



ONR GUIDE			
<b>THE CARRIAGE OF DANGEROUS GOODS AND USE OF TRANSPORTABLE PRESSURE EQUIPMENT REGULATIONS 2009 – PLAN IN WRITING: EMERGENCY<sup>1</sup> ARRANGEMENTS<sup>2</sup></b>			
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<b>Prepared by:</b>	D Petts	Inspector, Transport	
<b>Approved by:</b>	D I Barlow	Professional Lead, Transport	
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<sup>1</sup> CDG refers to ‘emergencies’ and ADR / RID refer to ‘incidents’ or ‘accidents’

<sup>2</sup> CDG refers to ‘emergency arrangements’ and ADR / RID refer to ‘emergency procedures’ and ‘emergency arrangements’

## 1 INTRODUCTION

- 1.1 The carriage of dangerous goods by road and rail in Great Britain, including radioactive materials, is regulated by the Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009 (Statutory Instrument 2009 No. 1348), also referred to as CDG 2009. CDG 2009 Regulation 32A makes it an offence for a person not to comply with any relevant provision as they apply to the civil carriage of class 7 goods. Regulation 24 requires compliance with Schedule 2 of CDG 2009 which, in turn requires that there is a plan in writing setting out such emergency arrangements as are appropriate for the carriage of that package.
- 1.2 ONR inspects compliance with CDG 2009, and also with the arrangements made under them, to judge the suitability of the arrangements made and the adequacy of their implementation. To support inspectors undertaking compliance inspections, ONR produces a suite of guides to assist inspectors to make regulatory judgements and decisions in relation to the adequacy of compliance, and the safety of duty holder activities. This inspection guide is one of a suite of documents provided by ONR for this purpose.

## 2 PURPOSE AND SCOPE

- 2.1 This guide has been prepared as an aid to inspection activities carried out by ONR inspectors at duty holder premises, and other relevant places, in judging the duty holder's compliance with the requirement for a plan in writing, as required by CDG 2009 Regulation 24 and Schedule 2.
- 2.2 A plan in writing is required for the civil carriage of class 7 goods by road and rail in Great Britain. It is ONR's expectation that a plan in writing is required for unpackaged radioactive materials, excepted packages, Industrial packages, Type A packages, Type B packages, Type H(U), Type H(M), and Type C packages. The plan and testing thereof should be a proportionate, graded approach taking account of reasonably foreseeable hazards present during the transport operation. Transport comprises all operations and conditions associated with, and involved in, the movement of radioactive material; these include the design, manufacture, maintenance and repair of packaging, and the preparation, consigning, loading, carriage including in-transit storage, unloading and receipt at the final destination of loads of radioactive material and packages.
- 2.3 This guidance provides a framework for these inspection activities, within which the inspector is expected to exercise their discretion. This framework is provided to facilitate a consistent approach to compliance inspection of CDG 2009.
- 2.4 The guidance is for use by inspectors in ONR. The guidance does not indicate when or to what extent inspections of the requirements of CDG 2009 should be carried out, as these matters are covered in individual inspectors' inspection plans, which take account of priorities established by the relevant ONR sub programme.
- 2.5 A compliance inspection of a nuclear licensed site may be topic specific (such as an inspection of emergency arrangements); however an inspection of other duty holders is likely to cover a range of topics. Some aspects (e.g. documentary information) may not necessarily be inspected at the premises.
- 2.6 The remainder of the Guide is set out in six sections, as below:
- Section 3: Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009 (CDG 2009),

- Section 4: Purpose of the Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009 (CDG 2009),
- Section 5: Guidance on Arrangements for a Plan in Writing for Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009 (CDG 2009),
- Section 6: Guidance on Inspection of These Arrangements and their Implementation for CDG 2009,
- Section 7: Further Reading,
- Section 8: Definitions

### **3 THE CARRIAGE OF DANGEROUS GOODS AND USE OF TRANSPORTABLE PRESSURE EQUIPMENT REGULATIONS 2009 (CDG 2009)**

- 3.1 The relevant regulatory requirements concerning the civil carriage of class 7 goods by road and rail in Great Britain are set out in Statutory Instrument 2009 No 1348 and subsequent amending Regulations. Regulation 5 requires that no person is to carry dangerous goods, or cause or permit dangerous goods to be carried, where that carriage is prohibited by ADR (European Agreement Concerning the International Carriage of Dangerous Goods by Road) or RID (Regulations Concerning the International Carriage of Dangerous Goods by Rail), including where that carriage does not comply with any applicable requirements of ADR / RID. Inspectors should consult these documents in preparing for and carrying out their compliance inspection.
- 3.2 The CDG 2009 regulations themselves, as made, are available on the internet at <http://www.legislation.gov.uk/ukxi/2009/1348/contents/made>. Inspectors should refer to [Westlaw UK](#) for the most current version of these regulations.
- 3.3 The relevant terms used in the CDG 2009 regulations are defined in Regulation 2 and are not repeated here.
- 3.4 CDG 2009 Regulation 24 (Radiological Emergencies) states:
- (2) the requirements of Schedule 2 are to be complied with in relation to radiological emergencies.*
- 3.5 CDG 2009 Schedule 2 paragraph 2 (Information to the Public About Health Protection Measures) requires that:
- (1) Every consignor, carrier and consignee carrying out the transport of a consignment must—*
- (a) ensure that any members of the public who are in an area in which, in the opinion of the GB competent authority, they are likely to be affected by a radiological emergency arising from the undertaking of that carrier, consignor or consignee are supplied, in the appropriate manner approved by the GB competent authority and without their having to request it, with at least the information set out in sub-paragraph (2); and*
- (b) make that information publicly available, which includes endeavouring to enter into an agreement or arrangement with the local authority in the area referred to in Paragraph (a) for the dissemination by that authority of the information required to be supplied to members of the public in accordance with that Paragraph.*

3.6 CDG 2009 Schedule 2 paragraph 4 (Duties Of Consignor and Carrier With Regard To The Preparation Of Emergency Arrangements) requires that:

- (1) *Before the carriage of a package begins, the consignor and the carrier of that package must ensure that there is a plan in writing setting out such emergency arrangements as are appropriate for the carriage of that package.*
- (2) *The plan shall be prepared having regard to -*
  - a) *the principle that intervention is to be undertaken only if the damage due to the radiation resulting from the radiation emergency is sufficient to justify the potential harm and the potential cost (including the social cost) of that intervention;*
  - b) *the principle that the form, scale and duration of the intervention should ensure that the benefit to health will be greater than any harm that might be associated with the intervention itself;*
  - c) *the dose limits provided for in Schedule 4 to the Ionising Radiations Regulations 1999; and*
  - d) *the levels of radiation dose applicable in an emergency that are specified by the Secretary of State pursuant the Secretary of State's functions under section 58 of the Health and Social Care Act 2012,*
- (3) *To the extent that the plan is used in relation to carriage on more than one occasion, the consignor and the carrier must review and, whenever necessary, revise the emergency arrangements and must ensure that at suitable intervals they are tested.*

3.7 Schedule 2 paragraph 7 (Power Of The Competent Authority To Require Documents and Require Testing, Rehearsal and Revision Of The Emergency Arrangements):

- (2) *To the extent required by a notice in writing served on the consignor or carrier by the GB competent authority, the consignor or carrier must test, rehearse and revise the emergency arrangements.*

#### **4 PURPOSE OF THE CARRIAGE OF DANGEROUS GOODS AND USE OF TRANSPORTABLE PRESSURE EQUIPMENT REGULATIONS 2009 (CDG 2009)**

4.1 Regulation 5, in essence, requires that carriage of dangerous goods is to be in accordance with ADR or RID, as applicable. ADR / RID 1.7.1.2 states that the objective of ADR / RID is to establish requirements that shall be satisfied to ensure safety and to protect persons, property and the environment from the effects of radiation in the carriage of radioactive material. This protection is achieved by requiring:

- (a) Containment of the radioactive contents;
- (b) Control of external radiation levels;
- (c) Prevention of criticality;
- (d) Prevention of damage caused by heat.

- 4.2 These requirements are satisfied firstly by applying a graded approach to contents limits for packages (including unpackaged radioactive materials) and conveyances and to performance standards applied to package designs depending upon the hazard of the radioactive contents. Secondly, they are satisfied by imposing conditions on the design and operation of packages and on the maintenance of packagings, including a consideration of the nature of the radioactive contents. Finally, they are satisfied by requiring administrative controls, including, where appropriate, approval by competent authorities.
- 4.3 Duty holders are required to comply with these Regulations. How this compliance is achieved is for the duty holder to decide. However, ONR must judge the adequacy of this compliance. ONR carries out this function by compliance inspection.

## **5 GUIDANCE ON ARRANGEMENTS FOR A PLAN IN WRITING FOR THE CARRIAGE OF DANGEROUS GOODS AND USE OF TRANSPORTABLE PRESSURE EQUIPMENT REGULATIONS 2009 (CDG 2009)**

### **General**

- 5.1 The duty holder must have arrangements in place to demonstrate compliance with these Regulations. These arrangements must be implemented adequately. This section considers aspects of the requirement for a plan in writing. It is neither exclusive nor exhaustive and will be subject to review and revision in the light of operational experience. If duty holders have generic models for such arrangements then it is for the duty holder to justify any deviation from the models.
- 5.2 CDG 2009 Schedule 2 paragraph 2 places certain requirements on consignors, carriers and consignees regarding health protection measures. It is ONR's regulatory expectation that the civil carriage of class 7 goods requiring such arrangements as per CDG 2009 Schedule 2 paragraph 2 would require a Special Arrangement (ADR / RID 5.1.5.1) and such arrangements will be reviewed as part of the approval process.
- 5.3 CDG 2009 Schedule 2 paragraph 4 requires that the consignor and the carrier must ensure that there is a plan in writing setting out such emergency arrangements as are appropriate for the carriage of that package, and if used on more than one occasion, they must review and, whenever necessary, revise the emergency arrangements and must ensure that at suitable intervals they are tested. (Note: The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment (Amendment) Regulations 2011 clarified the requirement for both the consignor and carrier to ensure that there is a plan in writing).
- 5.4 The purpose of a plan is to protect the workers, members of the public or the population (either partly or wholly) from exposure to ionising radiation.
- 5.5 Plans in writing setting out emergency arrangements are in addition to the instructions in writing required by ADR / RID 5.4.3.
- 5.6 Procedures should be readily available and should be up to date, signed by an appropriate person and be controlled documents. The person responsible for compliance should be identified.

### **Preparation of the Arrangements**

- 5.7 The plan and testing thereof, should be a proportionate, graded approach taking account of reasonably foreseeable hazards present during the transport operation. Such considerations, and subsequent mitigation, could include, but is not necessarily limited to:

- the radioisotope(s) being transported, physical form of the material, whether special form, the amount being transported (e.g. becquerels /  $A_1$  /  $A_2$ ), and the potential effects on persons and on the environment.
  - the number, frequency and type of packages being transported (excepted packages, Industrial packages, Type A packages etc.), whether the material is unpackaged, etc.,
  - the security requirements of the consignment, as per ADR / RID 1.10,
  - whether High Consequence Dangerous Goods are present (as defined in ADR / RID 1.10.3.1) and, if so, whether an associated security plan exists (ADR / RID 1.10.3.2),
  - whether the radioactive materials have any subsidiary risks, or other classes of dangerous goods also being consigned have a class 7 subsidiary risk,
  - the mode(s) of transport and associated intermodal transfers,
  - whether stops (breaks, overnight etc.) and / or storage in transit are undertaken,
  - whether adverse weather conditions are likely,
  - the population densities along the route (i.e. areas to potentially avoid),
  - whether rush hour traffic conditions likely,
  - reasonably foreseeable incidents and consequences (e.g. mechanical breakdown, theft of the conveyance or contents, impact, fire, loss of containment, loss of shielding, loss of criticality control, incapacitated driver).
- 5.8 CDG 2009 Schedule 2 Paragraph 5 requires that the GB competent authority be immediately notified of the occurrence of a notifiable event. For the purposes of the civil carriage of class 7 goods the “GB competent authority” shall mean the Office for Nuclear Regulation. The appropriate contact telephone numbers for the reporting of incidents are 0207 556 3475 (office hours) and 0151 922 9235 (out of hours). It is recommended that these details are included in the plan.
- 5.9 ONR expects that such plans in writing and testing thereof, for the carriage of a small number of excepted packages on a short road journey once or twice a year would significantly differ to a plan for multiple Type B packages being transported on a daily or weekly basis.
- 5.10 CDG 2009 Schedule 2 paragraph 5 sets out the duties of drivers, carriers and consignors in the event of the occurrence of a radiological emergency. These duties should be incorporated into the plan.
- 5.11 A plan in writing setting out emergency arrangements must demonstrate that it contains sufficient detail to allow duty holders to meet the requirements of CDG 2009 Schedule 2 paragraph 5, including:
- provide clear and concise instruction to the driver on what to do (if capable) following an incident, for example:

- immediate notifications to be made (e.g. the police, the consignor, and where appropriate, the relevant fire and rescue body) for a notifiable event, and the information to be provided;
  - actions to protect the driver (minimisation of dose uptake, how to identify a leaking / breached package(s) and what to do in such a situation, any RPE/PPE to be used, etc.)
  - actions to protect members of the public (minimisation of dose uptake, cordons, methods for warning and advising, etc.)
  - actions to protect the emergency responders on their arrival at the scene, arrangements for the provision of information and details of that information which needs to be provided,
  - how to prevent the situation from getting worse (control of contamination, minimisation of dose uptake, control of fire/heat, avoidance of criticality), use of equipment, RPE and PPE, etc.)
  - actions to ensure the radioactive materials remain secure, without compromising the emergency response (what to do if the conveyance is damaged to the extent that it is vulnerable (e.g. broken windows, doors not able to lock), conveyance remains locked if driver needs to leave the conveyance, etc.)
  - whether language barriers exist (e.g. ADR / RID 5.4.1.2.5.2)
- detail the contingency arrangements if the driver is unable to undertake some or all of the above (e.g. incapacitated),
  - detail the actions to be taken by the carrier (e.g. immediate notifications to be made to the police and the GB Competent Authority; assist in the intervention; examination of the load; etc.)
  - detail the actions to be taken by the consignor (e.g. immediate notifications to be made to the police and the GB Competent Authority; assist in the intervention; examination of the package(s) involved in a radiological emergency for compliance with CDG 2009, provision of further details to the GB Competent Authority; how to obtain additional approval(s) and / or certificates required, etc.),
  - include contact details of key personnel (such as an RPA, a DGSA, on-call duty officer(s), etc.)
  - detail where to obtain specialist advice (such as an RPA, a DGSA, etc.)
  - detail the process of how notification of an radiological emergency under CDG 2009 Schedule 2 paragraph 5(6) should occur (e.g. using an ONR INF1 form).
  - the plan shall have due regard to the principle that any planned intervention, its form, scale and duration, are justified and comply with the dose limits in Schedule 4 of the Ionising Radiation Regulations 1999 and section 58 of the Health and Social Care Act 2012.
  - whether specialist equipment (in addition to the requirements of ADR 8.1) is required on-board at all times, including those specified in any competent authority

approvals (e.g. cordons, firefighting equipment, tie down equipment, tools, mobile phone, RPE, PPE etc.),

- whether other equipment will be required to be mobilised in response to an incident (such as lifting equipment, salvage equipment, convoys, etc.), any associated contractual arrangements are in place (or have been given due consideration as a minimum), and the scope of the contractor's participation agreed,
- shall include provision for assistance in the intervention by the driver, consignor and carrier, that is made in connection with the emergency (e.g. provision for a competent person(s) to attend the scene as soon as practicable, onward carriage of undamaged packages as per CDG 2009 Schedule 2 paragraph 6, etc.)
- detail the potential arrangements for the clean-up phase of the incident (including recovery of damaged packagings, additional approval requirements likely to be required for onward carriage),
- Are the media likely to be interested in the incident? If yes, how will this interface be handled without compromising the incident response?
- who needs to be trained (e.g. general awareness training, role specific training, package specific training)? To what level of competence? How often? Is refresher training required? How will training be recorded?

5.12 The role responsible for carrying out a task in the plan should be identified.

5.13 Where a consignor and a carrier each have separate plans, arrangements should be in place to ensure that consignor's plan and the carrier's plan do not conflict with each other.

### **Testing of the Arrangements**

5.14 CDG 2009 Schedule 2 paragraph 4 (3) requires that to the extent that the plan is to be used on more than one occasion the plan must be tested at suitable intervals. The testing regime and frequency of testing should be proportionate to the risks involved in the transport operation. The plan should be tested at least annually, unless an adequate justification for less frequent testing is made. A record of the test should be made. It's ONR's regulatory expectation that this will record will be made within one month and kept for at least five years.

5.15 Example of types of test:

- One-to-One Discussion - discussion of the actions to be taken in the event of an emergency for their specific role.
- Drill – roll call of key personnel, dialling relevant telephone numbers for accuracy, check functionality and availability of emergency equipment.
- Desktop – presence of key personnel, dialling relevant telephone numbers for accuracy, check functionality and availability of emergency equipment, and discussion of the actions to be taken in the event of an emergency in the order that they are likely to occur.



- Full or partial simulation – with conveyance, packaging, driver, emergency equipment, emergency services and emergency response team present.
- 5.16 The National Arrangements for Incidents involving Radioactivity (NAIR) must not be claimed by the duty holder as being (wholly or in part) their plan.
- 5.17 Consignors may be members of the RADSAFE scheme which provides mutual support to its members. Membership of RADSAFE alone does not constitute an adequate plan in writing.
- 5.18 The testing regime should be such that all of the aspects of the response plan can be tested (where appropriate, phone numbers should be tested, any cordon / barrier equipment should be erected, electrical equipment should be checked (battery life etc.), all emergency equipment should be accounted for, emergency arrangement logistics should be checked (all equipment will fit in / on the conveyance etc.)).
- 5.19 Where a scenario is constructed it should ideally contain the unexpected making the emergency team think rather than just running through a standard set of responses (i.e. consideration should be given to both predicted incident scenarios and further scenario development).
- 5.20 Arrangements should make provision for the inclusion of any learning from experience as a result of tests undertaken, and resultant training requirements.

## **6 GUIDANCE ON INSPECTION OF ARRANGEMENTS AND THEIR IMPLEMENTATION**

### **General**

- 6.1 Part 6 of this guidance is to assist inspectors in judging the adequacy of the duty holder's arrangements. These arrangements must be implemented adequately. This section is neither exclusive nor exhaustive and will be subject to review and revision in the light of operational experience. It does, however, provide aspects of CDG 2009 that can be examined during routine inspections of emergency arrangements.
- 6.2 If duty holders have generic models for such arrangements then it is for the duty holder to justify any deviation from the models. Any such deviations must comply with the requirements of CDG 2009.
- 6.3 Check that arrangements are in place and procedures have been made to demonstrate compliance with the requirements of CDG 2009 for a plan in writing setting out emergency arrangements and if used on more than one occasion, they include the review and, whenever necessary, revision of the emergency arrangements and that at suitable intervals they are tested. Check that these arrangements are implemented adequately, as set out in the remainder of this section.
- 6.4 Plans in writing setting out emergency arrangements are in addition to the Instructions in Writing (IIW) required by ADR / RID 5.4.3.
- 6.5 Review the relevant procedures to establish validity, whether any changes have been made since the last review, where applicable, whether the identified responsible persons are correct and whether there are any omissions. Note whether instructions, methods and management system requirements claimed in procedures have been followed and whether any changes that have been made have been correctly incorporated and validated.

## Preparation of the Arrangements

- 6.6 Has a proportionate, graded approach taking account of the reasonably foreseeable hazards present during the transport operation been applied? Have all the relevant physical attributes of the radioactive materials, package types, frequency of carriage etc. been included? Have the other factors such as avoiding carriage during adverse weather (high / low temperatures may affect package performance, or conveyance performance), population densities and traffic conditions been considered (e.g. will the carriage of radioactive materials pass a school on a week day at 15:30? Is this the most appropriate route, or could it be consigned at another time / via another less populated route)?
- 6.7 Have the other relevant considerations of 5.7 of this guide been factored into the process adequately?
- 6.8 Do the security arrangements adequately address the requirements of ADR / RID 1.10.1 (general) and 1.10.2 (training)? If intermodal transfers are applicable, has consideration been given to the additional potential risks of such activities (out of hours handover arrangements, unavailability of the onward conveyance, etc.) and how are these to be mitigated against?
- 6.9 Is storage in transit covered, if applicable? What arrangements are in place for the plan to cover this activity? Does the duty holder park vehicles, unsupervised, and if so, do they use the hierarchy of locations set out in ADR 8.4.1?
- 6.10 Are High Consequence Dangerous Goods being transported, and if so, do arrangements to address the provisions of ADR / RID 1.10.3 (including the requirement for a security plan) exist? Consideration should be given to the carriage of other HCDGs with Class 7 dangerous goods, which themselves are not HCDG.
- 6.11 ONR recommends that the appropriate contact telephone numbers for the reporting of incidents are 020 7556 3475 (office hours) and 0151 922 9235 (out of hours) are included in the plan. If these are not included, are the arrangements in place sufficient to ensure contact could be made in the event of a notifiable event?
- 6.12 ONR expects that such plans in writing and testing thereof, for the carriage of a small number of excepted packages on a short road journey once or twice a year would significantly differ to a plan for multiple Type B packages being transported on a daily or weekly basis. For example:
- A consignment of an excepted package (steel drum) of solid waste. The plan should include details of how the driver, consignor and/or carrier would deal with an incident whereby the drum has been damaged in transit. The plans should consider the hazards and where it is deemed necessary to either overpack the damaged drum or transfer the contents to an undamaged drum. Competent persons should be identified to undertake such activities and the plan should contain adequate instructions or details where these instructions exist.
  - A consignment a Type A package of radioactive liquid (e.g. radiopharmaceuticals). The package is a cardboard outer with shielded inner tubes containing a vial. The plan should include details of how the driver, consignor and/or carrier would deal with an incident whereby the package has been dropped or damaged in transit. The plan should consider the hazards and how to recover the package and contents from the scene, taking due note of the radiation dose rate(s) and half-life of the products and measures required to minimise risks to staff & the public. The need for spill kits and suitable packages for use in the recovery operation should be

considered. The plan should contain adequate instructions or details where these instructions exist, including simple advice for the driver and emergency services at the scene. Where a third party will be required to provide assistance in the clean-up and recovery operation there should be clear evidence that the duty holder has any associated contractual arrangements in place for this support (or have been given due consideration as a minimum), and the scope of the contractor's participation agreed.

- 6.13 Are the types of incidents does the plan cover (mechanical breakdown, theft of the conveyance or contents, impact, fire, incapacitated driver, etc.) credible and do they consider all reasonably foreseeable incident scenarios?
- 6.14 Does the plan address the potential for loss of containment, loss of shielding, loss of criticality control (including changes in geometry / containments), increased external radiation levels, etc.? Does the plan consider the potential structural vulnerabilities of the package?
- 6.15 Are the duties of drivers, carriers and consignors in the event of the occurrence of a radiological emergency incorporated in to the plan? Is it clear who should do what? Are all activities covered (i.e. there are not any gaps)?
- 6.16 Determine whether the information within the plan(s) is adequate, clear, concise and readily available to the driver. The driver may be in shock immediately after the incident happens, they need the information to be in a form that needs little interpretation.
- 6.17 Are all the actions to be taken by the driver identified in the plan? When carriers employ drivers who speak English as a second language, do they assess their drivers' competency in speaking and reading English for the consignment, and does the carrier have a mechanism for ensuring the emergency arrangements are in the languages deemed necessary (ADR / RID 5.4.1.2.5.2 (c))?
- 6.18 What immediate notifications must be made by the driver and by what means? Is this adequate?
- 6.19 What information must the driver give to the emergency responders, as a minimum? Is this adequate?
- 6.20 How will the driver minimise their dose uptake? Is all equipment identified in the plan as being necessary carried on the conveyance at all times (including PPE, RPE, equipment specified in approvals and other specialist items), available to the driver, in working order, in date, and is the driver competent in their use? How will the driver identify a leaking / breached package or spill of unpackaged materials, and what actions are to be taken in the event of a leaking / breached package or spill? What actions will the driver take to prevent the situation from getting worse (control of contamination, minimisation of dose uptake, control of fire/heat etc.), use of equipment, RPE and PPE, etc.)?
- 6.21 How will the driver seek to minimise the risks to the public at the scene, including physical means and provision of information / warnings, and are these adequate? Is all the equipment identified in the plan (including PPE, RPE and specialist items such as cordons) available to the driver, and in working order?
- 6.22 What actions does a driver need to take ensure the radioactive materials remain secure, without compromising the emergency response (what to do if the conveyance is damaged to the extent that it is vulnerable (e.g. broken windows, doors not able to lock), conveyance remains locked if driver needs to leave the conveyance, etc.).

- 6.23 If the driver is incapacitated how will the emergency responders be made aware of the risks associated with the consignment; and how will the emergency services contact the consignor and/or the owner of the consignment?
- 6.24 What other notifications are required (e.g. to ONR using the INF1 form, unless an alternative is agreed by ONR) and is the responsible person(s) identified? It is likely that the Industrial, Medical and Carrier sector will make a telephone notification and an ONR staff member will complete the INF1 form, but all other duty holders are expected to complete the form themselves.
- 6.25 How will expert advice be obtained (DGSA, RPA, etc.)? Is DGSA and / or RPA advice available during operational hours (which maybe 24 hours a day, 7 days a week)? Are any contracts in place for this support and the scope of the contractor's participation agreed?
- 6.26 Do arrangements exist to ensure all equipment needed at short notice is available, including how will it be mobilised? Are any associated contractual arrangements in place for this support (or have been given due consideration as a minimum), and the scope of the contractor's participation agreed?
- 6.27 Does the plan address all the other relevant points listed in 5.11? Are any other relevant considerations given due regard?
- 6.28 Has due regard been made to the principle that any planned intervention, its form, scale and duration, are justified, comply with the dose limits in Schedule 4 of the Ionising Radiations Regulations 1999 and section 58 of the Health and Social Care Act 2012. This could be achieved through advice given by their RPA.
- 6.29 What actions are to be taken by the carrier? What assistance is made by the carrier in connection with the emergency? This should include immediate & other notifications required, assistance provided in the intervention (such as arrangements for examination of the load, disposal of contaminated components etc.).
- 6.30 What actions are to be taken by the consignor? What assistance is made by the consignor in connection with the emergency (e.g. immediate notifications to be made to the police and the GB Competent Authority (including notification of initiation of the emergency arrangements) even if, in the event, no intervention was made pursuant to those arrangements); assist in the intervention; examination of the package(s) involved in a radiological emergency for compliance with CDG 2009, provision of further details to the GB Competent Authority; how to obtain additional approval(s) and / or certificates required, etc.)?
- 6.31 How do the consignor and carrier ensure that an adequate plan in writing exists? What arrangements ensure that one doesn't assume that the other has an emergency plan covering the carriage of the radioactive materials?
- 6.32 Where a consignor and carrier have separate plans, determine whether the arrangements in place ensure that the plans do not conflict.
- 6.33 Who needs to be aware of and trained in the emergency arrangements? Are all those likely to be involved identified (including office based staff)? What training will be provided (general awareness, role specific, and/or package specific), to what level of competence, how often, are any refresher periods appropriate) and is this adequate? Is training recorded and retained adequately? Is the training of individuals up-to-date?
- 6.34 Are the potential arrangements for the clean-up phase of the incident (including recovery of damaged packagings, additional approval requirements likely to be required onward carriage) adequate? Do they consider all reasonably foreseeable

scenarios? Will support be required for additional services in relation to clean-up phase? Are any associated contractual arrangements in place for this support (or have been given due consideration as a minimum), and the scope of the contractor's participation agreed?

- 6.35 Are the media likely to be interested in the incident? If yes, how will this interface be handled without compromising the incident response?
- 6.36 Have reasonably foreseeable circumstances (e.g. a change in regulations, a significant change in transport operations, changes in contractor support, etc.) been identified as a trigger(s) for revision of the emergency arrangements?

### Testing of the Arrangements

- 6.37 What type of test(s) is (are) to be undertaken and is the justification for selecting the testing regime adequate? Refer to the tests described in 5.15. Alternative tests may be acceptable however a sufficient justification of their suitability should be made.
- 6.38 Example of types of test:
- One-to-One Discussion – Do the individuals understand the actions to be taken in the event of an emergency for their specific role? Are the points for discussion relevant? Are there any omissions? It is unlikely that this will form the totality of the testing of the emergency arrangements, but a subset of a more comprehensive testing regime.
  - Drill – Does this involve a roll call of key personnel, dialling relevant telephone numbers for accuracy, check functionality and availability of emergency equipment? If not, is this justified and are any other equivalent activities undertaken? This is unlikely to form totality of the testing of the emergency arrangements other than for carriage of excepted packages or unpackaged SCO1. In all other cases it is likely that this will be a subset of a more comprehensive testing regime.
  - Desktop – Are all key personnel present? Does the test involve dialling relevant telephone numbers for accuracy, check functionality and availability of emergency equipment, and discussion of the actions to be taken in the event of an emergency in the order that they are likely to occur? If not, is this justified and are any other equivalent activities undertaken? This type of test is most likely for, but not limited to, the carriage of Industrial packages (IP1 & IP2), and Type A packages.
  - Full or partial simulation – with conveyance, packaging, driver, emergency equipment, emergency services and emergency response team present. This type of test is most likely for, but not limited to, the high volume carriage of Industrial packages (IP2 & IP3), Fissile, Type A, Type B, Type H(U), H(M), and/or Type C packages.
- 6.39 Is the testing regime and frequency of testing proportionate to the risks involved in the transport operation? The scenario should be rooted in the current safety case / safety justification for the package. Do the test(s) consider both predicted incident scenarios and further scenario development? The scenario should ideally contain the unexpected making the emergency team think rather than just running through a standard set of responses. Is the plan tested at least annually, and has an adequate justification for less frequent testing made?

- 6.40 The testing regime should be such that all of the aspects of the response plan can be tested (where applicable, phone numbers should be tested, any cordon / barrier equipment should be erected, electrical equipment should be checked (battery life etc.), all emergency equipment should be accounted for, emergency arrangement logistics should be checked (all equipment will fit in / on the conveyance etc.)).
- 6.41 Are records of any tests made within one month and are they kept for at least five years?
- 6.42 Have lessons learned from the tests been adequately incorporated into the plan? Is this learning evident in subsequent test records?
- 6.43 The National Arrangements for Incidents involving Radioactivity (NAIR) must not be claimed by the duty holder as being (wholly or in part) their plan.
- 6.44 Consignors may be members of the RADS SAFE scheme which provides mutual support to its members. Membership of RADS SAFE alone does not constitute an adequate plan in writing. The provision of RADS SAFE support must dovetail with the other arrangements to form a coherent set of emergency arrangements.

### **Observation of a Test of the Arrangements**

- 6.45 Observation of tests other than partial or full simulations by ONR is unlikely but not impossible. In these cases it is for the inspector to determine which elements of this section apply to the test being observed.
- 6.46 A full or partial simulation is a single snapshot of the performance of the emergency response teams that could be involved in a radiological emergency. The simulation will deal with a single scenario on one particular day. It is important to form a view in the context of continued readiness and the ability of the duty holder to respond to a real event at any time. An intense training period and / or rehearsals prior to a simulation are not the preferred approach.
- 6.47 The inspection may involve one inspector or a team of inspectors depending upon the complexity of the scenario. A team approach enables ONR to subject the simulation to an in depth inspection; this team can, simultaneously, cover a wide variety of facets of the response and the interactions between them. However, the size of the team does need to be proportionate in respect of the priority attached to the intervention, i.e. informed based upon a prioritised programme.
- 6.48 A team approach enables ONR to evaluate the management and integration of the response by being in more than one place at the same time. Thus for any particular simulation an in depth review of some key areas, together with an overview of others, enables the exercise evaluation team to make a judgement on the ability of the duty holders' staff to cope with a real emergency.
- 6.49 Safety should always take precedence over any form exercise play. Individuals believed to be suffering from the symptoms of fatigue, distress, and/or heat exhaustion should be pulled out of the simulation before an accident happens. Simulations should be stopped if unsafe acts happen (or are about to happen) or if a real incident/ injury occurs.
- 6.50 Exercises should normally be run until the duty holder's simulation objectives (usually stated in the scenario) have been met, and the ONR team is satisfied they have seen enough to allow a judgement on the adequacy of the arrangements to be made.
- 6.51 If an exercise has gone awry e.g. the casualties have not been rescued after several hours the exercise should be terminated after a given period of time. Bearing in mind

the fatigue load on those taking part (and the fact that if a real event occurs as the exercise is finishing and they may have to respond), 4 hours is about the maximum that they should be asked to perform.

- 6.52 The ONR team should agree beforehand who will decide/ tell the duty holder that the exercise is considered finished; this is usually the ONR inspection team lead. If a consensus is required, inspectors should be contacted by appropriate means (e.g. mobile phone) to give their view on whether it should finish or not.

### **Determination of Adequacy / Making a Judgement**

- 6.53 It is for inspectors to apply their experience and discretion to determine the extent and depth of a particular inspection, taking due account of a number of factors such as safety significance, complexity and technical specialism.
- 6.54 In determining adequacy, the ONR Inspection Rating Guide should be used by inspectors. This can be found on [HOW2](#).
- 6.55 CDG 2009 Schedule 2 paragraph 7(2) give the GB competent authority power to require the consignor or carrier to test, rehearse and revise the emergency arrangements by serving a notice in writing. This should only be required where a duty holder's arrangements are assessed as falling significantly short of CDG 2009 requirements for a plan in writing.
- 6.56 Where inspection indicates that a duty holder's arrangements fall significantly short of CDG 2009 requirements, and especially where enforcement action appears to be warranted under the [Enforcement Management Model](#), (EMM) and more specifically NS-ENF-GD-002 – [The Use of The Enforcement Management Model in ONR](#) and OC 130/11 - [Enforcement Management Model: application to ionising radiations](#), the inspector should seek advice from the ONR Transport Inspection and Enforcement Delivery Lead.

## **7 FURTHER READING**

- 7.1 IAEA Safety Guide No TS-G-1.2 (ST-3) Planning and Preparing for Emergency Response to Transport Accidents Involving Radioactive Material. See link:  
[http://www-pub.iaea.org/mtcd/publications/pdf/pub1119\\_scr.pdf](http://www-pub.iaea.org/mtcd/publications/pdf/pub1119_scr.pdf)
- 7.2 ONR's transport of radioactive materials webpages. See link:  
<http://www.onr.org.uk/transport/index.htm>
- 7.3 The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment (Amendment) Regulations 2011. See link:  
<http://www.legislation.gov.uk/uksi/2011/1885/contents/made>
- 7.4 The Ionising Radiation Regulations 1999. See link:  
<http://www.legislation.gov.uk/uksi/1999/3232/contents/made>
- 7.5 The Health and Social Care Act 2012. See link:  
[http://www.legislation.gov.uk/ukpga/2012/7/pdfs/ukpga\\_20120007\\_en.pdf](http://www.legislation.gov.uk/ukpga/2012/7/pdfs/ukpga_20120007_en.pdf)

**8 DEFINITIONS**

ADR	European Agreement Concerning the International Carriage of Dangerous Goods by Road, 2015 Edition
CDG 2009	The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009
CDG 2011	The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment (Amendment) Regulations 2011
DGSA	Dangerous Goods Safety Adviser
HCDG	High Consequence Dangerous Goods
IIS	ONR's Integrated Intervention Strategy
INF1	ONR Incident Notification Form (obtained from <a href="http://www.onr.org.uk">www.onr.org.uk</a> )
Notifiable Event	For the purposes of CDG 2009 Schedule 2 paragraph 5, means (i) a radiological emergency, (ii) the theft or loss of the class 7 goods being carried; or (iii) an occurrence subject to report as construed in accordance with Sub-section 1.8.5.3.
Radiological Emergency	For the purposes of CDG 2009, means a situation arising during the course of the carriage of a consignment that requires urgent action in order to protect workers, members of the public or the population (either partially or as a whole) from exposure
ONR	Office for Nuclear Regulation
PPE	Personal Protective Equipment
RID	Regulations Concerning the International Carriage of Dangerous Goods by Rail, 2015 Edition
RPE	Respiratory Protective Equipment