

**Preparation, Conduct
and Evaluation of Exercises
for Detection of and
Response to Acts Involving
Nuclear and Other
Radioactive Material
out of Regulatory Control**



IAEA

International Atomic Energy Agency

IAEA NUCLEAR SECURITY SERIES

Nuclear security issues relating to the prevention and detection of, and response to, criminal or intentional unauthorized acts involving, or directed at, nuclear material, other radioactive material, associated facilities or associated activities are addressed in the **IAEA Nuclear Security Series**. These publications are consistent with, and complement, international nuclear security instruments, such as the Convention on the Physical Protection of Nuclear Material and its Amendment, the International Convention for the Suppression of Acts of Nuclear Terrorism, United Nations Security Council resolutions 1373 and 1540, and the Code of Conduct on the Safety and Security of Radioactive Sources.

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- **Nuclear Security Fundamentals** specify the objective of a State's nuclear security regime and the essential elements of such a regime. They provide the basis for the Nuclear Security Recommendations.
- **Nuclear Security Recommendations** set out measures that States should take to achieve and maintain an effective national nuclear security regime consistent with the Nuclear Security Fundamentals.
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For each publication, the Secretariat prepares the following, which the NSGC approves at successive stages in the preparation and review process:

- An outline and work plan describing the intended new or revised publication, its intended purpose, scope and content;
- A draft publication for submission to Member States for comment during the 120 day consultation period;
- A final draft publication taking account of Member States' comments.

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An underlying consideration is that related IAEA safety standards and safeguards activities should be taken into account in the technical content of the publications. In particular, Nuclear Security Series publications addressing areas in which there are interfaces with safety — known as interface documents — are reviewed at each of the stages set out above by relevant Safety Standards Committees as well as by the NSGC.

PREPARATION, CONDUCT
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OUT OF REGULATORY CONTROL

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TECHNICAL GUIDANCE

INTERNATIONAL ATOMIC ENERGY AGENCY
VIENNA, 2020

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FOREWORD

The IAEA's principal objective under its Statute is "to accelerate and enlarge the contribution of atomic energy to peace, health and prosperity throughout the world." Our work involves both preventing the spread of nuclear weapons and ensuring that nuclear technology is made available for peaceful purposes in areas such as health and agriculture. It is essential that all nuclear and other radioactive materials, and the facilities at which they are held, are managed in a safe manner and properly protected against criminal or intentional unauthorized acts.

Nuclear security is the responsibility of each individual State, but international cooperation is vital to support States in establishing and maintaining effective nuclear security regimes. The central role of the IAEA in facilitating such cooperation and providing assistance to States is well recognized. The IAEA's role reflects its broad membership, its mandate, its unique expertise and its long experience of providing technical assistance and specialist, practical guidance to States.

Since 2006, the IAEA has issued Nuclear Security Series publications to help States to establish effective national nuclear security regimes. These publications complement international legal instruments on nuclear security, such as the Convention on the Physical Protection of Nuclear Material and its Amendment, the International Convention for the Suppression of Acts of Nuclear Terrorism, United Nations Security Council resolutions 1373 and 1540, and the Code of Conduct on the Safety and Security of Radioactive Sources.

Guidance is developed with the active involvement of experts from IAEA Member States, which ensures that it reflects a consensus on good practices in nuclear security. The IAEA Nuclear Security Guidance Committee, established in March 2012 and made up of Member States' representatives, reviews and approves draft publications in the Nuclear Security Series as they are developed.

The IAEA will continue to work with its Member States to ensure that the benefits of peaceful nuclear technology are made available to improve the health, well-being and prosperity of people worldwide.

EDITORIAL NOTE

This publication does not address questions of responsibility, legal or otherwise, for acts or omissions on the part of any person.

Guidance issued in the IAEA Nuclear Security Series is not binding on States, but States may use the guidance to assist them in meeting their obligations under international legal instruments and in discharging their responsibility for nuclear security within the State. Guidance expressed as 'should' statements is intended to present international good practices and to indicate an international consensus that it is necessary for States to take the measures recommended or equivalent alternative measures.

Security related terms are to be understood as defined in the publication in which they appear, or in the higher level guidance that the publication supports. Otherwise, words are used with their commonly understood meanings.

An appendix is considered to form an integral part of the publication. Material in an appendix has the same status as the body text. Annexes are used to provide practical examples or additional information or explanation. Annexes are not integral parts of the main text.

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1. INTRODUCTION

BACKGROUND

1.1. The IAEA Nuclear Security Series provides guidance for States to assist them in implementing, reviewing and, when necessary, strengthening a national nuclear security regime. The series also provides guidance for States in fulfilling their obligations with respect to binding international instruments and their commitments with respect to non-binding international instruments.

1.2. IAEA Nuclear Security Series No. 20, Objective and Essential Elements of a State's Nuclear Security Regime [1], sets out the objective of a nuclear security regime and its essential elements. The following Nuclear Security Recommendations indicate what a nuclear security regime should address:

- (a) IAEA Nuclear Security Series No. 13, Nuclear Security Recommendations on Physical Protection of Nuclear Material and Nuclear Facilities (INFCIRC/225/Revision 5) [2];
- (b) IAEA Nuclear Security Series No. 14, Nuclear Security Recommendations on Radioactive Material and Associated Facilities [3];
- (c) IAEA Nuclear Security Series No. 15, Nuclear Security Recommendations on Nuclear and Other Radioactive Material out of Regulatory Control [4].

1.3. This publication provides guidance on exercises supplemental to the guidance provided in Ref. [4] as well as that contained in the following publications:

- (a) IAEA Nuclear Security Series No. 21, Nuclear Security Systems and Measures for the Detection of Nuclear and Other Radioactive Material out of Regulatory Control [5];
- (b) IAEA Nuclear Security Series No. 37-G, Developing a National Framework for Managing the Response to Nuclear Security Events [6];
- (c) IAEA Nuclear Security Series No. 2-G (Rev. 1), Nuclear Forensics in Support of Investigations [7];
- (d) IAEA Nuclear Security Series No. 24-G, Risk Informed Approach for Nuclear Security Measures for Nuclear and Other Radioactive Material out of Regulatory Control [8];
- (e) IAEA Nuclear Security Series No. 22-G, Radiological Crime Scene Management [9].

OBJECTIVE

1.4. The objective of this publication is to provide practical guidance on the preparation, conduct and evaluation of exercises for nuclear security systems and measures for the detection of and response to intentional unauthorized acts involving nuclear and other radioactive material out of regulatory control.

1.5. While this publication focuses on the preparation, conduct and evaluation of individual exercises, competent authorities might also consider the information provided here when developing a national programme of nuclear security exercises¹ for systems and measures for the detection of and response to intentional unauthorized acts involving nuclear and other radioactive material out of regulatory control.

1.6. This publication is intended to be used by competent authorities involved in the preparation, conduct and evaluation of exercises for such nuclear security systems and measures, including law enforcement agencies, customs and border control, emergency response organizations, regulatory bodies and technical and scientific support organizations.

SCOPE

1.7. This publication provides guidance on the preparation, conduct and evaluation of exercises for nuclear security systems and measures for the detection of and response to intentional unauthorized acts involving nuclear and other radioactive material out of regulatory control, including radiological crime scene management and nuclear forensics.

1.8. This publication does not provide guidance on exercises involving the detection of or response to nuclear security events involving nuclear and other radioactive material in regulated facilities and activities, addressed in Refs [2, 3].

1.9. This publication also does not address exercises that do not involve an evaluation component, such as those used as demonstrations of a State's nuclear security regime. Such demonstrations typically consist of scripted and rehearsed displays of personnel, skills, equipment and expertise, and could be used to

¹ A programme of nuclear security exercises refers here to a broader State or organizational level effort to plan a series of future exercises.

foster communication and build awareness among stakeholders, policy makers and the public.

1.10. Finally, this publication does not address preparation, conduct and evaluation of exercises to test arrangements in place to respond to any nuclear or radiological emergency associated with material under or out of regulatory control for which IAEA Safety Standards Series No. GSR Part 7, Preparedness and Response for a Nuclear or Radiological Emergency [10], and Ref. [11] apply.

STRUCTURE

1.11. Following this introduction, Section 2 provides an overview of a structured methodology that a State can use to prepare, conduct and evaluate exercises for the detection of and response to intentional unauthorized acts involving nuclear and other radioactive material out of regulatory control. Sections 3, 4 and 5 describe, respectively, how to prepare, conduct and evaluate exercises using this methodology. Annexes I–XIII present examples of templates and checklists that could be used during the preparation, conduct and evaluation of such an exercise.

2. METHODOLOGY FOR PREPARING, CONDUCTING AND EVALUATING EXERCISES

2.1. Paragraph 6.21 of Ref. [4] states that “The State should carry out exercises under the [national response] plan using credible scenarios. *Competent authorities* should perform exercises and drills at regular intervals, in order to evaluate the effectiveness of the plan.”

2.2. In this context, an ‘exercise’ is a structured activity that places participants or organizations in a simulated situation in which they function in the capacity that would be expected during a nuclear security event.

2.3. Exercises can provide a platform for a State to test, in a controlled environment, the knowledge, skills and state of readiness of individuals and organizations, to validate detection and response strategies, and to evaluate new approaches and technologies. Exercises can inform States on the status of existing nuclear security systems and measures, motivate individuals and competent authorities to effectively implement operations, and promote stakeholder

confidence in States' ability to detect and respond to acts involving nuclear and other radioactive material out of regulatory control. Exercises can also promote coordination and cooperation among participating organizations, such as competent authorities and other stakeholders, and help to identify good practices and areas of strength and weakness in the nuclear security regime.

2.4. A national exercise programme should allow a consistent approach to the preparation, conduct and evaluation of exercises. When developing this programme, the frequency of exercises should be considered. In particular, exercises should be repeated if changes are introduced to the State's nuclear security regime or if changes are identified in the international nuclear security landscape. The development and implementation of a national exercise programme allows for individual exercise results to inform and continually improve the part of the national nuclear security regime for nuclear and other radioactive material out of regulatory control and can assist States to ensure exercises are part of a coordinated, integrated approach for building and sustaining the overall nuclear security regime.

2.5. The national exercise programme should allow for consistent approach in the preparation, conduct and evaluation of exercises used to test relevant interfaces between security measures and emergency arrangements in case of a nuclear or radiological emergency triggered by a nuclear security event associated with nuclear and other radioactive material out of regulatory control, in line with the IAEA Nuclear Security Series Recommendations [2, 3, 4] as well as IAEA safety standards, in particular GSR Part 7 [10], and guidance provided in Ref. [11].

2.6. The exercise planning team² should use a structured approach for preparing, conducting and evaluating exercises in order to allow the State to better assess, validate and improve its detection and response strategies, plans and key activities. Such a process is described in the remainder of this publication.

A STRUCTURED APPROACH TO EXERCISE PREPARATION, CONDUCT AND EVALUATION

2.7. In this publication, a structured approach is introduced for the preparation, conduct and evaluation of exercises for nuclear security systems and measures.

² 'Exercise planning team', a term used throughout the publication, refers to a team consisting of representatives from competent authorities or other stakeholders with responsibilities for managing, preparing, conducting or evaluating exercises.

2.8. The purpose of such an exercise is to evaluate key activities of the State associated with detecting and responding to intentional unauthorized acts involving nuclear and other radioactive material out of regulatory control. When preparing, conducting and evaluating exercises, the State should identify the range of key activities needed. Each key activity should be associated with a goal for the State's nuclear security regime for the detection of and response to intentional unauthorized acts involving nuclear and other radioactive material out of regulatory control. For example, key activities of the State might include detection by information, information analysis and nuclear forensics.

2.9. As noted above, each key activity is associated with a number of actions implemented by relevant competent authorities and other stakeholders, each of which contributes to the goal associated with that key activity. For example, actions relating to detection by information could include gathering, storing and analysing operational information or reporting loss of regulatory control. Further examples of key activities and actions are provided in para. 2.12.

2.10. Each action is composed of a set of discrete tasks that need to be performed successfully at an established level of proficiency. Tasks should have corresponding measurable performance criteria or standards that allow for their evaluation and should be derived from established plans and procedures. Each competent authority should identify specific tasks that personnel should perform proficiently in order to complete associated actions.

2.11. Figure 1 shows an example key activity and possible associated actions and tasks. The actions and tasks shown in the example are not comprehensive.

2.12. The following further examples of State key activities for the detection of and response to intentional unauthorized acts involving nuclear and other radioactive material out of regulatory control are presented in more detail in Appendix I:

- (a) Detection by instrument;
- (b) Detection by information alert;
- (c) Information analysis;
- (d) Notification, activation and deployment;
- (e) Information sharing and communication;
- (f) Crime scene management;
- (g) Interdiction (counteraction);
- (h) Nuclear forensics;
- (i) International cooperation.

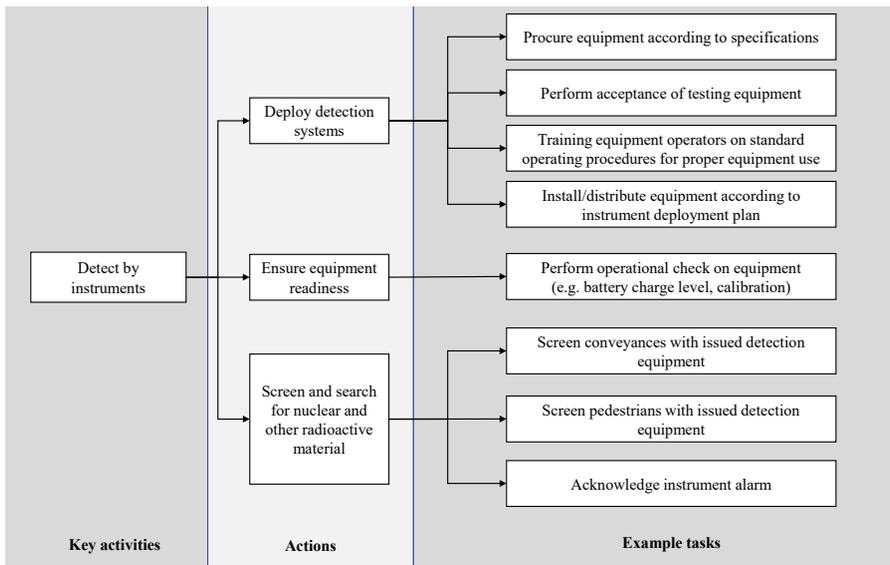


FIG. 1. An example key activity with associated actions and tasks.

EXERCISE FORMATS AND TYPES OF EXERCISE

2.13. Exercises can be structured using either a discussion based or an operations based format. During discussion based exercises, participants engage in a facilitated discussion of a realistic scenario of a nuclear security event. During operations based exercises, participants enact a scenario in an operational environment, based on their training, plans, procedures and expertise. More information on scenarios and their development is provided in paras 3.21–3.27.

2.14. A tabletop exercise is a common type of discussion based exercise used to evaluate the State's existing nuclear security policies, plans and procedures. Participants discuss the plans and procedures necessary to address a given scenario. This discussion is structured and moderated by one or more facilitators.

2.15. A workshop, while not an exercise, is a discussion based activity designed to improve plans, policies or procedures. Workshops are typically used to develop concepts of operations, standard operating procedures and response plans.

2.16. Operations based exercises are conducted in an operational or field environment (e.g. border checkpoint, laboratory, command centre). In such an exercise, personnel use assets and equipment in an operational or field environment

to enact realistic scenarios in a manner that simulates the stress and practical constraints of an actual incident.

2.17. Drills and field training exercises are two common types of operations based exercise. A drill is typically used to test a single, specific operation or task within a single competent authority or at a specific operational location. A field training exercise is an operations based exercise designed to evaluate individual and collective capabilities in near real time. A field training exercise can be designed broadly, including multiple competent authorities or multiple locations, or be focused within a specific competent authority. Drills are typically smaller in scale and shorter in duration than field training exercises.

2.18. When selecting an exercise type, the complexity of the planned exercise should be considered. For example, exercises can be designed to address a single or multiple key activities of the State, involve a single or multiple competent authorities, and/or be conducted at local, national, regional and international levels.

2.19. In general, the complexity of the exercise depends on the number of key activities to be evaluated and the number of different organizations involved. More resources and time will typically be needed to plan exercises that evaluate a number of key activities simultaneously, which can be an important consideration for the exercise planning team. In order to successfully execute more complex exercises, the exercise planning team is also likely to need experience that could systematically be developed by first conducting smaller scale exercises and progressing toward more complex exercises. For example, by starting with an exercise internal to an organization and working up to exercises involving more organizations.

2.20. In addition, different exercise types offer different approaches and outcomes, which should be taken into account during the selection process. The exercise planning team will need to determine whether a discussion based or an operations based exercise is most appropriate, taking into account the different advantages and limitations of each format.

2.21. A major advantage of discussion based exercises is that they are typically less complex to plan and execute than operations based exercises. Significantly fewer resources are likely to be needed (e.g. time, finance, personnel) and such exercises can be suitable for senior level personnel, such as managers and policy makers. Moreover, participants can take part in discussion based exercises using video conferencing, potentially saving time and financial resources, especially when national or regional exercises are being planned. Discussion based exercises

also typically involve less stress for participants and players than operations based exercises. In addition, in discussion based exercises, operational timelines can be artificially compressed, making this exercise format useful for identifying gaps in policies and plans.

2.22. However, discussion based exercises also have limitations. It can be difficult to involve front line personnel in such exercises, as the direct participants in the exercise are typically managers. Discussion based exercises are also not always realistic because of external factors such as communications, traffic and weather. Finally, practical considerations can be ignored in a discussion based exercise: notably, it can be difficult to evaluate the timeliness of operational plans and procedures in discussion based exercises (e.g. availability of equipment, response time of expert support) and the functionality of equipment is typically not evaluated.

2.23. An advantage of operations based exercises is that they can more effectively evaluate the timeliness of actions of personnel than discussion based exercises. In addition, operations based exercises allow personnel to use and demonstrate their proficiency with equipment and test plans and procedures in a realistic environment. Operations based exercises can also realistically test command and communication (i.e. incident management) and can provide useful outcomes for both operational personnel and management, as they test both the effectiveness of policies and implementation of plans.

2.24. However, operations based exercises often involve the expenditure of more resources (time, finance, personnel) than discussion based exercises and additional safety considerations have to be factored into planning, such as radiation protection, weapon safety, weather and any interference with ongoing operations. Moreover, the operations based format is more complex when controlling exercise play.

2.25. More detailed guidance on selecting the best exercise type based on the objectives and scope of the exercise is provided in Section 3.

CONSIDERATIONS FOR EXERCISES

2.26. The part of a State's nuclear security regime relating to nuclear and other radioactive material out of regulatory control typically involves multiple competent authorities, with different authorities, jurisdictions and priorities. Thus, multiple competent authorities might be responsible for key activities and actions relating to the prevention of, detection of and response to intentional unauthorized acts involving nuclear and other radioactive material out of regulatory control.

States should consider exercises that integrate the key activities and associated actions relating to the prevention of, detection of and response to such acts.

2.27. States should also consider integrating nuclear security elements with other national or international exercises such as those described in Ref. [11] and in Preparation, Conduct and Evaluation of Exercises for Security of Nuclear and Other Radioactive Material in Transport [12]. States should develop a common approach to preparation, conduct and evaluation of exercises taking into account the varying approaches described in these publications.

2.28. Finally, an exercise should draw on existing training programmes that address an organization's knowledge, skills and capabilities. A critical evaluation of ongoing training incorporated as part of the exercise allows for a State to progressively build on the skills and capabilities of its personnel. An evaluation of the training programme taking into account the outcomes of the completed exercise can also be used to identify strengths and weaknesses of the training programme.

3. PREPARATION OF EXERCISES

3.1. The State or competent authority responsible for organizing the exercise should form an exercise planning team to prepare the exercise, including members from each of the principal organizations involved in the exercise. This team should meet regularly during the preparation of the exercise. More information on the exercise planning team and its roles and responsibilities is provided in paras 3.30 and 3.31.

3.2. During the preparation of an exercise, the exercise planning team should perform the following in order to lay the foundation for the exercise conduct and evaluation:

- (a) Determine the key activities to be exercised, the format and type, the scope and objectives of the exercise;
- (b) Identify constraints and considerations;
- (c) Develop a planning timeline for the exercise;
- (d) Develop the exercise scenario;

- (e) Identify the exercise participants³ and their roles;
- (f) Develop evaluation criteria for the exercise;
- (g) Establish documentation needs for the exercise.

DETERMINING EXERCISE KEY ACTIVITIES, FORMAT, TYPE, SCOPE AND OBJECTIVES

3.3. The exercise planning team should determine which key activities will be evaluated during the exercise. One typical approach is to select key activities that are of interest for evaluation and that can be realistically exercised. Once these key activities have been identified, the scope and objectives of the exercise can be developed.

3.4. An appropriate scope for the exercise should also be determined that takes into account the time, resources, personnel and other constraints of the exercising organizations. The exercise scope is a short written description of the exercise that sets out the format and type of exercise to be undertaken, the organizations participating, the resources needed and the duration and location of the exercise. The exercise scope should also set out the scale of the exercise. For example, a tabletop exercise held at a national level would be a larger-scale exercise than a site level drill with one agency participating.

3.5. An exercise planning team might develop an exercise scope such as the following: “The exercise is an operations based radiation detection field training exercise with border guards, customs and expert support that will take one day at an operational or field environment using radiation portal monitors, mobile detection systems, handheld radiation detection equipment and information management systems.”

3.6. Well defined objectives for the exercise should also be set out. These objectives, typically expressed as short written descriptions, should be aligned with the key activities, actions and tasks that will be exercised. All organizations involved in the exercise should contribute to setting exercise objectives and should participate in subsequent planning decisions.

3.7. Exercise objectives provide a framework for the development of the exercise scenario, inform exercise evaluation criteria and can help to coordinate various

³ Exercise participants include all persons with roles or responsibilities relating to the preparation, conduct and evaluation of the exercise.

organizations' efforts in planning the exercise. Exercise objectives should fulfil the following criteria:

- (a) Specific: Each objective should be concise, clearly phrased and easy to understand.
- (b) Measurable: Each objective should be stated in such a way that performance criteria can be developed in order to assess the exercise outcomes.
- (c) Achievable: Each objective should be realistic to complete with the resources that the organization is able to commit to the exercise.
- (d) Relevant: Each objective should be relevant to the participants and organizations and focus on a behaviour or procedure connected to a capability, activity or task.
- (e) Time bound: Each objective should be achievable within the allowable time to conduct the exercise.

3.8. Exercise objectives should focus on plans, policies and procedures and enable development of evaluation criteria that identify good practices and opportunities for improvement. Objectives should correspond to the key activities to be tested in the exercise (see para. 3.11). The exercise planning team might consider limiting the number of exercise objectives in order to enable timely delivery of the exercise and to facilitate the design of a realistic scenario.

3.9. Examples of possible exercise objectives include: “to assess and evaluate front line officers’ ability to detect and identify a radiation alarm according to their standard operating procedures and equipment operating procedures”; and “to evaluate participants’ ability to receive, analyse and disseminate information relating to a threat caused by nuclear and other radioactive material out of regulatory control according to their standard operating procedures.”

3.10. While determining the scope, the exercise planning team should select the exercise format and type that provides the most appropriate and cost effective way to achieve the objectives set out in the previous step.

3.11. This decision could be considered as follows (see Fig. 2):

- (a) If the objective is to develop plans and procedures, such as standard operating procedures, a discussion based exercise or an activity such as a workshop would be most appropriate.
- (b) If the objective is to evaluate existing plans, procedures or operations of nuclear security detection and response systems and measures, either a discussion based or an operations based exercise could be appropriate.

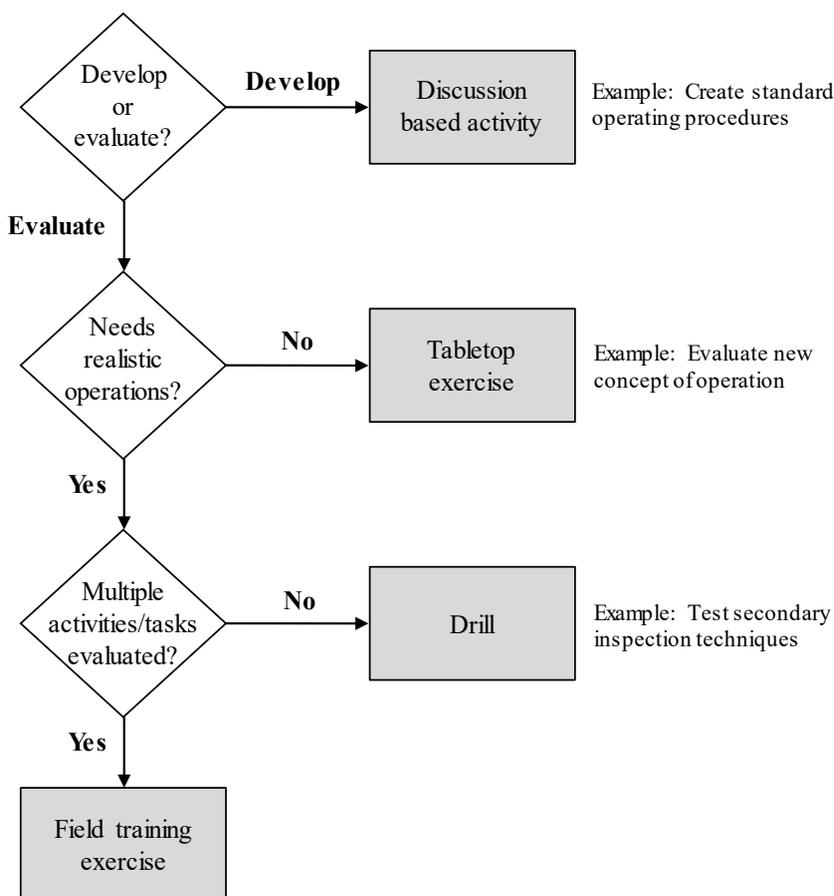


FIG. 2. Decision tree for selecting an exercise type.

- (c) If the objective is to evaluate realistic operations, then an operations based exercise should be considered; otherwise, a discussion based exercise could suffice.
- (d) If realistic operations need to be evaluated, and an operations based exercise is selected, then decision would depend on how many actions or tasks will be evaluated: a drill would be sufficient if only one activity or task is to be evaluated, while a field training exercise would be more appropriate if multiple activities or tasks are to be evaluated.

IDENTIFYING CONSTRAINTS AND CONSIDERATIONS

3.12. Constraints and considerations that might affect the selected exercise scope and type should also be considered during exercise preparation. These constraints and considerations include resource needs and availability, legal and regulatory considerations, safety considerations and the need for liaison with the media and the general public, each of which is presented in more detail in paras 3.13–3.18.

Resource needs and availability

3.13. The availability of appropriate technical, human and financial resources should be considered early in exercise preparation. The exercise planning team should work with the participating organizations and other stakeholders to identify financial resources, develop an exercise budget and define monitoring and reporting demands, as needed. In addition, the time needed for planning and evaluating the exercise and the resulting impact on available resources should be considered in advance. For example, a tabletop exercise could take only weeks to plan while a more complex field training exercise might take as long as a year to plan, and it might take as long as six additional months to evaluate and finalize the exercise report.

Legal and regulatory considerations

3.14. Legal and regulatory requirements associated with nuclear detection and response operations and with regard to the use of nuclear and other radioactive material should also be considered during exercise preparation. A review of jurisdictional boundaries and responsibilities might assist in identifying all relevant organizations for an exercise and ensure that the exercise represents a realistic situation and includes participation of all relevant organizations.

Safety considerations

3.15. Safety is paramount in any exercise and safety considerations should encompass all hazards that could be encountered. Factors to consider for a safe exercise include safety of personnel and the environment, the proper use and handling of any nuclear and other radioactive material, the presence of firearms and other hazards. Evacuation routes should also be planned along with ensuring emergency medical response in accordance with worker safety.

3.16. The exercise planning team should develop a safety plan to minimize risks associated with the hazards of the exercise and ensure a safe experience.

All exercise participants should be made aware of exercise safety rules including radiation protection instructions and first aid instructions, if necessary. If the use of nuclear or radioactive material (either open or sealed) is deemed necessary for the conduct of the exercise, material with the lowest possible activity should be used in the exercise.

Liaison with media and the general public

3.17. If it is anticipated that there will be a need to liaise with media and/or the general public, or that the exercise will be visible to the general public, the exercise planning team should develop a plan for managing media interest and for interacting with the media and the general public, including appointing a media spokesperson, if necessary.

3.18. The development and use of a media strategy could help to avoid confusion on part of the public. A media strategy should include the following points:

- (a) The media should be informed of exercises before their conduct. However, information should not be distributed to the media in advance of the exercise if the exercise is intended to test operational readiness. In this case, media information could reach some of the exercise participants and give them advance warning.
- (b) The media should be informed of the purpose of the exercise, emphasizing the fact that it is normal and, indeed, desirable to find deficiencies, weaknesses and areas for improvement as a result of exercises.
- (c) A separate section or department of the exercise organization should deal with the media during the exercise. The personnel in this group should not be players in the exercise [11].

DEVELOPING A PLANNING TIMELINE FOR AN EXERCISE

3.19. Once the exercise key activities, scope, format, type and objectives have been developed and constraints and considerations have been identified, a timeline should be developed that describes all important steps for the preparation, conduct and evaluation of the exercise. The timeline should identify when these steps should be completed and the primary person or organization responsible for each step. The exercise planning timeline should include but might not be limited to the

following steps, some of which could be completed before drafting the timeline for the exercise:

- (a) Formation of the planning team, including a description of various roles and responsibilities;
- (b) Determination of exercise scope, objectives and type;
- (c) Duration and location of the exercise;
- (d) Collection of plans and procedures relevant to the exercise;
- (e) Identification of participating organizations and determination of their degree of involvement;
- (f) Development and/or identification of an exercise scenario;
- (g) Date and venue where the exercise will be conducted;
- (h) Identification of resource needs;
- (i) Selection of exercise conduct and evaluation teams;
- (j) Determination of exercise evaluation criteria;
- (k) Development of observer needs and constraints;
- (l) Development of exercise briefings;
- (m) Conduct of the exercise;
- (n) Debriefing of players and participants;
- (o) Development of exercise report;
- (p) Development of corrective actions.

A template for developing such a timeline can be found in Annex I.

DEVELOPING EXERCISE SCENARIOS

3.20. The exercise planning team should not develop the scenario(s) until the exercise key activities, scope, objectives and type have been clearly defined.

3.21. An exercise scenario is an assumed set of realistic and credible conditions and/or events for the exercise that allows the participants to demonstrate expertise and competency in conducting tasks over the course of the exercise. The scenarios should also take into account sensitivities that might arise with the use of real names of adversary groups or sensitive venues. Exercise players should not have prior knowledge of the scenario details or of their expected actions, as that would interfere with the exercise play and evaluation.

3.22. Exercise scenarios should:

- (a) Establish the general context that allows participants to play;

- (b) Include the technical details necessary to accurately depict scenario conditions and events;
- (c) Include an outline of the injects to be used during the exercise.

An example scenario following this format is provided in Annex II.

3.23. A scenario is typically revealed through a series of injects. Injects are controlled pieces of information or event updates, provided to the participants during exercise play that allow for the evolution of the exercise. Not all participants will receive or be involved in the discussion or actions relating to all of the injects. Certain exercise participants might be specifically targeted to receive injects to evaluate their functions or actions.

3.24. The exercise planning team could choose to use either a single scenario or multiple scenarios for the exercise. A single scenario provides participants the opportunity to exercise the key activities against a realistic, sequential set of events and for this response to be evaluated. However, an approach using multiple unrelated scenarios can be useful to achieve exercise objectives that might not be intrinsically linked to one another by time and space.

3.25. Multiple unrelated scenarios might be used when unrelated plans are being evaluated. In some cases, multiple scenarios might also be used if a specific procedure or process is being evaluated in the exercise that is unrelated to other procedures and processes being evaluated, and an additional scenario around that procedure or process is needed in order to address it adequately. If multiple unrelated scenarios are used, the exercise planning team should ensure that the exercise controller provides clear directions and instructions to the exercise participants in order to prevent confusion.

3.26. The exercise planning team should create an exercise event list, a template of which is provided in Annex III. An exercise event list includes the description of expected events and how long it should take for them to be successfully resolved. The expected duration should be realistic. For example, an action that takes fifteen minutes in real life should not be confined to five minutes in the scenario.

IDENTIFYING EXERCISE PARTICIPANTS AND THEIR ROLES

3.27. In addition to developing the exercise timeline and scenario(s), during exercise preparation, the exercise planning team should also identify the exercise

participants, and define their roles and responsibilities. An example is provided in the exercise plan template in Annex III.

3.28. The roles and responsibilities of the exercise participants should be adapted to the needs of the exercise. For example, smaller-scale exercises might use personnel in multiple roles or the exercise director might also serve in a controller role. If one individual performs multiple exercise roles, then any potential conflicts should be minimized.

3.29. Roles for exercise participants and accompanying responsibilities are presented in paras 3.30–3.47.

Exercise director and exercise planning team

3.30. The exercise director should lead the preparation, conduct and evaluation of the exercise and oversee all exercise activities. The exercise director should also assemble the exercise planning team.

3.31. The exercise planning team, as mentioned earlier in the publication, should plan and design the exercise and develop evaluation guidelines. Members of the planning team might also participate in the exercise as controllers, facilitators or evaluators.

Controllers and facilitators

3.32. Controllers and facilitators both guide exercise play. While in this sense the roles are similar, the tasks that facilitators (for discussion based exercise formats) and controllers (for operations based exercises) undertake are different.

3.33. In discussion based exercise formats, facilitators should ensure that participant discussions remain focused on the exercise objectives and that all issues and objectives are explored as thoroughly as possible within the time allotted. Thus, the facilitator should possess the ability to keep all participants engaged in exercise play as well as keep discussions on track and within established time limits. A facilitator should also have functional area expertise or experience relative to the exercise, should be able to speak competently and confidently about the subject, without dominating the conversation, and should be familiar with relevant plans and procedures. Facilitators should also demonstrate an ability to listen well and summarize players' discussions.

3.34. If feasible and appropriate, co-facilitators who are knowledgeable about local issues, plans and procedures might assist the lead facilitator. In addition, the exercise planning team might consider designating a recorder to take notes so that the facilitators can focus on the key issues of the discussion.

3.35. In operations based exercise formats, controllers should plan and manage exercise play, should set up and operate the exercise site, should provide key data to players, should be properly equipped to monitor the conduct of the exercise and might also prompt or initiate certain players' actions. Controllers should also monitor exercise play for general safety and radiation safety considerations.

3.36. For large scale exercises, there might be a team of controllers or facilitators. These teams are typically guided by a designated lead controller or facilitator.

Evaluators

3.37. Evaluators should record key observations of the players' actions during the exercise, should perform evaluations based on established guidelines, and should take part in the preparation of the evaluation report. Evaluators typically have expertise in the expected actions of players, should not interfere with exercise play and should be independent from the organizations whose actions are evaluated during the exercise.

3.38. The exercise planning team should consider assembling an evaluation team and designating a lead evaluator to oversee and manage the process of evaluating the exercise. The lead evaluator could participate as a member of the exercise planning team and should be familiar with the exercise's objectives. The lead evaluator should have the skills to effectively communicate and coordinate with the exercise controllers, facilitators and other evaluators. The lead evaluator should also determine the structure of the exercise evaluation team based on the scope of the exercise, the exercise objectives and the key activities, actions and tasks to be evaluated during the exercise.

Players

3.39. Exercise players should actively take part in an exercise by either participating in the discussion or by performing their roles and responsibilities.

Simulators or controlled players

3.40. There might be organizations or individuals not participating in the exercise, but that could play a role in the conduct of the exercise. The roles of these organizations or individuals could be performed by simulators or controlled players in order to ensure realistic exercise play.

Role players

3.41. Role players act out specific roles, such as adversaries, witnesses and victims, in order to add realism to an exercise.

Media spokesperson

3.42. The media spokesperson should serve as the point of contact for coordination of all media interactions regarding the exercise and is responsible for providing any official statement.

3.43. A media spokesperson could provide information to the media before, during and after the exercise as well as develop instructions with regard to media and public interactions for exercise participants. Exercise participants might receive instructions from the media spokesperson on the appropriate interactions with the media before, during and after the exercise. In addition, the media spokesperson might organize a pre-exercise briefing with the media as well as a press release. Such measures could assist in ensuring that public messaging remains consistent and in avoiding any miscommunications, such as mistaking the exercise for a real event. The media spokesperson role is particularly important when an exercise involves any public space or space that will be able to be viewed by the general public.

Observers

3.44. Observers attend an exercise in order to observe and learn from the event. Observers should be prepared to provide feedback, if requested, and should not interfere with the exercise. A designated contact person for observers can be assigned depending on the scope and extent of the exercise.

Safety officer

3.45. The safety officer should monitor an operations based exercise for safety, using an all hazards approach, and have the authority to stop exercise play. The

safety officer should provide a safety briefing to the exercise participants and receive reports on safety concerns from participants. More than one safety officer can be appointed. If radioactive sources are to be used in the exercise, the safety officer should cooperate with the qualified expert in radiation protection, who should provide additional radiation protection instructions, as described in para. 3.46.

Qualified expert in radiation protection

3.46. The qualified expert in radiation protection should ensure the safe and secure handling of any nuclear and other radioactive material involved in operations based exercises, in accordance with national and international regulations, and provide radiation protection instructions to the participants. The qualified expert in radiation protection should decide the type, the form and the activity of nuclear and other radioactive material to be used in the exercise, in accordance with the exercise goals and national regulations. The use of sources of the lowest activity capable of providing threshold radiation detection alarms should be considered for the purpose of triggering detection alarms during the exercise as needed. The qualified expert in radiation protection should have the authority to stop exercise play if radiation safety is compromised. The qualified expert should also have the responsibility to monitor and record the radiation doses received by the exercise players and controllers using appropriate equipment. More than one qualified expert in radiation protection can be appointed.

Rapporteur

3.47. The rapporteur should maintain records of the meetings held during exercise planning and should be responsible for maintaining the exercise log that describes each of the events that occur in an exercise. The exercise log should include the time at which each event occurs. The rapporteur should also support the planning team by coordinating and consolidating information collected by other exercise personnel during the exercise play and any subsequent debriefings. Information collection and recording duties could be automated in States that use electronic and computer based emergency operations management systems.

DEVELOPING EVALUATION CRITERIA

3.48. Evaluation criteria provide an established structure for evaluators to identify during exercises strengths, weaknesses and areas for improvement in nuclear security systems and measures for the detection of and response to intentional

unauthorized acts involving nuclear and other radioactive material out of regulatory control.

3.49. Evaluation criteria consist of a set of statements, which, taken as a whole, describe good performance of the nuclear security systems and measures with respect to the key activity or activities being exercised. Data is then collected during the exercise for comparison with the criteria, so that during the evaluation stage, a determination can be made with regard to whether each key activity was performed adequately during the exercise.

3.50. Evaluation criteria should be developed during exercise preparation and should assess performance of the nuclear security systems and measures taking into account the key activities and the associated actions and tasks to be exercised. Evaluation criteria should be based on existing policies, plans and operating procedures.

3.51. When developing evaluation criteria, the planning team might consider using the following steps:

- (a) Develop actions specific to the key activity being exercised, taking into account the exercise scope, objectives and exercise type.
- (b) Identify the tasks needed to accomplish the actions and to demonstrate that the State can perform the key activity being exercised.
- (c) Maintain records of the documentation that is used in the development of the activities and tasks. These records will allow evaluators to more efficiently refer to plans or other documentation as needed, and can also assist in the development of the exercise report.
- (d) Tailor the evaluation criteria to reflect whether the exercise is operations based or discussion based. In an operations based exercise, evaluators observe exercise players performing tasks, and in a discussion based exercise, evaluators observe exercise players discussing or describing how tasks are performed.
- (e) Review and refine the evaluation criteria as the exercise planning process progresses, in order to ensure that the activities and tasks can be accomplished within the scope and time allotted for the exercise.

3.52. The exercise planning team should consider using a simple and objective rating system to analyse the data collected for comparison with the evaluation criteria. The use of such a system could lead to improved consistency between observations recorded by different evaluators.

3.53. As an example, a basic rating system could consist of three different ratings: strength (S); area for improvement (AFI); and not evaluated or observed (NE/O). A description of the grade as a guide could be provided to assist evaluators in consistently assigning the rating. In this example, a strength (S) could be described as “Players completed the activities and tasks associated with the capability in a manner that achieved the objective(s) and did not negatively affect the performance of other activities.” An area for improvement (AFI) rating could be described as “Players completed or partially completed the activities and tasks associated with the capability in a manner where opportunities to enhance effectiveness and/or efficiency were observed.” The not evaluated or observed (NE/O) grade could be described as “The activities and tasks associated with the capability were not evaluated or observed in this event.”

3.54. The exercise planning team should document the evaluation criteria in exercise evaluation guides, which are guides written specifically for the evaluation team to provide needed information relating to the exercise evaluation, such as how to use the evaluation criteria and the rating system. The use of exercise evaluation guides can streamline data collection, help to enable thorough assessments of the key activities exercised and help organizations to connect the data collected during the exercise results to the exercise objectives, key activities, actions and tasks for further analysis.

3.55. In addition to considering the evaluation criteria, exercise evaluators should also note good practices when they are observed during the exercise.

ESTABLISHING EXERCISE DOCUMENTATION NEEDS

3.56. As part of the exercise preparation activities, the exercise planning team should identify the documentation needed to communicate the objectives, scope and details of the exercise to all relevant participating organizations. Drafting the documentation for the exercise can provide an opportunity for participating organizations to reach consensus on key exercise decisions, for example deciding the exercise scope, scale and budget. The planning team should also document the details needed to plan, conduct and evaluate the exercise, and consider how the exercise outcomes and results will be documented and communicated to participating organizations, the competent authority and others, as needed.

3.57. A set of comprehensive and organized exercise documentation is needed to effectively prepare, conduct and evaluate an exercise as well as to ensure that an accurate account of the exercise is preserved. This documentation should

include a description of all critical issues, good practices, lessons identified and recommendations resulting from the exercise to enable organizations to improve their nuclear security systems and measures. Moreover, maintaining such documentation can allow organizations to use past documentation to support future exercises.

3.58. While most exercise materials are not sensitive, distribution might need to be restricted for some materials such as scenario details and exercise results. Information determined to be sensitive should be handled according to the State's relevant laws with regard to the protection of sensitive information. In addition, the exercise evaluation might be considered as sensitive information with limited access, as concerns identified during the exercise might provide information on vulnerabilities.

3.59. The preparation, conduct and evaluation of exercises can be a resource intensive process and the use of common templates and checklists can be used to simplify this process. Annexes III–XIII present templates and checklists that can be used during the preparation, conduct and evaluation of an exercise. Exercises can vary widely in scope, scale and complexity; therefore, these templates and checklists act as general guidance. The exercise planning team should determine the applicability of individual elements of the templates and checklists as they are planning their exercise.

3.60. In paras 3.61–3.75, several types of documentation are presented that the exercise planning team should either put in place or consider when planning an exercise.

Documentation for all exercises

3.61. For all exercises, an exercise plan, an exercise event list, an exercise evaluation guide, a participant feedback form and an exercise report should be developed.

3.62. The exercise plan should provide exercise participants with all the necessary tools for their roles in the exercise. For example, an exercise plan should provide all exercise participants with the exercise objectives, list of participating organizations and personnel, and a description of the roles and responsibilities of the participants in the exercise. An exercise plan template can be found in Annex III.

3.63. The exercise event list should contain the complete listing of scenarios, narratives, injects and their associated sequencing during the exercise. This list is

intended to be used by controllers, evaluators and players. An exercise event list template can be found in Annex III.

3.64. An exercise evaluation guide (see also para. 3.54) should set out the key activity or activities to be exercised and the exercise objectives, as well as the actions and tasks to be evaluated during the exercise. This guide also contains the evaluation criteria and ratings, presented in paras 3.48–3.53. Example exercise evaluation guides can be found in Annex III.

3.65. The participant feedback form is the data collection method by which participants can provide informal observations about the exercise. A template can be found in Annex IV.

3.66. The exercise report should contain the findings from the exercise and ratings relating to the performance of the exercised key activities, tasks and actions as derived from the evaluation criteria. An exercise report template can be found in Annex V.

3.67. The amount of documentation produced and decisions regarding what documentation is prepared will depend upon the exercise type, scope and scale.

Additional documentation for discussion based exercises

3.68. In addition to the documentation described in paras 3.61–3.67, a situation manual, a facilitator guide and multimedia presentations can be helpful for discussion based exercises.

3.69. A situation manual provides participants with the information needed to follow any multimedia presentations, perform their roles in the exercise and understand how the exercise will be executed.

3.70. A facilitator guide provides facilitators with the information needed to ensure the exercise is executed in accordance with the stated objectives. This guide might include questions, scenarios and related injects that a facilitator would need in order to conduct the exercise.

3.71. Multimedia presentations can assist facilitators in presenting scenarios to players and in providing overarching questions to assist in the facilitation of the exercise.

Additional documentation for operations and field based exercises

3.72. In addition to the documentation described in paras 3.61–3.67, a controller and evaluator handbook can be helpful for operations based exercises.

3.73. A controller and evaluator handbook describes the roles and responsibilities of exercise controllers and evaluators and the procedures they should follow during the exercise. Because a controller and evaluator handbook contains information about the scenario(s) and about exercise administration, it should be distributed to only those individuals specifically designated as controllers or evaluators. A controller and evaluator handbook typically includes exercise site maps, exercise team contact information and specific assignments and guidance for controllers and evaluators.

Tailoring exercise documentation needs

3.74. Depending on the scope and scale of the exercise as well as the audience for the documentation, which should be targeted to the different roles and responsibilities of the exercise participants, some exercise documentation can be combined. For example, a separate facilitator’s guide might not be needed for a small-scale tabletop exercise if the exercise plan includes the questions that a facilitator would need to ask to execute his or her roles and responsibilities during the exercise. Table 1 illustrates different types of exercise documentation and to which exercise type and audience they would be most applicable.

3.75. Exercise participants and players might also benefit from the distribution of a player handout that condenses the key information in the exercise plan into one or two pages, such as the scope of the exercise, the main events of the exercise and the date and location. An example player handout is provided in Annex VI.

TABLE 1. EXERCISE DOCUMENTATION AND ITS APPLICABILITY TO EXERCISE TYPES AND AUDIENCES

Documentation	Exercise type	Audience
Exercise plan	Tabletop exercise Drill Field training exercise	All participants

TABLE 1. EXERCISE DOCUMENTATION AND ITS APPLICABILITY TO EXERCISE TYPES AND AUDIENCES (cont.)

Documentation	Exercise type	Audience
Exercise event list	Drill	Controllers
	Field training exercise	Evaluators
	Complex tabletop exercise (optional)	Players
Exercise evaluation guides	Tabletop exercise	Evaluators
	Drill	
	Field training exercise	
Situation manual	Tabletop exercise	All participants
Facilitator guide	Tabletop exercise	Facilitators
Multimedia presentation	Tabletop exercise	All participants
Controller and evaluator handbook	Drill	Controllers
	Field training exercise	Evaluators
Participant feedback form	All exercises	All participants

4. CONDUCT OF EXERCISES

4.1. Conducting an exercise consists of four components: setting up the exercise and preparing for exercise safety; providing exercise briefings; conducting exercise play; and holding debriefing activities. The exercise play should follow the schedule outlined in the exercise plan developed during the exercise preparation. These components are presented in this section.

SETTING UP THE EXERCISE AND PREPARING FOR EXERCISE SAFETY

4.2. Adequate time should be allocated to setting up the exercise in order to allow planners to prepare a venue for an exercise and to address any unexpected

problems. Planners should visit the exercise venue as many days before the event as necessary to ensure that the exercise is well organized.

4.3. Setting up of the exercise might include the following tasks:

- (a) Arranging classrooms or conference rooms;
- (b) Marking the appropriate exercise areas (e.g. play, evaluation and observer areas);
- (c) Inspecting the venue for safety considerations;
- (d) Checking equipment (e.g. communications equipment, radiation detection instruments, personal protective equipment);
- (e) Providing food and drinks for participants.

4.4. Exercise safety should always take priority over exercise events. All controllers should be assigned responsibilities for participant safety, and any safety concerns should be immediately reported to the lead controller. In addition, any participant should be permitted to stop exercise play for safety reasons. Safety officers and participants should also remain vigilant for any violations of safety policies throughout an exercise. The lead controller should determine whether a real world emergency warrants a pause in exercise play and, if exercise play is paused, when it can be resumed.

Radiation safety

4.5. When an exercise involves the use of radiation sources, a qualified expert in radiation protection should ensure the safe and secure handling of any nuclear and other radioactive material involved in operations based exercises, in accordance with national and international regulations (see para. 3.46), as well as ensure that appropriate radiation protection measures are in place. The qualified expert in radiation protection might choose to appoint a certified radiation protection officer to be responsible for radiation safety.

4.6. The handling of radioactive sources should be strictly limited to qualified staff and should be in accordance with a radiation protection plan that has been prepared for the exercise.

Weapons plan

4.7. All operations based exercises that involve weapons should have a written weapons plan and a safety policy that are in accordance with applicable laws and regulations.

4.8. Positive, proactive measures should be taken to prevent interaction between weapons and exercise participants. These should include the following measures:

- (a) A review of weapons safety policies should be conducted before the start of an exercise.
- (b) A certified weapons safety officer should be designated whose sole responsibility is to ensure that no loaded firearm, ammunition or weapon capable of bodily harm is carried by any exercise participant, observer or facilitator. The weapons safety officer should individually inspect every exercise participant before the start of an exercise to ensure there are no loaded firearms, magazines, ammunition or weapons within their possession.
- (c) Only individuals with a legal authority to carry a firearm during the normal course of duty should be permitted to possess a firearm during an exercise, within a defined exercise conduct area. This firearm should be unloaded. These firearms should be clearly marked as inspected by the weapons safety officer, for example, using brightly coloured tape on the stock or handle to indicate that they have been inspected and are unloaded.
- (d) Inert training weapons should be used instead of unloaded firearms where possible. Any firearms that are permitted to be carried by exercise participants should use a chamber safety device.

PROVIDING EXERCISE BRIEFINGS

4.9. Exercise briefings provide necessary exercise related information to all exercise participants and ensure exercise safety. The planning team should determine when to conduct these briefings (i.e. before, during or following the exercise play). Typical exercise briefings are described in paras 4.10–4.13.

Controller, facilitator and evaluator briefing

4.10. The briefing for controllers, facilitators and evaluators should begin with an exercise overview, including: the exercise location and key exercise areas, schedule of events, scenario, controller and evaluator responsibilities, instructions on completing evaluations and any other relevant information. Typically, a lead controller provides this briefing. During the briefing, controllers, facilitators and evaluators are encouraged to discuss any matters of concern with the lead controller for guidance. A controller, facilitator and evaluator briefing template can be found in Annex VII.

Player briefing

4.11. The briefing for the players should include the appropriate and necessary information for players to understand their role and responsibilities during conduct of the exercise. This briefing should also contain details regarding safety concerns, including, when applicable, weapons safety and radiation protection. Procedures for stopping the exercise in the case of a legitimate emergency (e.g. fire or injury) should be covered during the player briefing. The safety officer or controller should provide this briefing. A player briefing template can be found in Annex VIII.

Media briefing

4.12. The media briefing should use precise, plain and clear language to communicate information about the exercise or associated activities in order to minimize the likelihood that the information will be misunderstood by the media or the general public. The general public might not have a detailed technical understanding of the actual hazards of radiation. Therefore, care should be taken to explain safety procedures and to avoid causing panic when communicating about exercise activities, including the use of radioactive material during the exercise. A designated qualified media spokesperson would typically provide this briefing. Further considerations for the media briefing are presented in Annex IX.

Observer briefing

4.13. The observer briefing should include rules, observation areas, timings and locations, and should communicate to observers how they are expected to observe and support the exercise. Further considerations for the observer briefing can be found in Annex X.

CONDUCTING EXERCISE PLAY

4.14. In a discussion based exercise, the facilitator generally presents a multimedia presentation, which describes the scenario and any relevant background information, as described in paras 3.68–3.71. The facilitator also leads the discussion, introduces spokespersons, poses questions to the audience and ensures that the event remains on schedule.

4.15. In an operations based exercise, once all participants are in position, the controller should clearly communicate to all participants the start of exercise play. The controller should then monitor the progression through the exercise event list.

4.16. The controller should supervise all exercise participants in order to ensure a safe and secure exercise environment. The lead controller and the members of the controller team could operate in shifts if needed in order to allow the controller team to continuously oversee the exercise from setup to its completion. During exercise play each evaluator should use the evaluation criteria to record performance. When all events included in the exercise are completed, the controller should clearly communicate the end of exercise play.

HOLDING DEBRIEFING ACTIVITIES

4.17. Debriefing activities following the conclusion of the exercise focus on gathering information that can be used to evaluate the exercise. These debriefing activities could involve observations by evaluators recorded in completed exercise evaluation guides and feedback from other participants. Debriefing activities are often structured as facilitated discussions in order to ensure that the debriefing remains brief and constructive. These debriefings can take two forms: a participant debriefing and a controller and facilitator debriefing.

Participant debriefing

4.18. A participant debriefing provides participants the opportunity to provide feedback on their own performance, successes and areas for improvement⁴. This type of debriefing also allows evaluators to seek clarification regarding player actions and decision making processes and to consider the overall exercise outcomes. The information gathered during a participant debriefing can be included in the exercise report as well as used to improve the planning and conduct of future exercises. Participants in this debriefing can also learn about parts of the exercise that they were not involved in.

4.19. Participant feedback forms provide participants the opportunity to comment candidly on exercise activities and exercise design, and could be distributed as a useful way to collect additional data on the exercise. A participant feedback form template is provided as Annex IV.

⁴ Areas for improvement are those areas that will continue to seriously impede capability performance if left unresolved.

4.20. An observer feedback form could also be provided to observers by the controller. An observer feedback form template is provided as Annex XI.

4.21. An exercise debriefing checklist is provided as Annex XII.

Controller, facilitator and evaluator debriefing

4.22. A controller, facilitator and evaluator debriefing is typically more formal, and provides the exercise planning team, controllers, facilitators and evaluators the opportunity to review and provide feedback on the exercise. During this debriefing, controllers and evaluators provide an overview of their observations on the exercise and discuss strengths and areas for improvement identified during the exercise. This discussion can provide content for the draft exercise report. The controller, facilitator and evaluator debriefing can occur shortly after the end of the exercise, but is usually held no later than a few days after the exercise.

4.23. At the conclusion of these debriefings, the exercise planning team should begin the final part of the exercise, the evaluation process.

5. EVALUATION OF EXERCISES

5.1. During the evaluation of the exercise, the exercise planning team and evaluators analyse the information collected during the exercise to identify strengths and areas for improvement and recommend corrective actions, if needed. This ultimately assists organizations in assessing the key activities that were tested during the exercise.

5.2. The exercise planning team could choose to organize a training course for evaluators to be held before the beginning of an exercise. This can help to provide a consistent approach to evaluation by ensuring that exercise evaluators have a shared understanding of the key data to be collected and how that data will contribute to the evaluation of the exercise. Evaluator training might include: general information about the exercise, including scope, objectives, key activities, scenario and schedule; relevant evaluator documentation (e.g. handbooks, instructions, evaluation tools); and plans, policies, procedures, agreements or other information that are relevant to the exercise. Evaluator training can also provide an opportunity for the lead evaluator or exercise director to provide

guidance to evaluators on observing exercise discussion or operations and on the criteria for the inclusion of data in the final exercise analysis.

GUIDANCE FOR EVALUATOR OBSERVATIONS

5.3. A well executed exercise evaluation is fair, consistent, objective and transparent. Evaluators should use exercise evaluation guides, as described in para. 3.54, and take detailed observation notes.

5.4. Evaluators should focus their observations on the tasks in the exercise event list for each key activity and action being exercised. These observations should be fact based and connected to the established evaluation criteria set out in the exercise evaluation guides. Their observations might also include:

- (a) The identification of good practices, strengths, weaknesses and areas for improvement;
- (b) Notes on how the task was or was not met;
- (c) Any pertinent decisions made during the exercise and information gathered to make decisions;
- (d) Resources used during the exercise;
- (e) Plans, policies, procedures or legislative authorities used or implemented during the exercise;
- (f) Any other factors contributing to the results.

5.5. Observations should include quantitative or qualitative assessments of whether and how the evaluation criteria were met, and the assigned rating for an observation, if a rating system is used, such as that described in para. 3.53. Evaluators should also note if an obvious cause or underlying reason resulted in players not succeeding in completing an activity or a task.

5.6. The methods for exercise observations and data collection can differ between discussion based exercises and operations based exercises. Discussion based exercises often focus on plans, policies and procedures. Consequently, observations of these exercises might consist of an evaluator or a recorder noting data from participant discussions using an exercise evaluation guide.

5.7. In contrast, operations based exercises focus on the operational execution of actions and tasks. During operations based exercises, evaluators collect and record observations of the participants. These data form the analytical basis for determining if the ability to complete certain tasks was successfully demonstrated.

Evaluators should refrain from reaching a final assessment until after exercise play is complete.

5.8. Additional data sources for evaluators might include face to face interviews, participant comments throughout the exercise and participant feedback forms. Evaluators could also consider that there may be more than one correct answer to questions posed by facilitators or observed actions.

5.9. The relevant evaluation criteria should be communicated to individual participants, and participants should be made aware that the final exercise evaluations might be communicated to participating organizations in order to share good practices and to identify areas for improvement.

ANALYSIS OF EVALUATOR OBSERVATIONS

5.10. The observations of the evaluators should be analysed in order to evaluate the ability of exercise players to perform actions and tasks during the exercise. Ultimately, the analysis should determine whether the exercise objectives were met and thus to rate the ability to perform the key activity or activities being exercised.

5.11. During analysis, the evaluators should consolidate the data and observations collected during the exercise. Any notes taken during the course of exercise play on observed strengths and areas for improvement should also be analysed. The data, observations and notes can help to provide the evaluators with insights into not only what happened during the exercise but also the reasons.

5.12. Evaluators should compare player performance against the evaluation criteria in order to determine the ability of the players to perform tasks during the exercise. In addition, when completing the analysis, evaluators should consider the following questions:

- (a) Did the evaluation of the discussion or operations suggest that tasks were executed in a manner that led to the completion of the actions and tasks being evaluated? If not, what was the impact or consequence?
- (b) Do current plans, policies and procedures support the actions and tasks being exercised? Were players familiar with these plans, policies and procedures?

DEVELOPING THE EXERCISE REPORT

5.13. The exercise report summarizes key information relating to the evaluation of the exercise. The length, format and length of time needed to develop the report depend on the exercise type and scope. The exercise report should be drafted by the exercise planning team and the exercise evaluators, and approved by participating organizations. The preparation of a presentation for exercise participants outlining the exercise report should be considered, as it can be a useful communication aid.

5.14. Exercise reports include basic exercise information, but the main focus of the report is the analysis of the exercise, including whether the key activity or activities being exercised were successfully performed. The report should include an overview of performance relating to each exercise objective and the key activity or activities associated with it, as well as highlight good practices, strengths and areas for improvement. Summaries of the evaluated actions and related observations should also be included, and areas for improvement to be acted on should be highlighted. An example exercise report assessment is provided in Annex XIII, and an exercise report template can be found in Annex V.

IMPROVEMENT CONSIDERATIONS

5.15. After the exercise evaluation is concluded and the exercise report is drafted, participating organizations should review the draft exercise report to confirm that the concerns, strengths and areas for improvement identified by evaluators are valid. Corrective actions should be developed that directly address any gaps or challenges preventing the organizations from successfully performing key activities. These corrective actions should be implemented by the appropriate organizations.

5.16. Participating organizations could use the following questions to guide their discussions when developing corrective actions:

- (a) What was the point of failure which led to this evaluation (e.g. area for improvement)?
- (b) Which changes to plans and procedures can improve performance?
- (c) Which changes to organizational structures can improve performance?
- (d) Which changes to management processes can improve performance?
- (e) Which changes to equipment or resources can improve performance?
- (f) Which training or exercises can improve performance?
- (g) What are the lessons identified for approaching similar problems in the future?

Appendix I

EXAMPLES OF KEY ACTIVITIES AND ACTIONS

I.1. In this appendix, a number of examples of key activities are set out, with associated example actions. The exercise planning team should consider these key activities during exercise preparation, conduct and evaluation, and should adapt them to the needs of the exercise being planned, with the understanding that the examples provided here are neither exhaustive nor exclusive. Moreover, the key activities are not isolated, and there might be overlap between the actions and tasks associated with them.

I.2. Detection by instrument, as described in Ref. [5], could include the following actions:

- (a) Deploying detection systems;
- (b) Confirming detection equipment readiness;
- (c) Screening and searching for nuclear and other radioactive material;
- (d) Collecting information about nuclear and other radioactive material out of regulatory control, an adversary and/or a target;
- (e) Confirming the status of a nuclear security event;
- (f) Confirming the nature of nuclear and other radioactive material out of regulatory control.

I.3. Detection by information, as described in Ref. [5], involves actions associated with gathering, storing and analysing input from a range of sources. These sources might include:

- (a) Sources of operational information;
- (b) Medical reporting;
- (c) Reporting of regulatory non-compliance;
- (d) Reporting loss of regulatory control;
- (e) Other information regarding material (e.g. whether it is targeted by an adversary or currently out of regulatory control), adversaries and/or targets.

Additional actions that could be considered part of this key activity include: confirming the status of a nuclear security event; and confirming the amount and/or nature of nuclear or other radioactive material relating to the nuclear security event.

I.4. Information analysis, as described in Refs [5, 6], could include the following actions:

- (a) Gathering and analysing information about a potential or ongoing nuclear security event;
- (b) Assessing, confirming and validating alarms and alerts;
- (c) Assessing potential adversaries;
- (d) Protecting sensitive information;
- (e) Sharing appropriate information with partner organizations;
- (f) Assessing the situation during the initial stages of a nuclear security event (e.g. adversary, method, nature of material involved, whether the material is stationary or in transport);
- (g) Monitoring an ongoing nuclear security event;
- (h) Determining the threat level of a nuclear security event and assessing the possibility of multiple nuclear security events or the escalation of a nuclear security event type;
- (i) Assessing the potential international impact (e.g. impact on shipping and cross-border movement of goods or people);
- (j) Identifying appropriate resources to deploy response measures;
- (k) Reassessing all analyses as more information is received.

I.5. Notification, activation and deployment, as described in Refs [5, 6], could include the following actions:

- (a) Notifying relevant competent authorities of the nuclear security event;
- (b) Activating relevant parts of response plans;
- (c) Deploying radiation monitoring teams;
- (d) Establishing a command structure at all levels (e.g. policy, strategic, tactical, operational);
- (e) Deploying appropriate resources to respond to the nuclear security event;
- (f) Reinforcing security measures and activities at strategic locations;
- (g) Sharing information on the status of the nuclear security event with all relevant response organizations;
- (h) Requesting international cooperation and assistance, as necessary.

I.6. Information sharing and communication, as described in Refs [5, 6], could include actions such as communicating with competent authorities, other stakeholders, the media, the general public and international partners with regard to the nuclear security event.

I.7. Crime scene management, as described in Refs [6, 9], could include the following actions:

- (a) Establishing scene control;
- (b) Securing first responders and evidence;
- (c) Implementing radiological crime scene management;
- (d) Initiating investigations;
- (e) Collecting and handling evidence;
- (f) Engaging in prosecution;
- (g) Collecting evidence associated with the nuclear security event;
- (h) Obtaining eyewitness and expert witness testimony;
- (i) Maintaining the integrity of evidence and ensuring chain of custody;
- (j) Conducting traditional and nuclear forensics as needed;
- (k) Supporting prosecution.

I.8. Interdiction, as described in IAEA Nuclear Security Series No. 18, Nuclear Security Systems and Measures for Major Public Events [13], and Refs [5, 6, 9], could include the following actions:

- (a) Disrupting an ongoing nuclear security event;
- (b) Obtaining control of device, material and/or potential adversaries;
- (c) Detaining, seizing and confiscating nuclear and other radioactive material out of regulatory control;
- (d) Notifying the regulatory body;
- (e) Removal of the material to a secure location after forensics and legal proceedings are concluded;
- (f) Reinforcing security measures at the scene.

I.9. Nuclear forensics, as described in Refs [7, 9], could include the following actions:

- (a) Determining the quantity and nature of nuclear or other radioactive material seized or obtained;
- (b) Categorizing and characterizing the material;
- (c) Preserving exhibits and evidence;
- (d) Determining if material is consistent with national holdings;
- (e) Performing traditional forensics on nuclear and other radiological material, or evidence contaminated with radionuclides, as appropriate.

I.10. International cooperation, as described in Refs [4–7, 9, 14–16], could include the following actions:

- (a) Exchanging of information on nuclear security events between States or between States and international and regional organizations;
- (b) Engaging technical cooperation and assistance from another State or international and regional organizations;
- (c) Cooperating with other States or international and regional organizations with respect to criminal offences and law enforcement responses;
- (d) Recovering and returning of seized items across borders.

REFERENCES

- [1] INTERNATIONAL ATOMIC ENERGY AGENCY, Objective and Essential Elements of a State's Nuclear Security Regime, IAEA Nuclear Security Series No. 20, IAEA, Vienna (2013).
- [2] INTERNATIONAL ATOMIC ENERGY AGENCY, Nuclear Security Recommendations on Physical Protection of Nuclear Material and Nuclear Facilities (INFCIRC/225/Revision 5), IAEA Nuclear Security Series No. 13, IAEA, Vienna (2011).
- [3] INTERNATIONAL ATOMIC ENERGY AGENCY, Nuclear Security Recommendations on Radioactive Material and Associated Facilities, IAEA Nuclear Security Series No. 14, IAEA, Vienna (2011).
- [4] EUROPEAN POLICE OFFICE, INTERNATIONAL ATOMIC ENERGY AGENCY, INTERNATIONAL CIVIL AVIATION ORGANIZATION, INTERNATIONAL CRIMINAL POLICE ORGANIZATION–INTERPOL, UNITED NATIONS INTERREGIONAL CRIME AND JUSTICE RESEARCH INSTITUTE, UNITED NATIONS OFFICE ON DRUGS AND CRIME, WORLD CUSTOMS ORGANIZATION, Nuclear Security Recommendations on Nuclear and Other Radioactive Material out of Regulatory Control, IAEA Nuclear Security Series No. 15, IAEA, Vienna (2011).
- [5] INTERNATIONAL ATOMIC ENERGY AGENCY, Nuclear Security Systems and Measures for the Detection of Nuclear and Other Radioactive Material out of Regulatory Control, IAEA Nuclear Security Series No. 21, IAEA, Vienna (2013).
- [6] INTERNATIONAL ATOMIC ENERGY AGENCY, Developing a National Framework for Managing the Response to Nuclear Security Events, IAEA Nuclear Security Series No. 37-G, IAEA, Vienna (2019).
- [7] INTERNATIONAL ATOMIC ENERGY AGENCY, Nuclear Forensics in Support of Investigations, IAEA Nuclear Security Series No. 2-G (Rev. 1), IAEA, Vienna (2015).
- [8] INTERNATIONAL ATOMIC ENERGY AGENCY, INTERNATIONAL CRIMINAL POLICE ORGANIZATION–INTERPOL, Risk Informed Approach for Nuclear Security Measures for Nuclear and Other Radioactive Material out of Regulatory Control, IAEA Nuclear Security Series No. 24-G, IAEA, Vienna (2015).
- [9] INTERNATIONAL ATOMIC ENERGY AGENCY, INTERNATIONAL CRIMINAL POLICE ORGANIZATION–INTERPOL, UNITED NATIONS INTERREGIONAL CRIME AND JUSTICE RESEARCH INSTITUTE, Radiological Crime Scene Management, IAEA Nuclear Security Series No. 22-G, IAEA, Vienna (2014).

- [10] FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS, INTERNATIONAL ATOMIC ENERGY AGENCY, INTERNATIONAL CIVIL AVIATION ORGANIZATION, INTERNATIONAL LABOUR ORGANIZATION, INTERNATIONAL MARITIME ORGANIZATION, INTERPOL, OECD NUCLEAR ENERGY AGENCY, PAN AMERICAN HEALTH ORGANIZATION, PREPARATORY COMMISSION FOR THE COMPREHENSIVE NUCLEAR-TEST-BAN TREATY ORGANIZATION, UNITED NATIONS ENVIRONMENT PROGRAMME, UNITED NATIONS OFFICE FOR THE COORDINATION OF HUMANITARIAN AFFAIRS, WORLD HEALTH ORGANIZATION, WORLD METEOROLOGICAL ORGANIZATION, Preparedness and Response for a Nuclear or Radiological Emergency, IAEA Safety Standards Series No. GSR Part 7, IAEA, Vienna (2015).
- [11] INTERNATIONAL ATOMIC ENERGY AGENCY, Preparation, Conduct and Evaluation of Exercises to Test Preparedness for a Nuclear or Radiological Emergency, EPR-Exercise, IAEA, Vienna (2005).
- [12] INTERNATIONAL ATOMIC ENERGY AGENCY, Preparation, Conduct and Evaluation of Exercises for Security of Nuclear and Other Radioactive Material in Transport, IAEA, Vienna (2018).
- [13] INTERNATIONAL ATOMIC ENERGY AGENCY, Nuclear Security Systems and Measures for Major Public Events, IAEA Nuclear Security Series No. 18, IAEA, Vienna (2012).
- [14] INTERNATIONAL ATOMIC ENERGY AGENCY, Operations Manual for Incident and Emergency Communication, EPR-IEComm 2019, IAEA, Vienna (2020).
- [15] INTERNATIONAL ATOMIC ENERGY AGENCY, IAEA Response and Assistance Network, EPR-RANET 2018, IAEA, Vienna (2018).
- [16] COMPREHENSIVE NUCLEAR-TEST-BAN TREATY ORGANIZATION, EURO-ATLANTIC DISASTER RESPONSE COORDINATION CENTRE, EUROPEAN COMMISSION, EUROPEAN POLICE OFFICE, FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS, INTERNATIONAL ATOMIC ENERGY AGENCY, INTERNATIONAL CIVIL AVIATION ORGANIZATION, INTERNATIONAL LABOUR ORGANIZATION, INTERNATIONAL MARITIME ORGANIZATION, INTERPOL, NUCLEAR ENERGY AGENCY OF THE ORGANISATION FOR ECONOMIC COOPERATION AND DEVELOPMENT, PAN AMERICAN HEALTH ORGANIZATION, UNITED NATIONS DEVELOPMENT PROGRAMME, UNITED NATIONS ENVIRONMENT PROGRAMME, UNITED NATIONS OFFICE FOR THE COORDINATION OF HUMANITARIAN AFFAIRS, UNITED NATIONS OFFICE FOR OUTER SPACE AFFAIRS, WORLD HEALTH ORGANIZATION, WORLD METEOROLOGICAL ORGANIZATION, Joint Radiation Emergency Management Plan of the International Organizations, EPR-JPLAN 2017, IAEA, Vienna (2017).

Annex I

EXERCISE PREPARATION, CONDUCT AND EVALUATION PLANNING TIMELINE

I-1. After developing the exercise key activities, scope, format and type, the timeline for exercise preparation, conduct and evaluation will be developed (see Table I-1).

TABLE I-1. TEMPLATE FOR DEVELOPING AN EXERCISE PLANNING TIMELINE

Step	Task	Timeline	Responsible person	Status
Pre-initial planning meeting	<p>Form and invite exercise planning team</p> <p>Identify implementation considerations and constraints</p> <p>Identify venue and date for initial planning meeting</p> <p>Develop initial planning meeting agenda</p>			
Initial planning meeting	<p>Review and incorporate suggested improvements from previous exercises</p> <p>Identify and develop exercise key activities, scope, resources, objectives, type and format</p> <p>Consider an outline of scenario(s)</p> <p>Begin development of an exercise event list</p> <p>Consider an evaluation approach for the exercise (e.g. exercise evaluators, criteria)</p> <p>Identify organizations/stakeholders to start writing draft exercise plan (as appropriate, e.g.):</p> <ul style="list-style-type: none"> • Staffing plan • Safety plan (radiation protection, weapons) • Security plan • Media plan • Visitor/observer plan <p>Establish exercise timeline</p> <p>Select venue (facility room)</p> <p>Identify participant list</p> <p>Identify participants' agencies</p>			

TABLE I-1. TEMPLATE FOR DEVELOPING AN EXERCISE PLANNING TIMELINE (cont.)

Step	Task	Timeline	Responsible person	Status
<p>Mid-term planning meeting(s)</p>	<p>Identify needs, financial resources and logistics Review action items and assignments Develop initial planning meeting minutes</p> <p>Assign personnel roles to develop specific sections of the exercise plan:</p> <ul style="list-style-type: none"> • Staffing plan • Safety plan (radiation protection, weapons) • Security plan • Media plan • Visitor/observer plan <p>Review and approve draft exercise plan Prepare maps Inspect venue Assign personnel to develop players handout Develop source management plan Develop exercise key role persons:</p> <ul style="list-style-type: none"> • Exercise director • Controller • Evaluator • Facilitator • Safety officer 			

TABLE I-1. TEMPLATE FOR DEVELOPING AN EXERCISE PLANNING TIMELINE (cont.)

Step	Task	Timeline	Responsible person	Status
	<p>Qualified expert in radiation protection</p> <p>Develop protocols for inviting observers and visitors</p> <p>Develop an observer management plan</p> <p>Assign facilitator(s)</p> <p>Appoint agencies/persons to continue writing draft exercise plan/specific documentation to be presented at final planning meeting</p> <p>Develop and approve the agenda for the final planning meeting</p> <p>Review action items and assignments</p> <p>Develop mid-term planning meeting minutes</p>			
Final planning meeting	<p>Finalize and approve all documentation</p> <p>Determine communications equipment (Internet, handheld radios, telephones)</p> <p>Finalize all logistical details, communication devices, audiovisual needs, and test, if needed</p> <p>Check equipment (dosimeters, radiation detectors, sources), maps and other props</p> <p>Receive approvals for source handling, storage, transport and security</p> <p>Finalize media communications plan</p> <p>Finalize visitor arrangements</p> <p>Finalize weapons policy</p> <p>Finalize exercise plan</p> <p>Finalize controller, facilitator and evaluator guide</p> <p>Develop and finalize any required briefings and presentation materials</p>			

TABLE I-1. TEMPLATE FOR DEVELOPING AN EXERCISE PLANNING TIMELINE (cont.)

Step	Task	Timeline	Responsible person	Status
	<p>Determine printing needs</p> <p>Finalize players handout</p> <p>Plan and agree final logistical checks and finalize all contingency plans</p> <p>Review food and water provisions and medical supplies</p> <p>Final confirmation of housing accommodations and transportation needs for exercise planning team and participants</p> <p>Visit exercise site locations with the planning team</p> <p>Test all communications equipment (Internet, handheld radios, telephones)</p> <p>Confirm the availability of the exercise radiological sources</p> <p>Arrange badging and identification</p> <p>Review action items and assignments</p> <p>Develop final planning meeting minutes</p>			
Exercise conduct	<p>Consider exercise walkthrough to check equipment, facilities, logistics and communications (as needed)</p> <p>Set up facilities</p> <p>Deliver exercise briefings and training:</p> <ul style="list-style-type: none"> • Player • Observer • Media • Evaluators/controllers • Weapons safety • Radiation safety 	Before the day of exercise		
		Day(s) of exercise		

TABLE I-1. TEMPLATE FOR DEVELOPING AN EXERCISE PLANNING TIMELINE (cont.)

Step	Task	Timeline	Responsible person	Status
	Distribute exercise materials to the exercise participants Conduct exercise Interact with the media Collect feedback from the participants Conduct post-exercise debriefing with participants Documentation team and personnel completes documentation Provide final reminder and instructions to evaluators			
Evaluation	Before the deadline, send out reminder to evaluators to submit their inputs Prepare draft exercise report Review draft report with all participating organizations and agree to corrective actions Finalize report			

Note: This timeline provides a general example that will have to be tailored depending on the exercise to be conducted.

Annex II

EXAMPLE SCENARIO

II-1. The exercise planning team develops the scenario the participants are to play. The example scenario presented in Box II-1 lists the key activities and objectives and includes an outline of the injects to be used during the exercise.

BOX II-1: EXAMPLE EXERCISE SCENARIO

Scenario Start: On [date] at [time], operational information will be propagated by [agency]. Following the release of the information, [agency] will [enter information with regard to the next steps in the scenario to be followed in accordance with established plans and procedures regarding information dissemination and deployment of nuclear detection teams and assets].

Inject 1: An informant informs the local police that an organized criminal group has successfully acquired two radiotherapy devices stolen from a hospital containing ^{137}Cs in a neighbouring country. The information indicates that an organized criminal group might be planning an attack.

Following the release of this information, players will determine appropriate actions.

Expected actions: Determine threat level, disseminate information to competent authorities and allocate resources in accordance with national response plan.

Inject 2: At a major border crossing, a front line officer's radiation detection portal alarm is triggered, indicating the presence of a radiation source.

Expected actions: Officer conducts a secondary inspection and utilizes technical expert support.

Inject 3: Remote technical expert support confirms the presence of ^{137}Cs . Expert support arrives at the scene, and localizes and secures the material.

Expected actions: Officers detain the suspect and begin the initial investigation into the origin and motive.

Inject 4: Intelligence analysts link the identified source from the border with the information provided by the informant. Analysts believe there might be a second radioactive source already in the country.

Expected action: Law enforcement and border authorities are put on high alert and conduct a nationwide search for another possible stolen radioactive source.

Annex III

EXERCISE PLAN TEMPLATE

EXERCISE SUMMARY

III–1. Table III–1 provides an overview of the exercise, summarizing the key points and listing the participating organizations.

EXERCISE OBJECTIVES AND KEY ACTIVITIES

III–2. The objectives in Table III–2 describe the expected outcomes for the exercise. The objectives directly link to key activities.

TABLE III–1. EXERCISE SUMMARY

Exercise name	[Insert name]
Exercise dates	[Insert date]
Purpose	This [discussion based or operations based] exercise provides participants the opportunity to [state general goal of the exercise].
Scope	This is a(n) [discussion based or operations based] exercise, planned for [duration] at the [location]. Exercise play is limited to the participating agencies.
Objectives	[Insert objectives]
Key activities	[Insert key activities]
Scenario	[Insert short description of the exercise scenario]
Lead agency	[List the lead agency/organization running the exercise]
Participating organizations	[Insert organizations]
Point of contact	[List exercise director/primary point of contact information]

TABLE III–2. EXAMPLE OF EXPECTED EXERCISE OUTCOMES

Key activity	Exercise objectives
Key Activity 1	Objective 1
Key Activity 2	Objective 2

PARTICIPANT ROLES AND RESPONSIBILITIES

III–3. Table III–3 lists different types of role for the exercise participants and provides a brief description of the participants’ responsibilities based on their role. Exercise participants may use tags or identification markers to indicate to the other participants their role in the exercise. In addition, participants representing the same organization may choose uniform clothing.

TABLE III–3. PARTICIPANT ROLES AND RESPONSIBILITIES

Role	Description
Exercise director	Oversees all exercise activities
Exercise planning team	Plans and designs the exercise Develops evaluation guidelines Members of the planning team sometimes participate during the actual exercise
Controllers Facilitators	Guide exercise play Discussion based exercises: Facilitators ensure that participant discussions remain focused on the exercise objectives and that all issues and objectives are explored thoroughly within the available time Field exercises: Controllers plan and manage exercise play, set up and operate the exercise incident site, give key data to players, and possibly prompt or initiate certain player actions Monitor for safety considerations For large exercises, there may be a team of controllers and facilitators, generally guided by the lead controller or facilitator

TABLE III–3. PARTICIPANT ROLES AND RESPONSIBILITIES (cont.)

Role	Description
Evaluators	Perform evaluations based on established evaluation guidelines and record key observation of the players actions Have expertise in the expected actions of players and plans Do not interfere with exercise play
Players	Actively take part in an exercise by either discussing or performing their roles and responsibilities
Simulators or controlled players	Perform the roles of organizations or individuals within that organization that are not actually participating in the exercise to drive realistic exercise play
Role players	Act out specific roles, such as adversaries, witnesses and victims, in order to add realism to an exercise Role players are not simulators
Media spokesperson	Serves as point of contact for coordination of all the media interactions Provides official statements
Observers	Attend an exercise to observe and learn from the event Are prepared to provide feedback if requested Do not interfere with the exercise flow
Safety officer	Monitors an operations based exercise for safety and has the authority to stop exercise play Provides the safety briefing Receives reports on safety concerns from participants
Qualified expert in radiation protection	Ensures the safe and secure handling of any nuclear and other radioactive material in accordance with national regulations
Rapporteur	Maintains records of planning meetings Is responsible for maintaining exercise log Supports the planning team by coordinating and consolidating information collected by other exercise staff during exercise play and debriefings

EXERCISE STRUCTURE

III-4. Box III-1 presents a template that can be used to present the exercise structure and is applicable only to discussion based exercises. The structure of operations based exercises is normally more complex and therefore, the specific actions can be captured in the exercise event list (see para. III-17).

BOX III-1: TEMPLATE FOR THE EXERCISE STRUCTURE OF DISCUSSION BASED EXERCISES

This exercise will be a facilitated exercise. The scenario will be presented during the discussion with the associated injects. Participants will respond to the scenarios according to their procedures to the following:

Scenario 1

- Inject 1
- Inject 2

Upon the completion of each inject, participants review the situation and engage in facilitated discussions to respond appropriately to the issues.

COMMUNICATIONS PLAN

III-5. The considerations that might be taken into account when constructing a communications plan will depend on the exercise type and are summarized as:

- (a) For some discussion based exercises, email, telephones or other means can be used to exchange information. However, most of the communication is done in a facilitated discussion based format in which all participants hear the discussion at the same time.
- (b) For operations based exercises, either normal day to day communication methods or specifically dedicated communication means can be used. In some cases, special permissions are needed for radio communication. All players and exercise staff could be briefed on the communications plan before the start of the exercise and could be provided a communications directory, such as a telephone, radio, fax and email list. Communication with external agencies not participating in exercise play needs the approval of the exercise controller.

EXERCISE CONTROL

III-6. Exercise control assists with staying within the exercise scope and timeline and ensures the consistent assessment of the objectives. The exercise controllers are tasked with executing the exercise control and, in order to perform their duties, they have to carry on their person material and documentation relating to the exercise activities, as needed.

III-7. The staffing plan provides the controllers with information on the assignments and contact information of other controllers, and links the controller activities to their role on exercise evaluation. A staffing plan template is given in Table III-4.

TABLE III-4. STAFFING PLAN TEMPLATE

Name	Assignment	Contact No.	Site location	Date/time	Exercise evaluation guide

III-8. The exercise controller will be provided with specific instructions covering the tasks before, during and after the exercise:

- (a) Before the exercise, the controller will review the exercise documentation, attend the briefing sessions as necessary and be at the designated location according to the schedule.
- (b) During the exercise, the controller will manage exercise play by delivering the injects to the players, recording the players actions and communicating with other controllers as necessary.
- (c) After the exercise, the controller will attend the debriefings and report the findings to the exercise director.

EXERCISE EVALUATION

III-9. Evaluators assess the exercise objectives and the key activities in exercise evaluation guides. Participants will complete participant feedback forms at the end of the event to note initial findings. The exercise planning team will use the feedback forms, evaluator findings and facilitator observations to compile the exercise report.

Evaluator role

III-10. The evaluator primarily documents whether the players perform the key activities effectively according to previously specified criteria, identifies strengths and areas for improvement and provides evidence to substantiate the findings. The evaluation is based on facts, and not perceptions or assumptions.

Evaluation documentation

III-11. Evaluators need to make sure they have all documentation necessary for performing their activities during the exercise. The evaluation documentation is provided in writing and all documentation being used in the exercise clearly states 'For Exercise Use Only'.

Exercise evaluation guides

III-12. Exercise evaluation guides are designed to assist evaluators in collecting data during the exercise conduct and preparing for the exercise report. The guides are developed according to the exercise objectives and key activities, and contain the relevant action targets and tasks. After the guides are completed, they are handed to the exercise director (see Tables III-5 and III-6).

TABLE III-5. EXAMPLE OF AN EXERCISE EVALUATION GUIDE FOR DETECTION AND COORDINATION

Exercise name:	Organization/Jurisdiction:	Venue:
Date:		
1. DETECTION AND COORDINATION		
Exercise objective: To assess the ability of the participating agencies in national coordination in the detection of and response to nuclear and radioactive material.		
Key activities: Operational detection and response Establish and maintain a unified and coordinated operational structure and process that appropriately integrates all critical stakeholders and supports the execution of key activities.		

TABLE III–5. EXAMPLE OF AN EXERCISE EVALUATION GUIDE FOR DETECTION AND COORDINATION (cont.)

<p>Action 1: Deploy detection systems</p> <p>Task 1.1: Did the managers of the participating organization plan and deploy radiation detection systems corresponding to their standard operating procedures (SOPs)?</p> <p>Task 1.2: Does the SOP explain the technical support process and points of contact?</p> <p>Task 1.3: Does the SOP designate a search area for secondary inspections?</p> <p>Task 1.4: Does the SOP designate a safety area for long term storage of high radiation alarms/alerts conveyance?</p> <p>Source(s): [Insert name of plan, policy, procedure or reference]</p>
<p>Action 2: Ensure equipment readiness</p> <p>Task 2.1: Did the officer confirm equipment is functioning correctly?</p> <p>Task 2.2: Did the officer acknowledge the radiation alarm?</p> <p>Task 2.3: Did the officer check supplemental information (e.g. manifest information)?</p> <p>Source(s): [Insert name of plan, policy, procedure or reference]</p>
<p>Action 3: Screen and search for nuclear and other radioactive material</p> <p>Task 3.1: Did the officer reset the background for handheld equipment adjacent to the secondary inspection area?</p> <p>Task 3.2: Did the officer establish a safety zone using a personal radiation detector, dose rate detector or radionuclide identification device according to response plan and/or SOP?</p> <p>Task 3.3: Did the officer isolate and identify sources using handheld equipment?</p> <p>Source(s): [Insert name of plan, policy, procedure or reference]</p>

TABLE III–6. EXAMPLE OF AN EXERCISE EVALUATION GUIDE FOR INFORMATION SHARING

Exercise name: Date:	Organization/Jurisdiction:	Venue:
2. INFORMATION SHARING		
Exercise objective: To share information relating to transborder crime according to agencies' standard operating procedures (SOPs)		
Key activities: Information sharing and communication Assess the capability of border agency and relevant stakeholders in the execution of core capabilities.		
Action 1: Notify competent authorities of nuclear security event Task 1.1: Did the managers of the participating organization notify the competent authorities corresponding to their SOPs? Task 1.2: Does the SOP indicate the points of contacts? Task 1.3: Does the SOP explain the process for requesting expert support? Source(s): [Insert name of plan, policy, procedure or reference]		
Action 2: Communicate with stakeholders Task 2.1: Did the officer communicate with the regulatory authority? Task 2.2: Did the officer respond to the event immediately? Task 2.3: Did the officer communicate with other stakeholders? Source(s): [Insert name of plan, policy, procedure or reference]		

TABLE III–6. EXAMPLE OF AN EXERCISE EVALUATION GUIDE FOR INFORMATION SHARING (cont.)

Action 3: Communicate with the general public
Task 3.1: Did the managers of the participating organization communicate with the public on the event?
Task 3.2: Did the officer respond to the event immediately?
Task 3.3: Did the officer directly communicate with the general public?
Source(s): [Insert name of plan, policy, procedure or reference]

Evaluation ratings

III–13. Exercise evaluation guides will be accompanied by rating definitions. Table III–7 gives an example of the ratings that can be used by the evaluators.

TABLE III–7. EXAMPLE OF EVALUATION RATINGS DEFINITIONS

Rating	Definition
Strength (S)	Players completed the actions and tasks associated with the key activity in a manner that achieved the objective(s) and did not negatively affect the performance of other actions.
Area for improvement (AFI)	Players completed or partially completed the actions and tasks associated with the key activity in a manner where opportunities to enhance effectiveness and/or efficiency were observed.
Not evaluated or observed (NE/O)	The actions and tasks associated with the key activity were not evaluated or observed in this event.

Evaluator instructions

III-14. The evaluator will be provided with specific instructions covering the tasks before, during and after the exercise:

- (a) Before the exercise, the evaluator will review the exercise documentation in order to develop a clear understanding of the key activities, actions and tasks to be evaluated, attend the briefing sessions as necessary and be at the designated location according to the exercise schedule.
- (b) During the exercise, the evaluator will monitor exercise play and record the players’ performance without interfering with exercise play.
- (c) After the exercise, the evaluator will attend the debriefings and report the findings to the exercise director.

Exercise report

III-15. Table III-8 presents a template that the evaluators can use to report their findings. The results of the evaluation of the exercised key activities will be included in the exercise report.

TABLE III-8. TEMPLATE FOR EXERCISE EVALUATION

Evaluator name			
Evaluator email			
Action	Associated tasks	Observation notes and explanation of rating	Target rating
[Insert Action 1]	[Insert Action 1 tasks]		
[Insert Action 2]	[Insert Action 2 tasks]		
[Insert Action 3]	[Insert Action 3 tasks]		
		Final key activity rating	

Ratings key: S — strength; AFI — area for improvement; NE/O — not evaluated or observed.

TOOLS FOR MONITORING EXERCISE PLAY FOR CONTROLLERS AND EVALUATORS

III-16. The exercise planning team might consider developing an exercise activity log to be used by the controllers and evaluators for monitoring exercise play. A template for the exercise activity log is provided in Table III-9.

TABLE III-9. EXERCISE ACTIVITY LOG TEMPLATE

Time	Event/action description	Controller/evaluator action	Related exercise evaluation guides

III-17. The exercise event list and the exercise timeline are useful tools for exercise control and might include information on the exercise timeline, location, short description of the scenario injects and expected actions. A template for the exercise event list is given in Table III-10, while Table III-11 provides an example of events and timeline management for a specific exercise scenario.

TABLE III-10. EXERCISE EVENT LIST TEMPLATE (INFORMATION RESTRICTED TO EXERCISE CONTROLLER AND EVALUATORS)

No. (key activity, action, inject)	Exercise day	Event time	Inject type: (active, passive, contingent, informational)	From	To	Description	Venue	Controller	Expected action

TABLE III-11. EXAMPLE OF EVENTS AND TIMELINE MANAGEMENT FOR A BORDER CROSSING POINT EXERCISE (INFORMATION RESTRICTED TO EXERCISE CONTROLLER AND EVALUATORS)

No.	Inject	Expected action	Timeline (i.e. 5 min/10 min/15 min/20 min)
1	Portal monitor triggers the alarm when a bus with passengers drives through.	FLO stops the bus and initiates secondary inspection.	C1
2	Bag containing radioactive or nuclear nuclide material detected.	FLO tries to identify the owner of the bag.	C1
3	All passengers deny the ownership of the bag.	FLO requests support.	C1
4	Passengers start complaining about the delay. They inform the media, which puts pressure on FLO.	FLO tries to calm down the passengers and explain the situation to them.	C1
5	TV team arrives at the border crossing point and starts broadcasting live.	FLO tries to control the situation.	C2

TABLE III–11. EXAMPLE OF EVENTS AND TIMELINE MANAGEMENT FOR A BORDER CROSSING POINT EXERCISE (INFORMATION RESTRICTED TO EXERCISE CONTROLLER AND EVALUATORS) (cont.)

No.	Inject	Expected action	Timeline (i.e. 5 min/10 min/15 min/20 min)	
6	Support team arrives.	FLO briefs the support team.	C2	
7	Passengers start giving interviews to TV and blame the authorities.	FLO and support team try to control and calm down the situation.	C2	
8	It starts raining.	FLO and support team try to preserve evidence. FLO takes care of passengers.	C3	
9	Forensics team arrives.	Forensics team receives short briefing and starts collecting the evidence.	C2	
10	While inspecting the bag containing radioactive or nuclear material, contamination is suspected.	Incident commander requests decontamination teams. Support teams start performing radiation measurements on each passenger.		C3

Note: C1 — controller 1; C2 — controller 2; C3 — controller 3; FLO — front line officer. The controllers are placed at different locations at the border crossing.

SAFETY PLAN

III-18. For operations based exercises, the safety plan will include the general requirements for fire and weapons safety, as well as considerations for medical emergencies. A safety officer will be designated and will have the authority to pause, stop and resume the exercise conduct owing to safety concerns. In case a real emergency occurs during the exercise, participants are instructed to use the phrase “real world emergency” and to communicate the details to the safety officer. For national exercises, provisions for emergency medical services will be made by the planning team. For international exercises, medical insurance arrangements might be needed. All exercise participants will be briefed how to access emergency medical services, if necessary.

III-19. If an operations based exercise involves the use of radiation sources, the safety plan will contain information for the participants. Boxes III-2 and III-3 show examples of the information that can be provided to all participants and exercise controllers and evaluators, respectively.

BOX III-2: EXAMPLE OF RADIATION SAFETY INFORMATION FOR ALL PARTICIPANTS

The [insert country/agency] is licensed to handle radioactive material under [insert regulation/law]. The licence outlines the procedures for the safe use of radionuclides, dosimetry requirements and training for individuals working with radioactive material.

The sources will be shielded as necessary to reduce participant exposure. The sources will only be handled by authorized staff. Each staff member has sufficient training and experience in the proper and safe use of radioactive material. Radiation safety of the public will be ensured during the conduct of the exercise.

The radiation levels from all sources will be checked in advance to ensure doses are maintained within limits allowed by [insert country/agency regulations] as well as being as low as reasonably achievable.

BOX III-3: EXAMPLE OF RADIATION SAFETY INFORMATION RESTRICTED TO EXERCISE CONTROLLERS AND EVALUATORS

The sources used for the exercise will be [insert source type] sealed sources. The individual sources will be in the range of [insert source activity].

The plan is to have sources at the following location(s):

[Insert location(s), as appropriate]

EXERCISE SITE ACCESS SECURITY

III-20. The lead agency is responsible for putting in place security measures that will ensure uninterrupted exercise play at the exercise venue and prevent unauthorized persons from interfering with exercise conduct. For unannounced exercises special considerations will be taken for safety and security of exercise participants and the general public.

EXERCISE SITE LAYOUT

III-21. The exercise planning team might choose to provide participants with site maps, diagrams and other information which would assist them in understanding the locations or logistics needed to conduct the exercise (see Fig. III-1).

MEDIA PLAN

III-22. The purpose of the media plan is to provide the public and interested organizations with relevant information concerning the exercise. The exercise planning team will discuss and agree on the instruments that will be used to inform the public. Press releases, press conferences (periodic and ad hoc), social media, web pages, field reports and an established press centre can be used to inform the public during and after the exercise. An exercise notification template is shown in Box III-4.

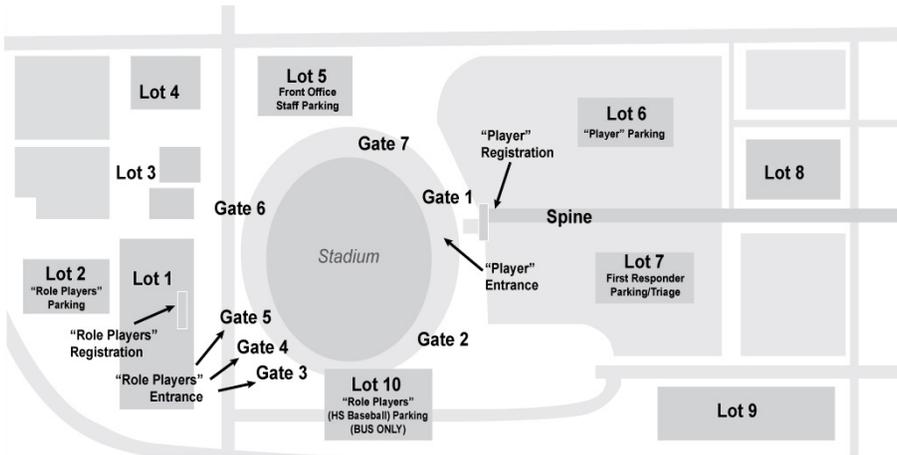


FIG. III-1. Sample site layout map.

BOX III-4: EXERCISE NOTIFICATION TEMPLATE

[Insert country] supports exercise play that simulates real life incidents. Public notification might include message signs, press releases, press conference, radio/press/social media announcements, and community hearings. Details of the exercise will not be communicated externally (including social media) without prior authorization from the exercise director.

It is the policy of [insert country] to ensure that every effort is made to provide a safe and secure environment during exercises for its players, observers, control and evaluation staff members, volunteers and the general public.

III-23. The media plan will identify those media representatives approved to participate in coverage of the exercise. Before the exercise begins, the media will be provided with a briefing that will cover all relevant issues relating to the exercise (e.g. scenario, agenda, safety). The media will be escorted in permitted areas for filming and/or interviewing in order not to disturb the conduct of the exercise, and will be asked to follow all instructions from the exercise staff (e.g. controllers, safety officers). Special considerations might be applied for filming the exercise (e.g. restricted areas for filming, blurring faces of the participants).

III-24. For interagency exercises a single media spokesperson can be designated. The media spokesperson will provide official statements to the media on a periodic basis (e.g. hourly, daily) and as otherwise needed, as agreed by the exercise planning team.

III-25. At the end of the exercise, a nominated individual can attend an official final interview or press conference to inform the public on the results and to answer any questions.

Annex IV

PARTICIPANT FEEDBACK FORM TEMPLATE

[EXERCISE NAME]

[DATE]

NAME: _____

ORGANIZATION: _____

Your feedback is very important to us. It can be helpful for us to develop future exercises and operational activities. Please be open and honest in your responses.

(1) Were you familiar with the organizational procedures [insert reference to appropriate plans] relevant to this exercise?

- Yes
- No
- If no, please explain:

(2) Having considered your individual performance during the exercise, please provide up to three examples of:

- Areas of positive performance (strengths):
- Areas for improvement:
- Additional comments:

(3) Having considered your own observations during the exercise, please provide up to three examples of performance with regard to the performance of your team or other teams (please state):

- Areas of positive performance (strengths):
- Areas for improvement:
- Additional comments:

(4) Having considered your own observations during the exercise please provide up to three examples of performance with regard to the planning, logistics and delivery of the exercise.

- Areas of positive performance (strengths):
- Areas for improvement:
- Additional comments:

(5) Any additional comments on the exercise:

- _____

The exercise planning team might wish to consider additional specific questions suitable to their individual exercises (examples below):

(1) How would you rate the performance of the group/staff during this exercise?

- Very good
- Good
- Acceptable
- Poor
- Very poor

(2) Were there any functions lacking in your group/staff during the exercise?

- Yes
- No
- Partly

(3) What rating would you give internal collaboration within the organization?

- Very good
- Good
- Acceptable
- Poor
- Very poor

(4) What rating would you give for collaboration with other organizations during the exercise?

- Very good
- Good
- Acceptable
- Poor
- Very poor

(5) How would you rate internal information dissemination?

- Very good
- Good
- Acceptable
- Poor
- Very poor

(6) In your opinion, were enough resources available to respond to the situation?

- Yes
- No
- Partly

(7) Did the training and knowledge you received enable you to solve the task?

- Yes
- No
- Partly

(8) What are the three most important experiences from the exercise (lessons identified for the organization) that you will take with you?

Comments: _____

- (9) For any areas for improvement you identified above, please recommend a corrective action that could be taken by the players to address the issue.

Comments: _____

- (10) Was the exercise well designed, organized and directed?

- Yes
 No

Comments: _____

- (11) Do you feel that because of this exercise your organization will be better prepared to deal with the scenario that was exercised?

- Yes
 No
 Partly

- (12) Please provide any additional notes or comments about your experience participating in this exercise.

Comments: _____

Annex V

EXERCISE REPORT TEMPLATE

V-1. The exercise report template consists of a brief exercise overview, analysis of the key activities, corrective actions for the participating organizations and the list of participants.

EXERCISE OVERVIEW

Exercise name	[Insert name]
Exercise date	[Insert date]
Purpose	This [discussion based or operations based] exercise provides participants the opportunity to [state general goal of the exercise].
Scope	This is a [discussion based or operations based] exercise, planned for [duration in hours] at the [location]. Exercise play is limited to the participating organizations.
Objectives	[Insert objectives]
Key activities	[Insert key activities]
Scenario	[Insert short description of the exercise scenario]
Lead agency	[List lead agency/organization running the exercise]
Participating organizations	[Insert organizations]
Point of contact	[List exercise director/primary point of contact information]

ANALYSIS OF KEY ACTIVITIES

The following sections provide an overview of the performance relating to each exercise objective and associated key activity, highlighting strengths and areas for improvement.

Key Activity 1

The strengths and areas for improvement for each key activity aligned to this objective are described in this section.

Action 1

Strengths

The [full or partial] key activity level can be attributed to the following strengths:

Strength 1: [Insert observation statement]

Strength 2: [Insert observation statement]

Areas for Improvement

The following areas need improvement to achieve the full key activity level:

Area for Improvement 1: [Insert observation statement, which clearly states the issue, gap or development need]

Recommendation 1: [State the recommendation and suggest corrective action]

Reference: [List any relevant plans, policies, procedures, regulations or laws]

Analysis: [Provide a root cause analysis or summary of why the full key activity level was not achieved]

Area for Improvement 2: [Insert observation statement]

Recommendation 2: [State the recommendation and suggest corrective action]

Reference: [List any relevant plans, policies, procedures, regulations or laws]

Analysis: [Provide a root cause analysis or summary of why the full key activity level was not achieved]

RECOMMENDATIONS AND IMPROVEMENT CONSIDERATIONS

These corrective actions have been developed specifically for [organization] as a result of [exercise name] conducted on [date of exercise].

Key activity	Area for improvement (AFI)	Recommendation (REC)	Corrective action	Primary responsible organization	Organization point of contact	Start date	Completion date
[Key activity name]	[AFI 1]	[REC 1]	[Corrective action 1]				
		[REC 2]	[Corrective action 2]				
		[REC 3]	[Corrective action 3]				
	[AFI 2]	[REC 1]	[Corrective action 1]				
		[REC 2]	[Corrective action 2]				

EXERCISE PARTICIPANTS

Participating organizations
Agency
Ministry
International organization

Annex VI

EXAMPLE PLAYER HANDOUT

VI-1. The player handout contains an overview of the exercise and its objectives and provides specific instructions with regard to communications and exercise safety.

<p style="text-align: center;">EXERCISE FOR NUCLEAR SECURITY SYSTEMS AND MEASURES</p> <p style="text-align: center;">[Insert exercise name]</p> <p style="text-align: center;">Information Handout</p> <p style="text-align: center;">[Insert date] [Insert location]</p>	<p style="text-align: center;">SCOPE OF THE EXERCISE</p> <p style="text-align: center;">[Insert exercise name]</p> <p style="text-align: center;">To test the ability of the agencies, in terms of coordination, for the response to nuclear and other radioactive material.</p> <p style="text-align: center;">Purpose</p> <p style="text-align: center;">[Insert purpose]</p> <p style="text-align: center;">Participating agencies</p> <p style="text-align: center;">[Insert participating agencies]</p>
--	--

<p style="text-align: center;">EXERCISE OBJECTIVES</p> <ul style="list-style-type: none"> • To assess the ability of the participating agencies in national coordination and international cooperation in response to acts involving nuclear and other radioactive material out of regulatory control. • Sharing of information relating to transborder crime according to agencies' standard operating procedure (SOP). • To assess timeliness of information sharing of agencies. • To enhance front line officer (FLO) capability to assess the nuclear security threat at the border. 	<p style="text-align: center;">PLAYER INSTRUCTIONS</p> <p style="text-align: center;">Before the Exercise</p> <ul style="list-style-type: none"> • Review appropriate organizational plans, procedures and exercise support documentation. • Please present yourself 30 minutes before exercise starts. • Wear the appropriate uniform and identification items. <p style="text-align: center;">During the Exercise</p> <ul style="list-style-type: none"> • Follow safety guidelines . • Conduct daily operations as normal. Do not simulate any activities unless directed to do so. • Keep all activities logs and notes. • Do not engage in personal conversation with controllers, evaluators, observers or media personnel. • Please ask the controller regarding any doubt on the organizational aspects of this exercise. <p style="text-align: center;">After the Exercise</p> <ul style="list-style-type: none"> • Provide copies of all logs, notes and other documentation to the evaluators. • Take active participation in the Participant Feedback Session. <p>Complete the Participant Feedback Form that will be provided to you after the exercise.</p>
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<p style="text-align: center;">COMMUNICATIONS</p> <ul style="list-style-type: none"> • Players will communicate and coordinate only with participating entities. • Players will use routine and in place agency communications systems during the exercise. • Contact the simulation cell if you would normally communicate with an agency that is not playing in the exercise. <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="padding: 2px;">Exercise Director</td> <td style="padding: 2px;">Phone No.</td> </tr> <tr> <td style="padding: 2px;">Safety Controller</td> <td style="padding: 2px;">Phone No.</td> </tr> <tr> <td style="padding: 2px;">Simulation Cell Controller</td> <td style="padding: 2px;">Phone No.</td> </tr> </table> <p style="text-align: center;">Questions and media relations</p> <p>For any questions regarding the exercise, please refer to Exercise Director</p> <p>[Venue 1] [Venue 2]</p> <p>[Insert schedule]</p>	Exercise Director	Phone No.	Safety Controller	Phone No.	Simulation Cell Controller	Phone No.	<p style="text-align: center;">EXERCISE SAFETY</p> <p>All players, controllers and evaluators will be responsible for participant safety.</p> <p style="text-align: center;">Security</p> <ul style="list-style-type: none"> • All exercise participants are requested to wear badges during the exercise. • Site security policy has to be followed strictly. • All radiological material will be controlled by the appropriate agency. <p style="text-align: center;">Weapons policy</p> <ul style="list-style-type: none"> • [Insert weapons policy] <p style="text-align: center;">Emergency situations</p> <ul style="list-style-type: none"> • If any, please notify the nearest controller or evaluator for further action. <p style="text-align: center;">Accidents and injuries</p> <ul style="list-style-type: none"> • All players have a basic responsibility to act as safety officers. • All players to report safety concerns, unsafe acts or injuries to the safety officer.
Exercise Director	Phone No.						
Safety Controller	Phone No.						
Simulation Cell Controller	Phone No.						

Annex VII

CONTROLLER, FACILITATOR AND EVALUATOR BRIEFING TEMPLATE

VII-1. The briefing for controllers, facilitators and evaluators contains an overview of the exercise, assumptions and constraints, any additional considerations and specific instructions depending on the participant role.

WELCOME

[Insert welcome statement, which includes the name of the exercise, dates and duration]

On behalf of [lead agency], thank you for participating in this important exercise.

EXERCISE OVERVIEW

Exercise schedule	[Discuss the major timelines of the exercise: The exercise will run from 07:00 to 19:00 daily.]
Purpose	This [discussion based or operations based] exercise provides participants the opportunity to [state general goal of the exercise].
Scope	This is a [discussion based or operations based] exercise. Exercise play is limited to the participating agencies.
Objectives	[Insert objectives:]
Key activities	[Insert key activities if appropriate]
Scenario	[Insert short description of the exercise scenario if appropriate]
Lead agency	[List lead agency/organization running the exercise]
Participating organizations	[Insert organizations]
Point of contact	[List exercise director/primary point of contact information]

SAFETY

[Insert safety statement]

For safety reasons, obey the instructions given by the safety officer.

For real emergencies, emergency medical services can be reached by [insert specific information].

To report emergencies, use the phrase: “This is a real world emergency.”

Respond to the incident using appropriate procedures and protocols in a realistic manner.

[Insert radiation safety guidelines]

ROLE

As a controller, your role in this exercise will be to manage exercise play, set up and operate the exercise, and possibly prompt or initiate certain player actions.

As an evaluator, your role in this exercise will be to attend the exercise to evaluate the exercise based on established evaluation guidelines and record the players’ actions.

ASSUMPTIONS AND CONSTRAINTS

This exercise will be conducted in a learning environment.

Exercise simulation will be realistic and plausible and will contain sufficient detail to which to respond.

Exercise players will react to information and situations as they are presented, in the same manner as if the exercise were a real event.

[Insert additional assumptions and constraints as appropriate]

ADDITIONAL CONSIDERATIONS

Operational security. This briefing contains exercise and operational material that has to be safeguarded. (Properly marking information; maintaining control over information to ensure controllers and evaluators do not share information with players that might impact the exercise conduct.)

Exercise format. Discussion based versus operations based, timing, location and ground rules.

Exercise staffing. Personnel/roles:

- [List specific roles as appropriate];
- [Reference to staffing plan with names and contact information].

Documentation. Refers to handout documentation package, including the following:

- Exercise plan, exercise event list, staffing plan and exercise evaluation guides;
- Any relevant safety and security plans;
- List of any necessary supporting materials (handouts, reference documentation, exercise play documentation).

Exercise schedule. Detailed timeline of events:

- Overall exercise schedule;
- Scenario injects and expected outcomes, as appropriate;
- Do not share information from inject to the exercise players unless directed.

EXERCISE VENUE(S)

[Inert maps and photos]

SPECIFIC CONTROLLER INSTRUCTIONS

[List instructions for controllers]

SPECIFIC EVALUATOR INSTRUCTIONS

[List instructions for evaluators]

Annex VIII

PLAYER BRIEFING TEMPLATE

VIII-1. The briefing for the players provides an overview of the exercise and details on safety concerns.

WELCOME

[Insert welcome statement, which includes the name of the exercise, dates and duration]

On behalf of [lead agency], thank you for participating in this important exercise.

EXERCISE OVERVIEW

Exercise schedule	[Discuss the major timelines of the exercise: The exercise will run from 07:00 to 19:00 daily.]
Purpose	This [discussion based or operations based] exercise provides participants the opportunity to [state general goal of the exercise].
Scope	This is a [discussion based or operations based] exercise. Exercise play is limited to the participating agencies.
Objectives	[Insert objectives]
Key activities	[Insert key activities if appropriate]
Scenario	[Insert short description of the exercise scenario if appropriate]
Lead agency	[List lead agency/organization running the exercise]
Participating organizations	[Insert organizations]
Point of contact	[List exercise director/primary point of contact information]

SAFETY

[Insert safety statement]

Safety is everyone's responsibility.

Players initiate actions that will respond to and mitigate the simulated event.

For safety reasons, obey the instructions given by the safety officer.

For real emergencies, the emergency medical services can be reached by [insert details].

To report emergencies, use the phrase: "This is a real world emergency."

Respond to the incident using appropriate procedures and protocols in a realistic manner.

[Insert radiation safety guidelines]

ROLE

As a player, your role in this exercise will be to respond to the simulated event and perform your regular roles and responsibilities during the exercise.

ASSUMPTIONS AND CONSTRAINTS

This exercise will be conducted in a learning environment wherein systems and processes will be evaluated.

Exercise simulation will be realistic and plausible and will contain sufficient detail to which to respond.

Exercise players will react to information and situations as they are presented, in the same manner as if the exercise were a real event.

[Insert additional assumptions and constraints as appropriate]

EXERCISE FORMAT

Discussion based

This is an open, low stress environment. Varying viewpoints, even disagreements, are expected. Do not be afraid to ask questions.

The exercise is designed to evaluate organizational and/or national readiness. The players are encouraged to address actions that would simulate how player decisions and judgement would respond in the actual scenario (e.g. gather information from other tables, pull groups together).

Respond based on players knowledge of current plans and key activities (i.e. the players may use only existing assets) and insights derived from training.

Decisions are not precedent setting and might not reflect an organization's final position on a given issue. This is an opportunity to discuss and present multiple options and possible solutions.

Take note of any observations, remarks or ideas that are developed during exercise discussion for documentation in feedback forms.

Operations based

If an action cannot be performed for safety or exercise related reasons, clearly explain to the controller the action that you would take.

Only contact directly the organizations that are participating in the exercise.

If a player needs to contact an organization that is not participating, the player can contact the controller.

Communications between players will take place through standard communication channels, in accordance with the plans and procedures, unless otherwise directed by the controller.

If you do not understand something in the exercise, or if you are uncertain about an organization's or agency's participation in an exercise, ask a controller.

AFTER THE EXERCISE

Participate in the immediate debriefing at the predesignated staging areas.

Provide any notes or materials generated from the exercise to your controller or evaluator for review and inclusion in the debriefing or report, as applicable.

Annex IX

MEDIA BRIEFING

STRATEGY

IX-1. The exercise planning team is advised to plan and implement a strategy to interact with the media several weeks before the exercise conduct. The information provided to the media will clearly explain the purpose of the exercise and point out that the exercise is designed to assure operational capabilities of the response teams.

IX-2. The exercise planning team might also consider notifying the public that an exercise is planned to take place so that an operations based exercise is not confused with a real event.

IX-3. The exercise planning team and the participating agencies might decide to invite the media to an exercise, making sure not to include media representatives during the discussion of potentially sensitive information. If invited earlier in the day, the media could be given the opportunity to make their news report deadlines and to conduct select interviews with the exercise planning team and participants before the exercise.

IX-4. The exercise planning team and participating agencies are advised to determine in advance if, when and where media footage of exercise proceedings and participants will be allowed. The exercise planning team will consider limiting the time and availability that the media can have access to the exercise proceedings and participants to help to manage risks of interference with exercise play and/or sensitive information. The exercise planning team will consider possible mitigation strategies if established parameters and protocols are not upheld.

CHALLENGES IN COMMUNICATION WITH THE MEDIA

IX-5. Any exercise might attract media interest. This might present several challenges, including the following:

- (a) The media might interfere with the conduct of the exercise.
- (b) The media might interfere with the simulated media.

- (c) The presence of simulated and real media during an exercise could confuse the players.
- (d) The results of the exercise could be misinterpreted by the media and cause unnecessary issues after the exercise, especially if the exercise revealed areas for improvement in the plans and procedures.

MEDIA ARRANGEMENTS

IX-6. The media arrangements might include the following:

- (a) Media spokesperson. The exercise planning team will designate an articulate representative, experienced with media interaction and thoroughly familiar with the particular exercise as the media spokesperson during the exercise.
- (b) Media announcement. The purpose of the media announcement is twofold: to keep the media informed and to communicate timely and accurate information to the public. The announcement will briefly describe the exercise and will include approximate date, time and purpose, as well as a telephone number for public enquiry, answered by properly briefed personnel.
- (c) Media recording opportunity. The exercise planning team might make arrangements for the media to take photos and videos of the exercise clearly defining which areas or parts of the exercise may or may not be recorded and providing clear guidelines about not interfering with the players or the exercise site. Media liaison officers might be designated to assist in this task.

IX-7. The exercise planning team might discuss whether or not to have a press release disseminated to the media before the exercise. A standard press release will typically contain a brief overview of the exercise, including the intent and scope of the exercise, and a synopsis of the scenario.

MEDIA BRIEFING

IX-8. The media spokesperson could brief the media on the following (but not limited to these) issues relating to the exercise:

- (a) Exercise development: Provide all media representatives with the information relating to exercise objectives, scenario, agenda and evaluation procedures,

taking into account any cultural, religious and political considerations, and ensure that the representatives do not disturb the exercise conduct.

- (b) Instruments for communication: After establishing instruments for communication during the exercise, advise all media representatives on making use of these instruments for official information and updates relating to the exercise, and explain any periodicity of information updates.
- (c) Official statements: Inform media representatives on how official statements relating to the exercise will be conducted.
- (d) Restrictions and limitations: Explain any special considerations to the media representatives relating to all restrictions and limitations for accessing specific areas, filming in secured and restricted areas, and interactions with exercise participants, among other things. Inform media representatives that they will be escorted by designated persons (if necessary), who will provide them with additional instructions.
- (e) Safety: Inform all media representatives on all real risks that might occur during the exercise, as well as on any safety related issues, including how to access the emergency medical services, how to use emergency exits, how to behave if they observe real risks, and whom and how to contact. Ask media representatives to follow all the instructions given during the exercise by the safety officers.
- (f) Filming considerations: Inform media representatives on the photography and filming policy for the exercise that relates to filming secured locations, personal data and faces, and cultural, religious and political considerations, and on how they may use video post-exercise. These will apply (if necessary) for recorded video as well as live video broadcasting.
- (g) Interviews: Ensure that appropriate time is given for performing interviews in such a way that it will not affect the course of the exercise.
- (h) Final press conference: Inform all media representatives about the date, time and location of the press conference, as well as about the persons who will conduct it. Consider offering initial evaluation results of the exercise at this stage to the media to the extent it does not affect the exercise final evaluation. Take into account cultural, religious and political considerations during the press conference briefings.

Annex X

OBSERVER BRIEFING

X-1. Observers will view the exercise from a designated observation area and will remain within the observation area during the exercise. For situations in which there might be space limitations or owing to radiation safety, observers might have to follow the exercise conduct from a centralized location, through optoacoustic means, such as video feeds, if necessary.

X-2. A dedicated person could be assigned to manage these groups. In a discussion based exercise, observers might support the development of player responses to the situation by asking relevant questions, delivering messages or citing references; however, they generally do not participate in moderated discussions.

X-3. An individual could be designated to brief all observers on the following (but not limited to these) issues relating to the exercise:

- (a) Exercise development: Provide all observers with the information relating to exercise objectives, scenario and agenda and ensure that observers do not disturb the exercise. When providing information to observers take into account any cultural, religious and political considerations.
- (b) Restrictions and limitations: Explain any special considerations to observers relating to all restrictions and limitations for accessing specific areas and interactions with exercise participants, among other things. Inform observers that they will be escorted by designated persons (if necessary), who will provide them with additional instructions. Inform observers about all restrictions and limitations relating to interaction with exercise participants and with media during the exercise.
- (c) Safety: Inform all observers on all real risks that might occur during the exercise, as well as on any safety related issues, including how to access the emergency medical services, how to use emergency exits, how to behave if they observe real risks, and whom and how to contact. Ask observers to follow all the instructions given during the exercise by the safety officers. Monitor their safety by a designated exercise controller if observers visit the exercise site.

- (d) Taking pictures and social networking: Inform observers on the policy applied in the exercise for taking pictures during the exercise and further use of those pictures, as well as for posting exercise related information on social networks.

Annex XI

OBSERVER FEEDBACK FORM TEMPLATE

[EXERCISE NAME]

[DATE]

NAME: _____

ORGANIZATION: _____

Your feedback is very important to us. It can be helpful for us to develop future exercises and operational capability. Please be open and honest in your responses.

(1) How would you rate the exercise structure and contents as a whole?

- Good
- Acceptable
- Unacceptable
- Additional comments: _____

(2) In your opinion, how relevant was the scenario in relation to the purpose of the exercise?

- Very relevant
- Relevant
- Quite relevant
- Not very relevant

(3) How would you rate the value of the exercise for the participating organizations' operations/role?

- Good
- Acceptable
- Unacceptable
- Additional comments: _____

(4) How would you rate the exercise for creating and developing areas for cooperation and collaboration for response to a similar situation?

- Good
- Acceptable
- Unacceptable
- Additional comments: _____

(5) How did you find the length of the exercise? Was it:

- Too long
- Appropriate
- Too short

(6) How did you find the pacing of the exercise? Was it:

- Too fast
- Appropriate
- Too slow

(7) Did you receive sufficient information for the exercise from the person(s) responsible on how it would be conducted?

- Yes
- No
- Partly

(8) What would improve future exercises?

Comments: _____

Annex XII

EXERCISE DEBRIEFING CHECKLIST

XII-1. After the conclusion of exercise play, the exercise planning team or staff executing debriefing and wrap-up responsibilities will:

- (a) Collect exercise attendance lists;
- (b) Provide copies of attendance lists and exercise documentation to the exercise director;
- (c) Collect participant feedback forms;
- (d) Collect observer feedback forms;
- (e) Develop debriefing notes;
- (f) Conduct the exercise debriefing discussion.

XII-2. Immediately following the exercise, the exercise director will conduct a debriefing discussion to reflect upon and evaluate the exercise conduct, including identifying strengths, areas for improvement and good practices.

XII-3. The goal of this review is to allow all players to share their observations on successes and failures in the exercise and to generate ideas for future improvements. This review will also provide a forum for participants to share information. During the exercise debriefing, every participant will have an opportunity to share constructive comments and suggestions for improvement. As with the exercise, the rapporteur(s) or appointed person will capture all comments.

XII-4. The following discussion points might be framed for individual key activities or actions included within the exercise (as necessary):

- (a) Strengths. Players identified the following strengths concerning the exercise:
 [List strengths]
- (b) Areas for improvement. The following areas for improvement concerning the exercise were identified:
 [List areas for improvement]
- (c) Exercise design. The following points were raised with regard to exercise design:
 [List points]
- (d) Other. The following was also noted:
 [List notes]

Annex XIII

EXAMPLE EXERCISE REPORT ASSESSMENT

XIII-1. Below are some samples of the activity evaluations and observations, which include analysis of the field operations conducted and potential recommendations for future improvement.

EXAMPLE OF ACTIVITY EVALUATIONS

Key Activity: Detect by Instrument

Action: Confirm amount and/or identification of nuclear material or other radioactive material utilizing expert support.

Observation: Strength. [Agencies] demonstrated proficiency in communicating with expert support assets.

Analysis: The [agencies] proficiently demonstrated the ability to properly document/record an appropriate request for expert support, send/receive spectrum information, communicate with secondary inspection on a 24 hour/7 days a week basis, discuss the spectrum file/record with the team conducting secondary inspection, discuss strategies for appropriate adjudication and confirm amount and/or nature of nuclear or other radioactive material.

Recommendations: None.

Key Activity: Information Sharing and Communications

Action: Communicate to competent authorities details of nuclear security event.

Observation: Area for Improvement. All pertinent participating agencies were not incorporated into the information sharing environment.

Analysis: Inside the operations centre, the incident commanders placed a very heavy emphasis on obtaining valid and verified intelligence and information. Not all of the appropriate agencies were present in the operations centre, and there was a gap in disseminating information with regard to the nuclear security event.

Recommendations

- (1) Develop a strong relationship among the participating agencies who will be involved in a response of this nature by implementing memoranda of understanding or information sharing agreements.
- (2) Consider hosting an information sharing and intelligence seminar or workshop that would raise awareness for agencies not typically in the information sharing environment.



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