in Appendix A

The information and instructions applicable to each type of failure are as follows:

5.3.1 Description of fault

Describes the specific technical fault causing the equipment failure.

5.3.2 Impact on GSM-R system

Describes the impact of the equipment failure in terms of the loss of functionality of the GSM-R system to enable understanding of the potential impact of specific technical faults.

5.3.3 Restrictions on trains entering or continuing in service

Summarises actions to be taken in respect of trains entering or continuing in service.

5.3.4 Actions to be taken when becoming aware of failure

Details step-by-step actions for the management of the equipment failure from becoming aware of the failure until the equipment concerned is restored to working order, identifying the roles responsible for each action.

5.3.5 Actions to be taken when equipment is in working order

Step-by-step actions for management of the equipment failure from being told by technical personnel the equipment is again in working order, identifying roles responsible for each action.

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APPENDIX A

LIST OF COMMON FAULT SCENARIOS

The following is the minimum list of GSM-R equipment for which contingency plans shall be produced:

Group 1

- Base Station (BTS) Failure (detectable by the TEC)
- Base Station (BTS) 'Loop' Failure
- Base Station (BTS) Mains Power Failure
- Tunnel Repeater Mains Power Failure
- Base Station (BTS) Equipment Building Air Conditioning Failure

Group 2

- Base Station Controller (BSC) Failure
- Network Sub-System (NSS) Failure
- Network Sub-System (NSS) Connectivity
- Network Sub-System (NSS) Infrastructure Failure

Group 3

- Fixed Terminal Sub-system (FTS) Fixed Terminal Failure
- Fixed Terminal Sub-system (FTS) Circuit Failure
- Group 4
- De-registration Failure

Group 5

- Registration Failure
- Public Address system (PA) Registration Failure (only applicable to trains in Driver Only (DO) passenger service Base Station (BTS) Failure (not detectable by the TEC)

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APPENDIX A

GROUP 1 – COMMON GSM-R FAULT SCENARIOS

BASE STATION (BTS) FAILURE (DETECTABLE BY THE TEC)
Description of fault
Fault in either the Base Station (BTS) cabinet or a failure which degrades or fails both transmission links back to the Base Station Controller (BSC) from one Base Station (BTS).
BASE STATION (BTS) 'LOOP' FAILURE
Description of fault
Failure or degradation of both FTN transmission links connecting up to five Base Stations (BTS) to the Base Station Controller (BSC).
BASE STATION (BTS) FAILURE (NOT DETECTABLE BY TEC)
Description of fault
Failure or damage to feeder and antenna systems on base station tower
BASE STATION (BTS) MAINS POWER FAILURE
Description of fault
Mains power failure shall lead to failure of the base station if mains power not restored or generator provided within a 12 hour period.
TUNNEL REPEATER MAINS POWER FAILURE
Description of fault
Mains power failure shall lead to loss of the repeater if mains power not restored within a four hour period.
BASE STATION (BTS) EQUIPMENT BUILDING AIR CONDITIONING FAILURE
Description of fault
Air conditioning failure in the Base Station (BTS) equipment building may lead to de-powering of the base station if air conditioning is not restored before the BTS equipment over heats, dependent on the prevailing ambient temperature at the time.