Preparation, Conduct and Evaluation of Exercises for Security of Nuclear and Other Radioactive Material in Transport

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PREPARATION, CONDUCT AND EVALUATION OF EXERCISES FOR SECURITY OF NUCLEAR AND OTHER RADIOACTIVE MATERIAL IN TRANSPORT

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INTERNATIONAL ATOMIC ENERGY AGENCY
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FOREWORD

States have responded to the risk that nuclear or other radioactive material could be used for malicious purposes by engaging in a collective commitment to strengthen the protection and control of such material and to respond effectively to nuclear security events. They have agreed to strengthen existing international legal instruments, and have established new ones, to enhance nuclear security around the world. Nuclear security is fundamental to the use of nuclear technologies and to applications where nuclear or other radioactive material is used or transported.

Through its nuclear security programme, the IAEA supports States to establish, maintain and sustain an effective nuclear security regime. The IAEA has adopted a comprehensive approach to nuclear security. This recognizes that an effective national nuclear security regime builds on: the implementation of relevant international legal instruments; information protection; physical protection; material accounting and control; detection of and response to trafficking in such material; national response plans; and contingency measures. With its Nuclear Security Series, the IAEA aims to assist States in implementing and sustaining such a regime in a coherent and integrated manner.

This publication is intended for use by persons responsible for the safe and secure transport of nuclear or other radioactive material, to ensure that all the measures dedicated to the protection of such material function as intended, and that everyone has a full understanding of their roles and the roles of others. It provides a single source of advice on preparing, conducting and evaluating transport security exercises to comprehend the level of readiness that the nuclear security regime has attained.

The advice is provided for consideration by States and transport security stakeholders such as regulatory authorities, shippers, carriers and law enforcement agencies. It constitutes a starting point for organizations that have not previously established or managed transport security programmes and exercises, as well as a reference for organizations that wish to validate or improve their existing programmes.

The preparation of this publication has been made possible by the contributions of experts from Member States. The information in this publication is based on national experiences, best practices, and pilot tabletop and field exercises conducted by Member States.

EDITORIAL NOTE

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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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TABLE OF CONTENTS

1. INTRODUCTION

1.1. BACKGROUND

A key aspect of a State's responsibility within its physical protection regime is to ensure that all the physical protection measures employed as part of the overall physical protection system do in fact operate as designed. The use of exercises is one such tool that allows not only for the evaluation of the operator's system effectiveness, but also provides additional benefits such as: plans, policies and procedure validation; interagency coordination; organization capability assessments; testing and evaluations; and training.

Transport security exercises are one such critical component of an effective physical protection system and transport security programme. Exercises provide a unique insight into the state of readiness of the transport security organizations responsible for the physical protection of the material in transport. They can also be the basis for continued improvement programmes of the physical protection systems employed to protect the high consequence material from a threat.

In addition to ensuring that the organization's physical protection system is effective, exercises can also support the State's physical protection regime by also incorporating the aspect of exercising the external response. Typically, external response would come from the State's law enforcement, security or military organizations that are external to the operator's control. Depending upon the scope of the exercise, these exercises can bring together all of the different security response agencies, national security decision makers, competent authorities, operators, carriers and shippers.

Whatever the goal, to be most useful, transport security exercises need to be well organized and professionally conducted, and their evaluation must focus on constructive improvement potential. Each exercise represents a significant investment in terms of effort, financial resources and people. It is therefore important for each exercise to yield the maximum benefit. That benefit depends primarily on the quality of the preparation, conduct and evaluation of the exercise.

1.2. OBJECTIVES

The purpose of this publication is to provide practical advice for planners to efficiently and effectively prepare, conduct and evaluate nuclear material transport security exercises.

Nuclear material transport security exercises are part of a comprehensive nuclear security regime. Exercises vary in scope and in scale, ranging from small drills, which focus on training, to large scale exercises, which aim at testing the overall command, control, coordination and communications arrangements. The purpose of exercises is not to 'demonstrate' the quality of the arrangements, but rather, to identify weaknesses and areas where improvements can be made. Hence, exercises are an integral part of a sustainable and continuous improvement programme for nuclear transport security. Exercises can also be a tool to assess and validate existing transport security arrangements prior to gaining regulatory approval for actual transport operations or transport campaigns.

The material provided in this publication is intended as an example of a logical process for the preparation, conduct and evaluation of exercises, which needs to be adapted to suit national systems, local circumstances and the specific aim of each exercise. It constitutes a starting point for organizations that have not previously organized or managed exercise programmes, as well as a reference for organizations that wish to validate or improve their existing exercise programmes.

1.3. SCOPE

This publication covers transport security exercises where the physical protection measures are developed and employed in order to meet the requirements specified for the associated material categorization as listed in Table 1 of IAEA Nuclear Security Series No. 13, *Physical Protection of*

Nuclear Material and Nuclear Facilities (INFCIRC/225/Revision 5), Ref. [1] . In accordance with the graded approach, the State is responsible for ensuring that the specified material is protected to the appropriate levels given its categorization against its current defined threat.

This publication primarily outlines the use of exercises based on nuclear material. Owing to the type, quantity and nature of nuclear material, a State would typically deploy greater security measures and plans to protect it. However, as IAEA Nuclear Security Series No. 9 *Security in the Transport of Radioactive Material*, Ref. [2], notes, this should not preclude a State from not conducting transport related exercises for other radioactive material. While radioactive material typically does not require the same level of protection, the reality is that threats to these materials exist, and all organizations associated with designing, protecting and responding to a malicious event need to be aware of their roles and how they interact with other agencies and authorities in order to test the best methods of mitigating the consequences of these malicious events.

This publication focuses on the processes involved in preparing and controlling partial and, eventually, large scale exercises (i.e. a partial or full scale exercise combined with a field exercise). In less complex exercises, such as tabletops and drills, the process is conceptually the same, but the level of effort and the time required to prepare the exercise are reduced and some parts of the process may not be required. For such exercises, the advice provided in this publication may be used, but organizers will have to employ their judgement in deciding which steps may be downscaled or omitted. The preparation, conduct and evaluation of field exercises usually involve the coordination of several organizations. Field or full scale exercises demand the investment of great effort and require the input of several staffs and disciplines in order to yield good results. Drills and tabletop exercises, on the other hand, demand less preparation and coordination, and are usually easier to evaluate.

The publication will be useful to regulatory bodies, law enforcement agencies, intelligence organizations, security forces and industry stakeholders in Member States with nuclear material or in the process of introducing such material, and in Member States with radioactive material only.

The publication does not include exercises on emergency response to any nuclear or radiological emergencies that might result from a nuclear security event. It does however cover the safety and security interfaces that would arise during a nuclear security event (e.g., interfaces between contingency plans and emergency response plans) relating to the transport of nuclear and other radioactive materials. It takes into account the IAEA Emergency Preparedness and Response (EPR) publications and is consistent with and complementary to other guidance publications issued and in preparation within the Nuclear Security Series, including other technical guidance supporting NSS No. 13, Ref. [1] and NSS No. 14, Ref. [3].

In 2005, IAEA published *Preparation, Conduct and Evaluation of Exercises to Test Preparedness for a Nuclear or Radiological Emergency (2005),* Ref. [4]. This publication draws on the core methodology of that publication with specific adaptation for security of nuclear and other radioactive material in transport and includes specific examples from other organisations, where relevant.

The structure of this publication, including the subject headings and topic planning areas, is similar to that of the IAEA publication EPR-Exercise 2005. This approach was selected in order to facilitate the use of both publications in a harmonized manner by relevant national authorities and organizations. However, the content of the two publications differs, due to the type of information that is to be handled, the target audiences for the exercises and their cultural considerations, the significant differences in how security exercises are conducted and evaluated and the focus on security priorities and objectives relative to a threat. Within this publication there is reference to emergency response and the associated organizations that would work cooperatively during the course of a nuclear security event, but specific actions of those organizations in the course of the exercise are not specifically addressed. For that guidance, those organizations can refer to the EPR-Exercise 2005 publication.

The United States Federal Emergency Management Agency's Radiological Emergency Preparedness Exercise Manual, Ref. [5], was also used as a source of general information in the development of this publication.

1.4. STRUCTURE

Following this introduction, Section 2 describes the different types of exercise that can be held, their characteristics and how the results can be used to improve performance. Section 3 describes the process involved in organizing an exercise. Section 4 addresses exercise evaluation and Section 5 identifies what would be included in the exercise specifications. Section 6 describes what would be included in the scenario for an exercise, including the sequence of events. Section 7 describes the information that would be included in the exercise material. Section 8 describes the organization and the process for controlling and evaluating the exercise, including information that would be included in the controller and evaluator guides. Section 9 describes the information that would be provided to participants (or 'players') in the exercise. Section 10 describes considerations for dealing with the real media before and during an exercise. Section 11 provides information on special considerations that would be addressed. The appendices contain detailed examples and guides to illustrate some of the key concepts described in the main text.

2. EXERCISE CONCEPTS

2.1. TRANSPORT SECURITY PROGRAMMES AND EXERCISES

In accordance with Fundamental Principle A of the Convention on the Physical Protection of Nuclear Material (CPPNM), responsibility for establishment, implementation and maintenance of a nuclear security regime rests entirely with the State. A nuclear security regime would cover all nuclear material during use, storage and transport.

An important element of the nuclear security regime is that the State ensures that shippers, carriers and receivers develop and implement contingency plans and procedures to deal with unauthorized removal of nuclear material, sabotage or attempts to do so. In keeping with Fundamental Principle K, it is also necessary for the State to ensure that these plans are exercised to verify that they will work properly when they are activated. There is need to exercise contingency plans at the State level as well as at the shipper/carrier/receiver level and in many cases at both levels simultaneously.

IAEA Nuclear Security Series No. 13, addresses transport security exercises in the following areas:

- 3.13 "The State should ensure that evaluations include exercises to test the physical protection systems, including the training and readiness of guards and/or response forces."
- 3.61 "Arrangements should be made to ensure that during emergency conditions and exercises, the effectiveness of the physical protection system is maintained."
- 6.22 "Exercises should be conducted to assess and validate the transport security plan (TSP) and to train participants on how to respond to nuclear security events."
- 6.50 "The State should ensure that appropriate State response organizations, carriers and/or other relevant entities conduct exercises to assess and validate contingency plans and also to train the various participants how to react in such a situation."
- 6.66 "The State should ensure that appropriate State response organizations, carriers and/or other relevant entities conduct exercises to assess and validate contingency plans for transport of nuclear material and also train the various participants on how to react to in such a situation."
- 6.68 "The State should ensure that joint exercises, which simultaneously test emergency and contingency plans and actions for transport of nuclear material, are regularly carried out in order to assess and validate the adequacy of the interfaces and response coordination of emergency and security organizations involved in responding to various scenarios, and should have a method for incorporating lessons learned to improve both management systems."

Exercises would be held that cover State level responsibilities, including:

- Response (including armed response) to unauthorized removal or attempted unauthorized removal when nuclear material is in transport, typically initiated by notification from the shipper, carrier or receiver;
- Actions to locate and recover nuclear material that is missing or stolen during transport;
- Response to acts or attempted acts of sabotage during transport;
- Actions to minimize or mitigate the radiological consequences of successful act of sabotage.

The State would also ensure that shippers, carriers and receivers exercise their contingency plans, including (as appropriate):

- Exercises to test transport security plans or elements of those plans;
- Coordination and integration of emergency and contingency arrangements such as those for initiating State response to unauthorized removal or an attempt to do so, an act of sabotage or attempted sabotage and an incident of missing or stolen nuclear material.

The frequency with which exercises would be held depends on the purpose and scope of the exercise, the nature and complexity of the transport operations, the experience of the involved parties and the

regulatory requirements. Complex transport operations can be exercised in parts rather than by exercising all aspects of the operation at once. Simple and regular transport operations (such as those for routing radiography transports) with correspondingly simple contingency plans can be exercised by the carrier on a periodic basis and when changes are made in security arrangements or operations.

An adequate transport security contingency programme includes, inter alia:

- Plans and procedures that address potential nuclear security events that might occur during transport;
- Training programmes that include an appropriate number of theoretical and practical courses, as well as testing and refresher training for all key organizations and positions;
- Resources, including human, equipment, communications and facilities to support the execution of the security response plans;
- Appropriate coordination arrangements;
- Drills and exercises;
- A feedback process to improve all of the above based on lessons identified from real events, during training and from following exercises.

Transport security contingency programmes would also include considerations and arrangements for international liaison, notification, exchange of information and assistance. These arrangements also need to be 'exercised'.

A transport security response exercise would not be an isolated event, but rather one that is part of an overall exercise programme that is normally implemented over a cycle of several years. Leading to any major exercise, there will be training, drills and smaller scale exercises.

Over the exercise cycle, all response objectives and all major organizations in the plan would be targeted by at least one exercise. Some objectives will of course be tested more often than others. The type of programme and the frequency with which exercises are conducted will vary depending on the organization(s) and the nature of the transport operations being conducted.

2.2. PURPOSE OF EXERCISES

Exercises are a way of testing, training, evaluating and demonstrating capabilities in a particular subject area. Participants and participating organizations would be knowledgeable in their roles and responsibilities as well as their established procedures for dealing with the topic of the exercise. The exercise provides an opportunity for those procedures and decision making processes to be applied in a realistic manner. When multiple organizations and agencies are involved in the exercise, their ability to coordinate and collaborate is also demonstrated.

The objectives of an exercise may include:

- Validating plans and procedures;
- Testing performance of participants and participating organizations;
- Providing an opportunity for training in a realistic situation;
- Exploring and testing new concepts and ideas;
- Assessing interagency coordination and interfaces.

The desired outcome of the exercises includes reinforcing good practices and identifying gaps and overlaps or other areas as part of the organization's continuous improvement programme.

2.2.1. Validation

Validations by far the most common reason for holding an exercise and may be characterized by the question, "Does the plan work?" A successful exercise identifies areas where improvements are

necessary in the transport security, contingency or other plans, tests the effectiveness of revised procedures introduced as a result of previous exercises and/or operations, and furthers the development of adequate response to a nuclear security event.

However, an exercise would not be seen as an opportunity to demonstrate the perfection of a response. A good exercise is not necessarily one where everything goes well, but is, rather, one that allows improvements to be identified.

When new plans are being implemented, an exercise allows for validation of those plans. Periodically, as changes are introduced to plans and procedures, it may serve as a verification of the continued effectiveness of the physical protection system and effective response to a nuclear security event. In general terms, the more significant the changes made to a plan, the more complex the exercise which may be required to validate it.

Communication between organizations is one of the major challenges faced during real world operations (both routine and emergency) and an exercise can test the communication arrangements better than any other activity. In that context, communication is not limited to the technological means of communicating, but also includes the substance and the format, and the way in which the information is shared.

2.2.2. Performance evaluation

Performance evaluation may be characterized by the question, "Do all participants know their part in the plan?" Exercises may be used to check individuals' and organizations' knowledge of the transport security, contingency or other plans. Typically, drills (see Section 2.3.1) are a type of exercise used to verify individuals' knowledge and other types of exercise are used for organizations or parts thereof. Performance may be evaluated internally, to an organization, or externally, such as by the State or competent authority.

Exercises present an excellent opportunity to engage with individuals who are separate from the process of writing plans but who are part of their implementation. Receiving and acting on feedback from exercise participants as to the effectiveness of their part in the plan(s) can be useful.

2.2.3. Training

Although the main purpose of an exercise may be to validate and test performance, every exercise has a significant training value. As part of an overall training programme, exercises provide opportunities for: individual and collective training; feedback on the training received by guards and response forces; multiple agency coordination; interface between emergency and security organizations; etc.

It may be one of the few opportunities for individuals and organizations to work together under realistic conditions. However, if an exercise is the only method used to expose individuals to their roles, these individuals will be left with a misconception of their responsibilities. Therefore, exercises are not usually conducted solely for the purpose of training.

2.2.4. Trials

In some cases, new or revised concepts, procedures, systems or arrangements must be developed, explored and pre-tested so that they can be improved before being implemented. This can also be accomplished in the context of exercises.

2.2.5. Coordination and interfaces

An effective response to a security event, as described in transport security or contingency plan, may require the input of several organizations or even States. The level of familiarity with each other's roles

and responsibilities may differ. Exercises present an excellent opportunity for participants to learn how they will work with each other and understand each other's part in the plan(s).

At the most basic, but important level, this may be the first time participants from diverse organizations or States have had a chance to meet and establish an effective working relationship. A further benefit may be, as part of the validation process, confirming that boundaries of responsibility are clear, effective and understood by all participants in the plan(s). This may be the case for different carriers, guards and response forces, national and local police forces, national and local emergency response organizations, and States.

2.3. TYPES OF EXERCISE

The term 'exercise' is usually loosely interpreted as meaning any practical implementation of response plans and procedures in a simulated situation. This includes drills, tabletop exercises (TTXs), partial and full scale exercises as well as field exercises and games (Table 1).The preparation and conduct of each varies in complexity, scope and objectives.

Although each exercise type can be executed as a single activity, greater benefit can be achieved through a progressive training approach that exposes exercise participants to gradually increasing complexity of exercise conduct. A multi-year plan employs a progressive training approach in which training and exercise activities focus on specific capabilities in a cycle of escalating complexity (e.g. series of exercises may begin with an executive level seminar and progress towards tax or an exercise series may begin with a TTX and progress to several drills, then to a full scale exercise).

TABLE 1. EXERCISE TYPES AND PURPOSES

Exercise type	Purpose
Drills	Training Performance testing
TTXs	Training Interagency coordination Performance testing Testing and evaluating command and control structures
Battle board	Training Validating vulnerability assessment Decision making Testing new concepts, procedures, physical protection measures
Partial exercises	Training Training under real time and environmental conditions or simulated Training a subset of units Coordinating with a subset of stakeholders Evaluating capabilities and proficiencies

Full scale exercises	Training Training under real time and environmental conditions or simulated Coordinating with all stakeholders Training of all units Evaluating capabilities and proficiencies Testing and evaluating command and control structures
Field exercises (may be partial or full exercises)	Defined according to location (in the field) Training Training under real time and environmental conditions Evaluating capabilities and proficiencies Testing and evaluating command and control structures

2.3.1. Drills

Drills normally involve small groups of persons in a learning process designed to ensure that essential skills and knowledge are available for the accomplishment of non-routine tasks such as response force immediate actions or contact drills. A drill is conducted primarily as a training tool to develop and maintain skills in certain basic operations or tasks, or to reinforce a skill or practice/review a procedure. A drill can also be used to assess the adequacy of personnel training and is usually supervised and evaluated by qualified instructors. It normally covers a particular component, or a group of related components, associated with the implementation of the transport security plan. It may also be a sub-component of an integrated exercise, for example, emergency communication drills. Several types of drill can be conducted during an exercise; the type of drill used depends on the function being practised and the group being trained.

Appendix I provides list of basic operations or tasks associated with the implementation of transport security response plan, for which the use of drills may be relevant. This list is not necessarily exhaustive and is only provided as an illustration of possible drills.

2.3.2. TTXs

A TTX is a discussion type exercise conducted around a table. All the participants are in the same room or building (players, controllers/evaluators, observers). Therefore, no communication link with any outside body is necessary.

TTXs are not usually conducted in real time (see Section 2.4.1). The main focus may be on decision making, cooperation and coordination arrangements, assessment, public and media communication policy definition, implementation or another capability that needs to be exercised. Therefore, a TTX may be appropriate for:

- Identifying, understanding and evaluating response issues;
- Developing and testing response concepts;
- Formalizing concepts, plans, procedures, arrangements and systems;
- Improving mutual understanding between stakeholders in nuclear security event, particularly when those stakeholders typically do not interact routinely (e.g. international response);
- Evaluating operational and tactical concepts (see also battle board exercises);
- Performing vulnerability assessments;
- Evaluating the interfaces between safety and security response plans.

There are different types of TTX, which are based on the purpose and goals of the exercise itself. An open discussion TTX is good for some purposes (such as raising mutual awareness) but does not stress other aspects (such as communications procedures and interfaces between organizations). Arrangements such as putting some organizations in separate rooms can more realistically evaluate communications and organizational role. A good starting point for a Member State undertaking an initial exercise would start with a discussion based TTX with representatives of all organizations present in the same room. More complex scenarios and technical challenges for a TTX can be undertaken once a country/organization gains experience.

Key points in the preparation and conduct of a TTX include undertaking the following:

- Defining the objectives of the TTX;
- Preparing a clear scenario, including all associated data, that meets the objectives of the tabletop;
- Identifying clearly and preparing all logistical requirements, i.e. data presentation, communications, tools required by the players, etc.;
- Organizing the room so that it is clearly perceived by the players to be the setting of an exercise and NOT a meeting;
- Ensuring that all the players are introduced and that their roles and responsibilities are clearly understood by all;
- Explaining clearly that the goals of the tabletop are to assess and to attempt to take decisions and that these decisions will be used for improving the overall response to a nuclear security event (avoiding never ending discussions and pontificating);
- Explaining that the players are accountable for their contribution;
- Explaining that players can only bring realistic resources to the problem;
- Explaining that the discussions may be recorded.

These rules make TTXs very different from workshops. In a workshop, participants tend to be in a receiving and discussing mode. In a tabletop, they need to be pro-active and decisive.

2.3.3. Battle boards

Battle boards are turn based (adversary followed by protective force) simulations with probability assigned exercises designed to evaluate the system's capability in response to an adversary action. Using a scale model, map sheet or an enlarged aerial photograph allows participants the ability to make decisions based not only on their own procedures but also in relation to many other variables (adversary actions, terrain, buildings, etc.).

Originally developed by the military as a battle planning tool, it has since been modified and is now used by numerous organizations, the rules having been modified to meet the needs, objectives and purposes unique to a transport mission.

Typical uses of the battle board exercise include:

- Evaluation of a current system (baseline);
- Evaluation of an upgraded or changed system;
- Development of tactical plans;
- Training of guards and response forces;
- Evaluation of procedural changes in the safeguards and security programme;
- Contingency planning.

The concept of a battle board exercise is similar to combat oriented board games where participants are divided into two groups: adversaries and protective forces. The two groups are assigned missions and must develop plans of attack (or defence) in order to achieve their assigned mission.

Once the planning is complete, the two groups then meet around a battle board and walk through their assigned missions using a turn by turn process. Engagements between the two forces are evaluated by the controllers and the use of probability tools (dice or computer applications) to determine the outcomes of separate engagements. The battle continues until one of the following conditions is met:

— Adversaries have met their objective, or
— Adversaries are no longer capable of meeting their objective, either through attrition (they lack the necessary numerical strength to overcome the physical protection systems) or through the loss of essential capability such as explosives, vehicles, or tools.

Both the adversary and protective forces are controlled to ensure that they conduct realistic actions. For example, protective forces are constrained by:

— Actual procedures and training;
— Equipment in inventory (unless an upgrade is being modelled).

Adversary forces are constrained by an agreed-upon design basis threat (DBT), for example, with:

— Force numbers;
— Insider numbers and level of aggression (passive/active);
— Equipment (tool kit);
— Realistic tactics and movements.

2.3.4. Field exercises

Field exercises are practical by nature and focus on the tasks and coordination of operational resources applied to a nuclear transport security event. Operational resources include those people, teams and equipment that operate in and around the area of a nuclear security event. As an example, a field exercise could be conducted to evaluate the integrated performance of accompanying guards, shipper, carrier, response forces and emergency services teams through a single or multiple emergency operations centre (EOC).

A field exercise can be conducted on its own or combined with a partial or full scale exercise. In a partial scale exercise, the emphasis is on team procedures and coordination between several teams with a common task, to evaluate one or more capabilities, functions or abilities. The focus of partial scale exercises may been coordination and cooperation between multiple organizations or to evaluate specific functional aspects, which will require only selected organizations and interfaces to be activated; the remainder can be simulated.

The most demanding and exhaustive test of the transport security regime's capability is an integrated full scale exercise involving the full participation of all organizations involved in the physical protection of a shipment, including external security and emergency response organizations. Its major objective is to verify that the overall coordination, control, interaction and performance of these response organizations are effective and that they make the best use of available resources.

Exercises can vary in magnitude and scope. In the case of a transport security exercise, it can be designed to test a variety of capabilities, including guard force response, command and control, and emergency communications.

2.3.5. Types of exercise appropriate for different shipments

The types of exercise shown in Table 2 are for illustrative purposes only. States may decide to require specific exercise types based on their national requirements and threat.

TABLE 2. EXERCISES FOR DIFFERENT SHIPMENTS

Recommendation in IAEA Nuclear Security Series No. 13	Category I	Category II including spent fuel	Category III
6.22 Testing of transport security plan	Tabletop Partial Drills		
6.22 Training on the transport security plan	Full (notional transport security plan) Partial Tabletop Battle board Field Drills		Partial Tabletop Drills
6.50 Locate and recover missing or stolen material (both testing and assessing the contingency plan and for training)	Full Partial Tabletop Battle board Field Drills		Partial Tabletop Field Drills
6.66 Minimize or mitigate radiological consequences of an act of sabotage(both testing and assessing the contingency plan and for training)	Partial Tabletop Battle board Field Drills		
6.68 Conduct joint exercises to test emergency and contingency plan and interface between safety and security	Full Tabletop Field		Partial Tabletop Field

2.4. METHODS OF CONDUCTING AN EXERCISE

Time mode, scope, scenario injects versus free play, and the use of simulation are important factors that must be determined when preparing an exercise.

2.4.1. Time mode

An exercise is carried out in a real time mode when each activity is conducted on the same timescale as it would be during an actual nuclear security event. The timescale is compressed when otherwise necessary steps or time lapses are simulated or foreshortened during the exercise. An expanded timescale may provide additional time to that normally required for completing a particular event or a prolonged time period within a sequence of events to enable the convenient management of the exercise.

Compression or expansion of the timescale for certain sequences in the scenario may be advisable in order to make efficient use of the time personnel invest in the exercise. This is often appropriate for

TTXs and for drills, but not usually for larger exercises, where coordination between various groups makes it harder to synchronize the exercise unless done in real time. There are exceptions, such as in the early stages of a nuclear security event, where response forces may take time to arrive at the event site, and time compression may be advised. For the purpose of the exercise, the timescale for this stage can be compressed in order that their particular assessment and decision making activities may be put into practice without prolonged delay.

There are cases where time compression is definitely disadvantageous. A prime example is the compression of the time required for an adversary to gain access to the material inside a multi-layered package. These time delays are crucial to gaining an understanding of the adversary task time delays that would be incurred in overcoming the physical protection system under real attack conditions.

Wherever possible, however, this procedure (and, in particular, time expansion) would be avoided during the early stages of an integrated exercise as it is essential that players obtain a genuine appreciation of the actual time available for the completion of particular tasks, especially when these involve coordination with other groups. As a guiding rule, the time sequence of the associated series of events in an exercise may be compressed or expanded, provided that this does not compromise exercise objectives.

2.4.2. Scenario injects and free play

Free play means that players are free to react to a simulated problem according to their perception of the most appropriate solution. Free play allows participants to perform reactively or pro-actively, based on the situation. The freedom of action may be constrained by the scenario, which aims to achieve exercise objectives, and other factors such as the DBT or safety considerations. For example, a scenario that allows free play is the preferred method of training response force members to carry out their assigned functions under realistic conditions. Free play also allows the evaluators to determine more accurately the adequacy of response plans and procedures.

Scenario injects refer to actions that controllers may take to stimulate players to act. Injects are also used to correct errors or to interrupt actions made by the players, which might otherwise lead them to depart from the scenario and possibly jeopardise the overall objectives of the exercise. In general, the controllers would avoid correcting players' errors whilst the exercise is in progress unless it is absolutely necessary in order that the exercise remains on track.

2.4.3. Using simulation during an exercise

Simulation is used to replicate certain real world aspects of an exercise that for practical reasons may not be feasible to use (e.g. safety or cost considerations). For events such as hijacking or sabotage of a conveyance, simulation may be used to develop the scenario and/or run the exercise. During the exercise, simulation tools can add realism and may include:

- Conveyance simulators;
- Weapons effects simulators (blanks, lasers and non-lethal training ammunition);
- Mock-ups (of explosives, packages, incident location, etc.);
- Other devices to add realism (e.g. smoke canisters).

2.4.4. Force-on-force exercise

A force-on-force exercise can provide an accurate and adequate means to evaluate response plans and procedures. The force on force exercise is typically used to performance test a response force against a trained adversary force in accordance with the DBT.

2.5. EXERCISE FREQUENCY

Exercise frequency depends on the exercise type, an organization's exercise requirements and, in some cases, regulation. For example, less demanding exercises with limited objectives that involve fewer staff may be held more often than an integrated full scale exercise. The frequency of an integrated full scale exercise would be determined, based on:

- The necessity to change major portions of the transport security, contingency or other plans;
- The turnover rate of key personnel (e.g. transport control centre staff, guards, the shipper/carrier's senior staff or indeed any personnel playing a central role in delivering the plans);
- The degree of normal contact between the major response organizations;
- The type and frequency of partial exercises;
- The need to maintain training;
- The degree of success observed in previous exercises.

The time interval between integrated exercises is a matter to be determined by the competent authorities of the State (or States) concerned. This interval is unlikely to be less than 12 months or more than 36 months.

Exercises may also be needed, in terms of validation and performance evaluation, as part of an approval process for a movement, a series of movements or a carrier.

2.6. EVALUATIONS AND FOLLOW-UP ACTIONS

Depending on the type of exercise conducted, the exercise objectives and the scope of the exercise will determine the extent of the evaluation process. In some exercises where significant resources have been dedicated, a formal evaluation process may be incorporated into the mechanisms of the conduct of the exercise. The participants, the physical protection systems and the actions of the response organizations may be assessed by trained subject matter experts and the results will then be provided in a formal evaluation report to be incorporated into an organization's corrective action programme to improve the system effectiveness of the transport organization. In other exercises, the participating organizations may conduct an after action review (AAR) that would constitute a self-assessment.

The evaluation of an exercise identifies areas of the transport security plans, contingency plans or response capabilities that may need to be improved or enhanced. As a result of an exercise evaluation, there may also be recommendations on ways to correct the identified deficiencies, problems or weaknesses.

2.7. EXERCISE PROGRAMME

Exercises would be seen as an integral part of the process to develop, maintain and improve transport security plans and preparedness for transport nuclear security events. The State would identify those bearing responsibility for exercise programmes, including those for State entities as well as those for shippers and carriers.

An exercise programme would be prepared by each organization, based on its security functions, and coordinated with other organizations as needed.

An exercise programme typically includes a detailed one-year plan and a more general long term plan. The one-year plan describes:

- A statement about the aim and objectives of the one-year plan;
- The types of exercise to be conducted, i.e. drills, TTXs, field exercises, and partial and full scale exercises;

— The tentative schedule for these exercises;
— The participating organizations.

The long term plan identifies those exercises that be conducted over the next few years. The long term plan would cover a period of several years (e.g. five) as set by the appropriate national authority. This long term plan would also address international exercises, which are typically planned and implemented over a period of more than one year. This plan would be reasonably detailed for major exercises, which require considerable advanced planning. The long term plan will also address the requirement for smaller scale exercises, but their detailed schedule and specifications would normally be part of the one-year plan.

The following factors would be considered in the development of the long term plan:

— Any changes to the threat assessment or the DBT;
— Nature and category of the nuclear material being transported;
— All response objectives identified for each organization would be covered over the period stipulated in the long term plan;
— Allowances would be made to adjust the exercise programme based on feedback from previous exercises;
— Some security functions need to be exercised more frequently, e.g. those relating to protection of the material from a malicious act;
— The scenarios and event types to be considered would cover a broad range of postulated events;
— All designated personnel (including backups) would participate as players on a regular basis;
— The exercise programme would take into account the schedule for the revision and improvement of plans, procedures, assessment tools, equipment, etc.

Implemented activities and participation of individuals in exercises would be recorded to monitor the achievements of the exercise programme.

3. PROCESS OVERVIEW AND MANAGEMENT

3.1. PROCESS OVERVIEW

The planning of a large scale field exercise can be a complex undertaking based on numerous factors. This planning process for such an exercise can take six to twelve months, the duration of which is dependent on the complexity of the exercise and the targeted level of participation. Presented below are the general steps involved in the process; these are further examined in subsequent sections. The timeline provided is meant only as an example and must be adjusted, taking into account:

- The scope of the exercise;
- The diversity of participating organizations;
- The amount of exercise data that must be prepared;
- The availability of people and organizations;
- The level of priority of the exercise over other planned activities.

Step 1 (several months prior)

- Appoint an exercise management committee in which the director also assumes the role of chair. A model for the committee's structure and its members' roles and responsibilities is described in Section 3.2 on process management.
- Develop the exercise specifications (see Section 5 on developing the exercise specifications). This includes national and international requirements.
- Obtain approval on the exercise specifications from major stakeholders.
- Distribute the exercise specifications to all participating organizations.
- Define the policy to deal with the real media in the context of the exercise (see Section 10 on dealing with the real media).

Step 2 (6 months prior)

- Appoint a scenario design team. A model for the committee's structure and its members' roles and responsibilities is described in Section 3.2 on process management.
- Begin developing the scenario and exercise data (see Section 5 on developing the exercise scenario and Section 7 on developing the exercise data). The exercise management committee will periodically review the data to ensure that they remain consistent with the exercise specifications.
- Begin developing the exercise controllers' and evaluators' guide (see Section 8 on developing the guide for controllers and evaluators), starting with the evaluation criteria.
- Begin preparing a risk assessment, risk mitigation and exercise security plan for the exercise.

Step 3 (5 months prior)

- Validate the exercise scenario concept with specialists in the relevant fields. These specialists would not be players in the exercise.
- Develop training, drills and exercises leading to the date of the major exercise, making full use of TTXs for managers and coordinators. If the exercise is partial scale, limited scope or intended to determine the current state of transport security without bias, this step may be omitted. However, since large scale exercises often involve people who have had a limited amount of transport security response training, this step can be a useful part of the overall transport security preparedness programme.

Step 4 (2–3months prior)

- Conduct drills and TTXs.
- Identify logistics requirements and begin making arrangements.

— Develop media briefing package (see Section 10 on dealing with the real media).
— Identify, by name, all controllers and evaluators.
— Make arrangements for observers.
— Keep in mind that some participating organizations may need to develop their own internal exercise guide with the necessary information to ensure that staff members participate effectively.
— In exercises involving a large number of organizations, such as international exercises, this would be the deadline for the exercise scenario, evaluation guide, coordination mechanisms and communications protocols (i.e. how the international part of the exercise will be controlled).

Step 5 (1 month prior)

— Complete preparation of the scenario and exercise data.
— Complete the guide for exercise controllers and evaluators.
— Distribute the guide for exercise controllers and evaluators to the exercise control and evaluation team members.
— Develop the guide for players (see Section 9 on producing the guide for players).

Step 6 (2 weeks prior)

— Distribute the guide for players to every participating organization and observer.

Step 7 (1 week prior)

— Hold a final meeting of the exercise management committee to review the exercise scenario and data, as well as the guide for controllers and evaluators and the arrangements made in preparation for the exercise.
— Agree on the media releases for the real media (see Section 10 on dealing with the real media).
— Finalize logistical arrangements.
— Complete and publish an exercise telephone/fax/email/radio communication list that contains the coordinates of the organizations and the people being simulated. This list or simulated coordinates are to be used by players during the exercise in lieu of real coordinates. All numbers and frequencies would be tested.

Step 8 (at least 2 days prior)

— Train the exercise controllers and evaluators, including conducting familiarization visits if needed.
— Ensure exercise controllers and evaluators customize their guide so that they may readily obtain the information they need.
— Make the final amendments to the scenario and exercise input and data lists, if required. It is preferable not to make any significant changes, as even a single small change can have large repercussions on the overall scenario. Before a modification is made, the impact on all other aspects of the scenario would be carefully considered.

Often, a ‘full dress rehearsal’ is scheduled approximately one month prior to the exercise. This is not absolutely necessary, but it allows the exercise committee to identify and resolve any potential issues arising with respect to the players and exercise organizations.

Care would be taken to ensure that exercise players are not given access to information that would give them knowledge of the exercise scenario or allow them to ‘game’ the exercise or anticipate upcoming actions. Additionally, certain tactics and responses associated with a nuclear security event may be sensitive and need to be treated accordingly.

3.2. PROCESS MANAGEMENT

3.2.1. Organization for the preparation of an exercise

A typical exercise preparation organization is shown in Fig. 1. The exact structure and number of people involved depend on the scope of the exercise. The functions and associated roles presented are common to any exercise. The exercise director would ensure that responsibilities are clearly assigned.

The members of the exercise preparation organization would not become players during the exercise. Some, if not all, of the members of this organization, will most likely be part of the core group for the control and evaluation of the exercise (although this is not a requirement).

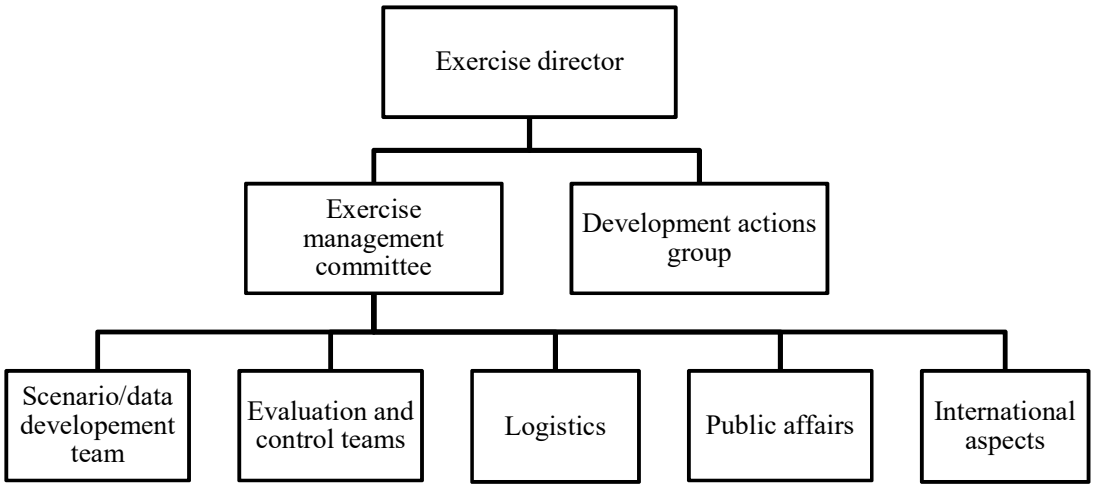

FIG. 1. Typical organization for the preparation of an exercise.

3.2.2. Exercise management committee

The exercise management committee consists of:

- An exercise director;
- A lead controller and a lead evaluator;
- Representatives from major stakeholders.

The exercise management committee would consist of senior decision makers and planners from key participating organizations as well as regulators. The chair of the exercise management committee is normally the exercise director.

This exercise management committee is responsible for:

- Developing the exercise specifications;
- Developing the exercise evaluation criteria;

— Developing the guide for controllers and evaluators;
— Developing the guide for players;
— Managing the process described in Section 3.1;
— Selecting the scenario development team and assigning all major functional responsibilities within the exercise preparation organizations;
— Periodically reviewing the exercise scenario manual to ensure that it remains consistent with the exercise specifications;
— Determining the extent of international participation;
— Approving the media strategy;
— Selecting the exercise controllers and evaluators;
— Approving the presence of observers.

3.2.3. Development actions group

In some countries, there are major initiatives under way to improve their ability to respond to a nuclear security event at the national level. Often, these programmes benefit from international assistance. The improvement programmes may be subject to schedules and constraints that involve several organizations and agencies. It is important to ensure that the programme schedules, objectives and tasks are well coordinated with any planned major nuclear security exercise. This coordination is the responsibility of the development action group, established for the exercise. This group is responsible for maintaining liaison with the national organizations and individuals in charge of the other major programmes.

3.2.4. Exercise scenario/data development team

The exercise scenario development team comprises:

— Persons from the organizations responsible for transport security and contingency planning;
— Technical specialists with a thorough knowledge of the relevant plans as well as the operational and security arrangements;
— Other representatives from the participating authorities, as appropriate.

This team would involve people from all functional areas being exercised. Proper coordination of input and knowledge of plans and procedures will be key to ensuring that the exercise remains realistic.

It is essential for one person to be given overall responsibility for the preparation and organization of the exercise scenario. This person must have a thorough knowledge of the relevant transport security and contingency plans, and be familiar with the area of the exercise and its surroundings. Representatives from other groups may, and would, help by providing inputs for their respective parts of the scenario, but the responsible person must coordinate and consolidate all inputs to ensure that there are no conflicts and that the exercise objectives can be met.

The scenario development team is responsible for the development and validation of the exercise scenario and exercise data in accordance with the exercise specifications. Those specifications are described in detail in Section 5.Scenario and exercise data development are dealt with in Sections 6 and 7.

3.2.5. Exercise evaluation and control

Although each team has key responsibilities, the evaluation and control team will work to develop templates for controlling and evaluating the exercise in accordance with each participating organizations' needs. Exercise controllers will plan and manage exercise play, set up and operate the exercise incident site, and possibly take the roles of individuals and agencies not actually participating in the exercise. Controllers direct the pace of exercise play, provide key data to players and may prompt or initiate certain player actions and injects to the players.

Each organization would consider developing evaluation criteria that target critical tasks for exercise objectives, and core capabilities which will enable evaluators to capture structured and unstructured data regarding exercise performance.

3.2.6. Logistics

The logistics function can be carried out by a team or assigned to an individual member of the exercise management committee or support staff, depending on the scope of the exercise. Logistical preparations include:

- Making hotel reservations or arranging other accommodation;
- Reserving conference room workspace, which is required for the entire exercise control and evaluation team the day before the exercise, and for the evaluators following the exercise;
- Obtaining supplies (do not expect that controllers and evaluators will bring their own supplies);
- Arranging proper transportation;
- Organizing communications for the controllers and evaluators;
- Obtaining safety equipment;
- Providing identification badges;
- Producing and distributing hardcopies of the scenario, guides for controllers and evaluators, and guides for players.

Transportation to and from the site must be addressed. This is particularly important for exercise team members who would travel with the players.

It is necessary to ensure that radio frequencies used by exercise controllers and evaluators are distinct from those used by players or emergency services. The list of telephone numbers and radio frequencies to be used by controllers would be available and distributed in advance. All numbers and frequencies would be tested one day prior to the exercise.

It is necessary to determine, ahead of time, who will need special protective equipment wherever safety requirements are in place.

All controllers and evaluators would wear some sort of identification. This could be a vest, armband, badge or a distinctive hat.

It is important that spare copies of the exercise instructions be brought to the briefing the day before the exercise.

3.2.7. Public affairs

The public affairs team is responsible for:

- Formulating the strategy for dealing with the real media leading to and during the exercise;
- Assisting the exercise director in his/her duties as official spokesperson;
- Leading the preparation of a media simulation cell for the exercise, if it is required in accordance with the exercise objectives.

3.2.8. International liaison team

The international liaison team is responsible for:

- Maintaining liaison with other participating countries and international organizations;
- Developing agreements on the international objectives and exercise specifications with other participating countries and international organizations;

— Ensuring that the national scenario and the international objectives and specifications are consistent.

4. EXERCISE EVALUATION

4.1. PURPOSE OF EVALUATION

Evaluation can be defined as the act of reviewing or observing and recording exercise activity or conduct, assessing behaviours or activities against exercise objectives, and noting strengths, weaknesses, deficiencies, or other observations.

Evaluation would not be a single event in the exercise process; instead, it would be carefully integrated into overall exercise design. The output of exercise evaluation is information used to improve performance. For this reason, exercise evaluation is part of an ongoing process of improvements in preparedness.

When conducted systematically, these exercises serve as gap analysis tools, helping Member States identify gaps in policy, training and equipment. In this way, systematic exercises lay the foundation for a continuous cycle of improvement planning. They therefore maximize the value of preparedness investments to the community.

During an exercise, evaluators collect data in multiple ways. They record their observations, collect data from records and logs, and attend the player debriefing and the controller/evaluator debrief.

Whatever the data collection method, evaluators would perform three levels of performance analysis: (I) task level analysis, (ii) activity level analysis and (iii) capability level analysis.

(i) Task level analysis

Task level analysis focuses on specific, discrete actions. This analysis helps agencies target plans, equipment, and training resources to improve performance on specific tasks.

Tasks are often linked to performance measures designed to assist evaluators. For example, the ‘guard force response’ capability incorporates the task ‘implement appropriate security measures’. This task is accompanied by check boxes marked ‘fully’, ‘partially’, ‘not’ and ‘not applicable’.

(ii) Activity level analysis

Activities are groups of similar tasks that, when carried out according to plans and procedures, support a capability from the organizations’ requirement list.

Activity level analysis focuses on whether all activities have been performed successfully and in accordance with plans, policies, procedures and agreements.

Through this analysis, evaluators gain valuable insight into broad ‘themes’ of successes or challenges in performing related tasks. Awareness of such themes is key to improving the performance of individual tasks and thus demonstrating the associated capability.

(iii) Capability level analysis

Capabilities are specific functionalities that support the high level mission. They are combinations of elements such as personnel, planning, organization and leadership, equipment and systems, training, exercises, assessments and corrective actions.

When conducting capability level analysis, evaluators examine whether performance on specific tasks and activities was sufficient to demonstrate the desired capability.

Capability level analysis is designed to assist managers and executives in developing operating plans and budgets, communicating with competent authorities, setting long range training and planning goals, and developing interagency and inter-organizational agreements.

4.1.1. Discussion based exercise evaluation

In a discussion based exercise, evaluators would record discussions as they progress through the exercise. While recording discussions, evaluators would pay special attention to:

- Issues identified by players;
- How players make decisions;
- Player roles and responsibilities;
- Player coordination and cooperation;
- Recommendations from the group.

4.1.2. Operations based exercise evaluation

During an operations based exercise, the main role of evaluators is to observe and record player actions. While recording player actions, evaluators would pay special attention to:

- **What** actions took place?
- **Who** performed an action or made a decision?
- **Where** an action or decision took place?
- **When** an action or decision took place?
- **Why** an action was performed or a decision was made?
- **How** players performed an action or made a decision?

4.2. AFTER ACTION REPORT/IMPROVEMENT PLAN (AAR/IP)

Improvement planning is the process by which the observations and recommendations recorded in the draft AAR are resolved through development of concrete corrective actions. These corrective actions are prioritized, tracked and analysed by programme managers as part of a continuous corrective action programme.

Through this process, evaluation leads to a disciplined process for implementing corrective actions and all discussion improving preparedness.

All discussion based and operations based exercises result in the development of an AAR/Pith AAR/IP serves multiple purposes. Specifically, it:

- Records what occurred during the exercise;
- Provides feedback on the achievement of capabilities and associated activities;
- Provides recommendations for improved preparedness.

Perhaps most importantly, the AAR/IP is a tool to establish consensus and to support the next steps. By using this format, organizations ensure that the style and the level of detail in their AAR/IP is consistent with other agencies involved. Consistency across organizations allows the country's emergency preparedness agency to gain a broad view of capabilities.

As directed by the lead evaluator, the evaluation team drafts the AAR using the evaluation products discussed in lesson 5. These products include the exercise event timeline, narratives and exercise evaluation and analysis sheets.

Other sources of data for the draft AAR/IP include:

— Data from the player debrief, the controller/evaluator debriefing, and participant feedback forms;
— The plans and procedures of participating organizations.

The plans and procedures of participating organizations are used to compare intended outcomes with actual events. Specifically, the suggested AAR/IP format includes:

(a) **Executive summary**

This section is a one- to two-page synopsis highlighting the exercise scope, successes and areas for improvement.

(b) **Executive overview**

This section provides background information on the exercise date and time, location, type, hazard, participating organizations and evaluation methodology.

(c) **Exercise goals and objectives**

This section lists the goals and objectives that were identified during the design of the exercise. The goals and objectives are based on the tasks associated with the exercise and would mirror the exercise evaluation guidelines.

(d) **Analysis of capabilities demonstrated**

This section provides an analysis of capabilities that were evaluated during the exercise. The analysis would include a detailed assessment of the organization's ability to perform activities and tasks associated with these capabilities.

(e) **Conclusion**

This section summarizes the key findings of the AAR and describes the implication of these findings on future action.

(f) **IP matrix**

This section would be presented as an appendix of the AAR. The IP matrix lists each area requiring improvement, as identified by evaluators in the AAR. Each area identified for improvement is accompanied by the following:

— Capability assessment;
— Observation title;
— Recommendations;
— Corrective action description;
— Capability element;
— Primary responsible agency;
— Agency point-of-contact (POC);
— Start date;
— Completion date.

Additional appendices may include lessons learned, a participant feedback summary, an exercise events summary table, performance ratings and an acronym list.

Each analysis of a capability would include the appropriate capability, its title and number from the task listing, and the activities that correspond to it. Each activity would be followed by:

(i) **Observations**

The observations section would include an overall narrative outlining performance of the activity. It would also include a brief description of specific evaluator observations, which can be positive (a strength) or negative (an area for improvement). If the AAR/IP includes multiple observations about a single performance measure, it would individually list each observation and the analysis and recommendations associated with it.

(ii) **References**

The references section would cite documents that relate to the observation of a plan, a procedure, or mutual aid agreement.

(iii) **Analysis**

The analysis section would apply root cause analysis to assess whether the organization possesses the plans, policies, procedures, trained personnel, equipment, mutual aid agreements, etc., needed to perform the activity. Where areas for improvement exist, evaluators would list the consequences of action or a lack of action by the organization.

(iv) **Recommendations**

The recommendations section would describe steps that must be taken to address areas identified for improvement. If the observation is a strength, evaluators can use this section to identify potential best practices and lessons learned.

Once the draft AAR/IP is complete, members of the exercise planning team and evaluators meet to review the draft. This meeting is a 'dry run' before the full after action conference. Its purpose is to:

- Provide a peer review of the draft AAR/IP;
- Address whether the exercise met its goals and objectives, or whether time constraints or unforeseen circumstances prevented this;
- Review the AAR/IP before it is presented to the full audience.

The outcome of this meeting is the finalized after action conference 'read ahead' package. This package would include the draft AAR/IP, conference agenda and presentation.

4.3. AFTER ACTION CONFERENCE

Following completion of a draft AAR, the exercise planning team, evaluation team and other stakeholders meet for an after action conference, the purpose of which is to review and refine the draft AAR.

As part of the after action conference, attendees develop an IP that articulates specific corrective actions by addressing issues identified in the AAR. The refined AAR and IP are then finalized as a combined AAR/IP.

Ideally, the after action conference would be scheduled for a full day, within several weeks of the conclusion of the exercise. It would be held at a convenient location or at the site where the exercise took place.

The conference would be highly interactive. Attendees would be invited to validate observations and recommendations and to provide insight into activities that may have been overlooked or misinterpreted by evaluators.

The conference would include a facilitated discussion of ways in which participating organizations can build upon the strengths identified in the organization.

A key purpose of the after action conference is to hold a facilitated discussion on how to implement recommendations for improvement. The outcome of this discussion is a list that identifies corrective actions, the organization responsible for completing them, and a timeline for completion.

When compiled, the corrective actions and timelines make up they, which converts AAR recommendations into specific, measurable steps that will result in improved preparedness.

The complete IP is included in the final AAR/IP as a table that summarizes the next steps. Participating organizations/agencies will use it to execute improvement planning.

4.3.1. IP matrix

Conference attendees typically use an IP matrix as a tool to complete the IP. For every improvement recommendation, attendees would complete nine categories on the IP matrix:

- Capability;
- Observation title;
- Recommendations;
- Corrective action description;
- Capability element;
- Primary responsible agency;
- Agency POC;
- Start date;
- Completion date.

Thai is distinct from the IP matrix. The IP is a narrative that describes changes to be undertaken as a result of lessons learned during the exercise. It describes who will make these changes, as well as provides details of their implementation. In contrast, the IP matrix is a tool used to generate the narrative that makes up the IPad to gain consensus on improvement actions.

4.4. GENERATING CORRECTIVE ACTIONS

Each corrective action would identify what will be done to address the recommendation; who (person or agency) would be responsible; and a time frame for implementation. These corrective actions would contain enough detail to make it useful.

Some AAR/IP recommendations will lead to clear corrective actions that can be defined at the after action conference. Other corrective actions cannot be identified without additional information. For these items, the IP matrix would specify at least the first step in the process.

Each corrective action would be assigned to the organization that is best qualified to execute it. It is important that organizations are assigned corrective actions that they have the authority to carry out.

Some corrective actions will require resources for training, equipment, or personnel. The IP would establish realistic priorities for the use of limited resources. For example, some action items may require steps such as submitting an application for additional funding, or seeking an agreement to share resources with another country.

When resources are not immediately available, exercise planners and evaluators would develop both short and long term solutions for improving the capability in question. In this situation, the IP is considered complete even if it only details the short term steps for improvement.

Corrective actions must include attainable benchmarks that will allow the organization to measure progress towards their implementation. Examples of benchmarks include the following:

- The number of personnel trained in a task;
- The percentage of equipment that is up-to-date;
- The finalization of an interagency agreement within a given amount of time.

These benchmarks would be defined against concrete deadlines so that the agency can track gradual progress towards implementation.

On the conclusion of the after action conference, the exercise planning and evaluation teams finalize the AAR/IP by incorporating corrections, clarifications and other participant feedback into the final plan.

The AAR/IP is then distributed to members of the exercise planning team for validation. The exercise planning team will assess whether the AAR/IP is an accurate document that meets the exercise objectives.

When validating the AAR/IP, the exercise planning team ensures that the AAR/IP addresses the needs of participating organizations. It also ensures that the AAR/IP is a useful tool to guide the following areas:

- Strategy development;
- Exercise programme planning;
- Sharing of lessons learned with homeland security community partners;
- Changes to plans, policies and procedures;
- Capability development and refinement;
- Efforts to focus limited resources upon improvements in preparedness.

Once the AAR/IP is validated, it is considered final. To protect potentially sensitive information, the exercise planning team would agree on the AAR/IP distribution list before issuing the final version.

The corrective actions captured in the AAR/IP would be tracked and continually reported on. This process is referred to as a corrective action programme. Tracking implementation of corrective actions is the eighth step in the exercise evaluation and improvement planning process. To track the implementation of corrective actions, each participating organization would have POC responsible for tracking corrective actions and reporting on their progress.

Agencies are not expected to have dedicated staff members for these POC positions. Instead, these duties can be assigned to current homeland security exercise and emergency response personnel. POC positions include:

- Event POC;
- Organization POC;
- Action officers POC.

Event POC

A successful exercise programme would have a designated event POC. This person is responsible for continuously tracking implementation of the corrective actions assigned to the organization in the AAR/IP.

The event POC serves as the central POC for exercise improvements. In this capacity, the designated individual is responsible for compiling updates on corrective actions into periodic progress reports. In this way, the event POC executes a corrective action programme.

Organization POC

Each participating organization would identify an organization POC. This person is responsible for managing the corrective actions assigned to the organization, as well as for assigning action officers to complete individual corrective actions.

The organization POC would collect information from assigned action officers on the progress of corrective actions. After compiling this information, he or she would provide regular progress updates to the event POC.

Action officers

Action officers are assigned to complete individual corrective actions. They provide regular status updates to the organization POC and/or programme manager. The action officers' reports track progress on the benchmarks associated with each corrective action. These benchmarks were identified in the AAR/IP. Failure to achieve these benchmarks would also be reported, in order to enhance accountability. The action officers' updates are compiled to produce progress reports on the status of all corrective actions identified in the AAR/IP.

By assigning POCs to track corrective actions, an organization engages in a corrective action programme that continually improves priority capabilities.

The implementation of corrective actions listed in an AAR/IP is the manner in which exercises inform and improve other components of the preparedness cycle. The progress reports issued by an organization's POC would illustrate a consistent trend of progress towards the implementation of corrective actions.

As the AAR/IP ties corrective actions to specific capabilities, progress reports ultimately demonstrate the concrete ways that exercises enhance capabilities. Once participating agencies have implemented corrective actions, a new cycle of exercise activities can begin.

5. DEVELOPING THE EXERCISE SPECIFICATIONS

This section describes what would be in the 'exercise specifications' portion of the exercise manual. Determining the exercise specifications is the first step of the exercise preparation process. The exercise specifications consist of the scope, objectives and constraints related to the exercise. No other work would be allowed to proceed until the exercise management committee has agreed upon these specifications.

5.1. EXERCISE PURPOSE

Since no single organization can independently address the issues associated with a nuclear security event when in transport, it's important that agencies exercise their ability to effectively respond and mitigate the impact of such events. The purposes of an exercise establish the reasons why an exercise will be conducted. Common purposes include:

- Satisfying governmental requirements to conduct exercises periodically;
- Addressing public concerns about the security of shipments;
- Providing greater consistency in the response actions taken by agencies responsible for countering these events;
- Building stronger relationships among agencies and responding personnel;
- Identifying vulnerabilities to be addressed after the exercise;
- Demonstrating the capabilities of responders and equipment;
- Evaluating new procedures or other operational requirements and/or governmental regulations.

Once the type of exercise that best facilitates the purpose is selected, then the scope of the exercise can be established.

5.2. EXERCISE SCOPE

The exercise scope would be determined before any significant other work on the exercise scenario begins. The scope of the exercise includes:

- Selecting the organizations that will participate and the extent of their participation;
- Deciding on the time and duration of the exercise;
- Determining the extent of the actions that will be carried out during the exercise.

The extent of participation by organizations, teams or individual specialists depends on the purpose of the exercise. In the case of partial exercises, the presence of some organizations may not be essential and others need only be present as observers.

Each participating organization, especially large ones, would clearly identify which internal sections, departments or individuals will participate in the exercise and to what extent, or subject to what restrictions. These would be consistent with the exercise objectives.

Decisions related to the selection of exercise planners, players and evaluators may include the following considerations:

- What role would the individual best serve in order for the organization to benefit?
- Does the individual have a specific background and experience in the role they will serve or will training be required?
- Since the planning cycle of an exercise can take several months/years, have alternates been selected to fulfil the role?
- Will there be a sufficient number of qualified non-players to serve as role players, safety personnel, etc.?

In planning an exercise, other considerations include:

- Time availability of each organization's representative in planning the exercise;
- Selecting exercise dates that are not in conflict with major events or holidays;
- The total number of personnel that potentially could be involved, and logistical support required for the duration of the exercise;
- Selecting exercise sites, with consideration given to operational requirements of the exercise, site security and safety of both the exercise participants and the public.

When involving government organizations such as national departments or ministries, a considerable amount of lead time to prepare may be required.

5.3. EXERCISE OBJECTIVES

Exercise objectives define specific expected outcomes from the exercise. They identify who will do what according to an established standard. Well defined objectives provide a framework for scenario development. Objectives would be 'smart', i.e.:

- **S**pecific: The objectives would clearly state exactly what is to be accomplished and for whom, in terms of end results.
- **M**easurable: The objectives would clearly state the standard expected based on the objective to be achieved. An effective objective utilizes both quantitative and qualitative measures.
- **A**greed upon: The objectives would be the result of collaboration between agencies and when required, mutually agreed upon.
- **R**ealistic: The objectives would be realistic, yet challenging. Objectives would be based on facts, analysis and knowledge.
- **T**ime parameters: The end result specified would be accomplished within a certain time period, not merely 'in the future'.

In writing objectives for an exercise, a distinction would be drawn between organizational and individual tasks. The results of the exercise may identify the strengths or weaknesses of the organizations but not typically individual abilities or capabilities.

Although exercise objectives address the interactions between organizations, each organization may develop specific objectives it wants to evaluate as well. As an example, command and control may be an objective for the exercise, but a specific organizational objective may be the ability to use a new communication system to understand the restrictions associated with distance and terrain. Examples of exercises objectives are given in Appendix II.

5.4. EXERCISE CONSTRAINTS

Exercise objectives are often subject to constraints imposed by practical considerations. For example, it may not always be possible to start the exercise in the middle of the night, even though this would allow a useful test of the functions at a time when people are least available. Financial resources may also be limited and prevent the conduct of an exercise lasting more than one day. There may be other priorities, political or other concerns that restrict the time available for the exercise or that limit the participation of important organizations. Constraints would be identified early in the process to avoid wasting effort in designing an exercise that cannot be implemented.

6. DEVELOPING THE EXERCISE SCENARIO

This section describes what would be in the 'scenario' portion of the exercise manual.

6.1. INTRODUCTION

6.1.1. Getting started

The start of the exercise would define a broad scenario outline that reflects and supports the various objectives of the transport security exercise. Depending on the exercise scope, the scenario may need to be divided into several phases, each focused on a particular aspect of the transport security or contingency plan. For example, in the case of a transport security plan exercise, the scenario would at least include the en route actions of the transport elements and associated supporting agencies. Once the normal operations are exercised, a second phase of the exercise may include malicious actions to test a particular contingency plan.

In this example, the normal en route scenario would contain all the information required by the transport team to carry out its mission. It would be driven by the normal operating procedures and the environment in which the transport element would find itself along the route. The hostile phase of the scenario would then be driven by an adversary's actions, based on the adversary's capabilities and goals.

To the extent possible, the scenario would exercise the judgement, knowledge and training of the transport element personnel, emergency operations staff and response force members under simulated hostile conditions. The scenario development team can best accomplish their objectives by ensuring that the simulated hostile action provides the same type, form and sequence of information as would actually be available during an attack or unknown emergency.

The scenario development team would ensure that the scenario outline is reasonable, realistic and that it will allow all exercise objectives to be tested within the existing constraints, such as the DBT or threat assessment. Once a firm scenario outline has been agreed upon, the team is ready to fully develop and document the scenario.

6.1.2. Components of an exercise scenario

A general outline of the scenario would include:

- Start state;
- Key events and critical timeline;
- Tactical scenario;
- Detailed sequence of events;
- Narrative;
- Master events list;
- Exercise inputs and data.

These elements are discussed in more detail below.

6.1.3. Challenging the players

The simulated tactical situation that includes other emergency descriptions would also include non-essential inputs that challenge the players. For example, this could include one or more of the following:

- Large amounts of extraneous information that would force the player to identify the most relevant aspects;
- Harsh working conditions;
- Harsh weather;

— Adversary use of social medial or open communications with public media outlets;
— Political pressures;
— Media pressure, etc.

6.2. START STATE

The start state describes the initial conditions as well as the context for the exercise and would reflect realistic conditions. The details provided would be limited to those that are actually necessary for conducting the remainder of the scenario.

The start state would include (but is not necessarily limited to) the following topics:

— Characterization of the convoy or shipment;
— Characterization of the threat;
— Characterization of the material;
— Organizational assignments;
— Type and status of equipment;
— Primary and secondary routes and their road conditions;
— Weather conditions;
— Operating environment;
— Current intelligence situation for the participants.

6.3. SCENARIO

6.3.1. General description

The general description of the scenario is a quick overview that is often provided in narrative form to describe the events involved in the scenario. It is a 'story' in that it contains all the main events that will drive the exercise. This description of the scenario is provided mainly for the exercise personnel and organizers who may not have the technical need, background or knowledge to understand the more technical scenario (see below).

A scenario consists of three basic elements:

(i) General context or comprehensive story;
(ii) Conditions that allow players to demonstrate proficiency and competency in meeting the exercise capabilities, tasks and objectives;
(iii) Technical details necessary to accurately depict scenario conditions and events.

The exercise planning team ensures that the design effort is not characterized by a fixation on scenario development, rather, the scenario facilitates achievement of exercise capabilities, tasks and objectives, which are the foundation of exercise design. Furthermore, scenarios would be constructed to avoid any sensitivity that may arise, such as the use of real name or sensitive venues (e.g. a school or private company).

6.3.2. Tactical description

This is the tactical description of the scenario, which gives details as to the situation of the shipment and the events that set the scene for the exercise event. This includes, for example:

— The initiating event (e.g. explosive charges, diversion, hostile action, road accident);
— Security posture;
— External variables that contribute or diminish the escort's ability to accomplish tasks.

The tactical scenario also describes escort status, actions of innocent bystanders and traffic conditions during the course of the security event.

6.4. EXERCISE EVENTS SEQUENCE

6.4.1. Key events and adversary timeline

Key events are those that must take place in order for all exercise objectives to be met. The adversary timeline is the time it takes the adversary to accomplish its tasks (either theft or sabotage at which key events must occur in order to allow the participating organizations to take appropriate actions).

Example 1

If the scenario is an attack for an attempted theft, there is typically pre-attack indicators or intelligence that supports the actions or capabilities of the adversaries. This 'intelligence build', depending on the exercise objectives, may be critical for the transportation security planning process.

Example 2

An exercise is planned to test the response of the external security and or law enforcement agencies, during non-regular working hours. The simulated attack might occur after a mechanical failure that causes the shipment to be significantly delayed beyond the original plan.

Example 3

The simulated attack must lead to sabotage, yet there is a requirement to test response actions to an active adversary. In this case, the attack is launched against the shipment to take the material outside of regulatory control and to move it to a high population centre in order to inflict maximum casualties. The exercise controllers during the exercise must correct any deviation from critical timelines in order to test the parameters of moving the unauthorized removal to a higher consequence location.

6.4.2. Master events list

The master events list is a time ordered list of the major exercise events. It is a tool designed for the lead controller. The master events list controls the pace of the exercise. An example master events list can be found in Appendix XVI. A master events list is often developed in tabular format and would contain the following information:

- Input sequential number;
- The time at which the input is to be provided;
- The message, data or action that is to be delivered;
- Comments, if needed.

6.5. VALIDATING THE SCENARIO AND EVENT SEQUENCES

Before a scenario is finalized, it must be validated. Scenario validation requires the help of specialists and experts in order to verify and approve the accomplished work. Transportation, training and physical security staffs are also extremely valuable in this respect. The engineering and safety analysis staff can be useful as long as they understand the requirements and methodology of a transport security exercise and recognise the need for conducting one.

When presenting the scenario for validation, the methodology would first be explained, starting with the exercise type and objectives. Discussions concerning the safety of the scenario would involve specialists. Compromising elements would be identified and removed. If at all possible, a scenario

practice run would be executed (e.g. using a simulator when available). In validating the scenario, information would not be shared with the players.

7. DEVELOPING THE EXERCISE INFORMATION

This section describes what would be in the 'exercise information' portion of the exercise manual.

7.1. GENERAL CONSIDERATIONS

Exercise information would be no different from real information except for the fact that it may be simulated. It provides information that is used to assess the security event and determine the response actions that must be followed in order to handle the situation. There are various ways of providing exercise information. A simple principle is to adopt a method that will most resemble reality.

The information may be presented in the form of:

- Briefings;
- Exercise injects;
- Messages;
- Tables;
- Graphs;
- Figures or pictures;
- Maps.

Several types of information are commonly used during the course of an exercise. They can be divided into four categories:

- Shipment information;
- Adversary information;
- Meteorological information; and
- Other information.

The information that will have to be part of the exercise manual includes all information that:

- Would normally be available to the exercise players during a real event;
- Is essential for the exercise objectives to be met;
- Is important for the exercise realism to be maintained;
- Would not be available during the exercise owing to the simulated nature of the event.

There are several types of delivery method for such information, one of which is through a pre-set message that is delivered by telephone, fax, communiqués or other communication modes. The message would state:

- The originator;
- The person receiving the message;
- The delivery method;
- The time of delivery;
- The message content.

7.2. SHIPMENT INFORMATION

The shipment information would define all relevant details of a transport to enable the exercise players to make informed decisions. Information includes, as appropriate:

- Type of nuclear material (e.g. contents of packages);
- Packaging used;
- Mode of transport;
- Route conditions (e.g. traffic situation, sea state);

— Geography;
— Characteristics of guards escorting the shipment (number, equipment, location, etc.);
— Response from other organizations (if simulated);
— Response of international organizations (if simulated).

7.3. ADVERSARY INFORMATION

Adversary information would be realistic and based on the national DBT or threat assessment. The details level of the information would be such that the confidentiality of the DBT and other arrangements is maintained. Information includes, as appropriate:

— Type and characteristics of the adversaries (motivation, intent, number, training, etc.);
— Modus operandi (tactics, etc.);
— Capabilities and equipment (firearms, explosives, breaching equipment or other equipment of weapons used).

7.4. METEOROLOGICAL INFORMATION

The exercise scenario will normally include a specification of the meteorological conditions. In most cases, it is easiest to use simulated, or so-called 'canned' weather conditions. However, in some cases, using real time weather information offers actual advantages. One method is to state that the actual meteorological conditions prevailing at the time would be used throughout the course of the exercise. This approach enables participants to consult weather forecasting organizations and to use this information to predict the likely development over time.

Weather information relevant to response actions and decision making may include:

— Precipitation status;
— Visibility;
— Lunar and solar conditions;
— Wind.

7.5. OTHER INFORMATION

Other information may also be required, for example:

— Interactions with the media and other simulated organizations;
— Response by the public;
— Radiological information.

This information may need to be highly flexible to account for the specific response during the exercise.

Depending on the scope of an exercise, radiological information may be required (e.g.in a full scale exercise that includes safety organizations). A decision will need to be made in terms of which information will be required to exercise all functions associated with the exercise objectives.

8. DEVELOPING THE GUIDE FOR CONTROLLERS, FACILITATORS AND EVALUATORS

This section describes what would be in the 'controller, facilitator and evaluator guide' portion of the exercise manual. There are examples of exercise guides for controllers, facilitators and evaluators in Appendix IV, Appendix VII.

8.1. GENERAL INFORMATION

8.1.1. Confidentiality

Care would be taken to ensure that exercise players are not given access to the guide, and indeed to other parts of the exercise manual that would give them knowledge of the scenario or allow them to 'game' the exercise or anticipate upcoming actions. Additionally, certain tactics and responses associated with a nuclear security event may be sensitive and need to be treated accordingly.

8.1.2. Exercise control and evaluation organization

The exercise control and evaluation team is responsible for the conduct and evaluation of the exercise. It is important that controllers and evaluators be appropriately selected and that they be familiar with their role and the steps involved in conducting an exercise.

For a discussion based exercise, the position of facilitator is used to lead and guide the exercise participants through the scenario. This person's job is not to control the discussion but, rather, to guide it in the direction based on the scenario, ensuring that the goal for the exercise is accomplished.

Controllers and evaluators would ideally not be the same individuals. Exercise control is a full time job, as is exercise evaluation. However, in some cases, owing to staff restrictions or physical constraints (e.g. Space limited to one extra passenger in a survey vehicle), a controller may also be an evaluator.

A typical organization of exercise control and evaluation team is shown in Fig. 2.

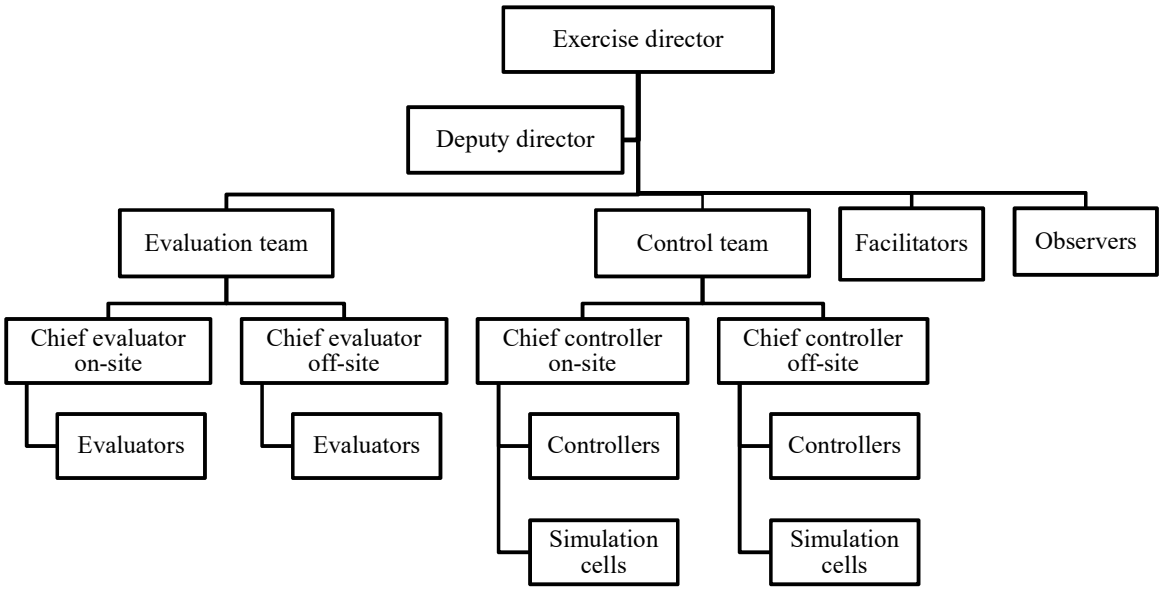

FIG. 2. Typical exercise control and evaluation team.

Exercise director

The exercise director is responsible for the overall exercise, its preparation, conduct and evaluation.

Deputy Director

The deputy director assists the exercise director and assumes the role of director in the director's absence.

Lead controller

The lead controller is responsible for the conduct of the exercise. This may include verifying that the main events list is adhered to or free play injects are made such that the purpose and exercise objectives are achieved.

Lead evaluator

The lead evaluator is responsible for coordinating the evaluation of the exercise. Depending on the purpose and exercise objectives, they may evaluate specific aspects, including the validity of the plan(s) being exercised, the performance of the participants, interagency coordination and interfaces, etc.

Facilitator

The facilitator is responsible for presenting the topical information of the scenario to the players, using aids and open-ended questions to guide the discussions throughout the exercise. Similar to a lead controller, this person engages the players with scenario injects, guiding the participants towards a resolution of the scenario, while accomplishing the exercise goals and objectives.

A facilitator is only used during discussion based exercises, such as a tabletop or battle board. The facilitator can also be the lead controller.

Observers

Many exercises attract observers, VIPs and others. While observers may learn from their experience, they would not be allowed to disrupt the exercise, prevent it from achieving its purpose and objectives, or to interact with the players. Make arrangements early on to deal with observers in a controlled manner. Split the groups into smaller manageable groups. Make arrangements for their transportation and visits to particular locations. Do not generally allow observers to roam about freely. Players can ask observers to leave if they are disrupting their teamer delivery of the plan(s). Interest group representatives can make good observers. Observers would be briefed about their expected conduct before the visits to exercise locations and would be escorted.

8.1.3. Schedule

The exercise instructions would include a schedule detailing timings for:

- STARTEX (start of the exercise);
- ENDEX (end of the exercise);
- In-briefings (briefing before the exercise);
- Debriefings (briefing after the exercise);
- Any other essential timings.

8.1.4. Locations

The guide must give the specific locations where exercise activities are to be held. These can be provided on maps or in textual format.

8.1.5. Logistics

Logistics arrangements to be described in the exercise manual include:

- Hotel reservations or other accommodation;
- Meeting locations and times;
- Office supplies;
- Transportation before and during the exercise;
- Communications for controllers and evaluators;
- Safety equipment;
- Identification badges;
- Copies of the scenario, guides for controllers and evaluators, and guides for players.

Any other special supplies that might be needed will be stated in the manual.

8.1.6. Communications

Communications methods and protocols that will be observed during the exercise need to be included within the manual. This includes a contact list for the exercise staff and a list of contact numbers for simulated organizations. This section would also describe the communications rules, including the need to precede any discussion over communications networks with ‘FOR EXERCISE’ or an equivalent statement. The communication section would also describe how master scenario event lists (MSELs) are initiated, real world emergency situations are handled and the use of any code words that may be used to denote milestones or other exercise actions.

Throughout the exercise, it is important for the exercise leadership be able to communicate with the different organizational representatives and exercise functional elements (controllers, evaluators, safety personnel) in order to ensure the safe and smooth conduct of the exercise. The communication system would be separate from the exercise forces and have the ability to be secured to prevent exercise participants gaining access to these communications.

8.1.7. Safety

All safety legislation and procedures remain in effect during exercises. The stress of exercises can cause people to focus on their tasks to the extent that they may neglect to follow standard safety precautions.

As with any exercise, safety is paramount. This is even more important for nuclear security event exercises that test response capabilities, since the response can involve physical combat and/or use of firearms or weapons. There is always the potential that security and law enforcement agents may react to exercise events as if they were real, which could result in injury. Moreover, unless all exercise players are adequately briefed and clearly identifiable, security personnel may use firearms to confront exercise players. Some exercises may call for the use of actual explosives and blank rounds to enhance realism. In order to avoid injury, there must be strict safety procedures in place and a safety officer or team would be designated with the responsibility for designing safety protocols and ensuring that they are followed.

The exercise manual must emphasize that evaluators and controllers are responsible for monitoring exercise play to ensure a safe environment. Therefore, clear arrangements on how to stop an exercise for safety reasons would be established and reflected in the exercise manual.

8.1.8. Handouts for planners/participants/evaluators/controllers

The use of handouts is extremely important to everyone involved in the exercise; it goes beyond the power point presentation. Handouts provide the additional information that participants use as a reference not only during the exercise but afterwards when they are required to write a report on the exercise and develop after action follow-up items.

Handouts for exercises are used for a variety of reasons. Income cases they are used as instructional guides to the exercise, or to expand on material for the exercise scenario in the form of injects. Regardless of their purpose, there are a few guidelines for developing handouts:

- Handouts would be titled with the exercise name and purpose so that the participant and facilitator can identify which handout is appropriate.
- Exercise goals and objectives may be stated to help remind participants with regard to what they are expected to achieve from the exercise.
- Handouts would be legible and the font size large enough to facilitate easy reading by the planners, participants, evaluators, controllers, etc. Caution would be exercised in making copies of copies as eventually the copies are degraded and become hard to read.
- Specific terms, if unfamiliar to the participant, would be defined in the handout.
- If feasible, figures and colour would be used to capture the participant's attention.
- Distribution of handouts depends on the objectives of the handout. Exercise players would probably not be exposed to all of the exercise injects at one time. Handouts would be distributed as and when appropriate and to specific individuals.
- On the basis of the classification (security) level of the exercise, appropriate security markings would be highlighted on each handout containing confidential or classified information and only distributed to those with a 'need to know'.

8.2. GUIDE FOR CONTROLLERS

8.2.1. Roles and responsibilities

The role of the controller is to:

— Direct the exercise by providing exercise inputs to the players;
— Keep the scenario on track by ensuring that the actions of the players do not jeopardize the rest of the scenario.

Controllers must ensure they are thoroughly familiar with the overall exercise scenario, purpose and evaluation objectives, and their particular roles and responsibilities. Prior to or during the exercise, controllers would not hesitate to discuss matters of concern with the lead controller to obtain guidance or clarification. Controllers' freedom in providing exercise inputs would be clearly defined in the guide so that an unrealistic scenario, or one which does not achieve the purpose and/or objectives, does not develop.

8.2.2. Controller instructions

These instructions provide guidance to controllers prior to, during and following the exercise and would be included in the exercise instructions for controllers. It is the responsibility of the controllers to ensure that working locations are kept, and left, in a safe and secure state. A sample guide for controllers appears in Appendix IV.

8.2.3. How to start the exercise

There are several ways of starting an exercise. The simplest of these ways is for the lead controller to telephone in, send or announce the initial message that will trigger the start of the exercise. There is no need for an elaborate ceremony. If the situation and scenario allow, it is advisable to let the players do their normal work for a while before starting. It is preferable not to start as soon as the players are in place, but rather to allow them some time to adjust to their surroundings, if different than their normal work environment.

It is important to ensure that all controllers and evaluators are in place before the exercise commences.

8.2.4. How to deliver the exercise inputs

Supplying data during an exercise is an art. It is good to minimize the interaction between controllers and players. Data would be supplied in as subtle of a way as possible. If a message would normally be transmitted by telephone, then try to use an actual telephone during the exercise. Rather than engaging in a long discussion with players to explain the inject, provide succinct phrasing and additional clarification only if required.

The key to a successful exercise is skilful coordination between the controllers. The lead controller is responsible for making this happen.

8.2.5. What to do when the exercise gets off-track

Occasionally, exercises will get off-track. Consider, for instance, the players outsmarting the controllers and scenario development team by finding an unexpected solution to a problem. This will have the potential to disrupt all events downstream and may require controller intervention. If this becomes the case, controllers will have to recognize the players' achievements and explain to them why, for exercise purposes, they will be assumed to have failed. Another way of tackling this is to have the controller inject an additional event in order to get the scenario back on track (although this is not the most

desirable solution). In any event, the lead controller is the only one who has the authority to permit deviations from 'the script'.

If the exercise appears to be off-track, a controller would immediately inform the lead controller. The lead controller will then adjust the timeline or event as required and inform all affected controllers, all the while keeping exercise purpose and objectives in sharp focus.

8.2.6. How to end the exercise

The exercise ends upon instruction from the exercise director. Normally, this occurs at the end of the scenario or when all exercise objectives have been met. The groups will not necessarily end their portion of the exercise all at once. For example, it is possible to end the response force component of the exercise and to allow the shipper/carrier to continue dealing with transportation issues.

Players and remote organizations must be clearly informed of the termination of the exercise. There have been exercises held in the past where organizations were not properly notified and they continued to play for several hours after all others had stopped.

Controllers are not officially part of the evaluation team. However, they may have valuable input to contribute to the evaluation process and they would be debriefed by the evaluation team.

8.2.7. Simulation cells

General

Some organizations may not be participating, but may need to be contacted by the players for the purpose of obtaining information. These organizations must therefore be simulated. The most effective way of accomplishing this is to provide one or several simulation cells (e.g. media, government agencies, radiation protection) equipped with telephones, faxes and email, as required. There may be a need for several simulation cells if the exercise spans several geographic areas. Simulator cell staff will have to be thoroughly familiar with the organizations they are simulating and the sorts of questions those organizations would ask and the responses they would give.

It will be necessary to provide the players with special telephone numbers or with contact information for all simulated organizations. This information will most likely be different from the one included in the normal procedures. The fewer the number of organizations simulated, the more realistic the scenario.

When simulation cells are established, their telephone numbers and contact information would be listed and provided to the players before the exercise commences.

Simulated media

Simulated media input can add realism to an exercise. Indeed, interacting effectively with the media is a major challenge for most nuclear security events. The coordination of information provided to the media by the various response organizations, the need to monitor the media to detect false information or rumours and to correct them are key elements of the response system that would be exercised often.

It is not simple to simulate the media in a realistic manner. There are challenges in terms of logistics, personnel selection and distribution of the simulated media information in real time. The following measures may help achieve a realistic media simulation:

— The simulated media personnel would have some experience of dealing with the real media, such as an organization's communications department.

— The simulated media personnel would ideally not be technical or operational staff who have intimate knowledge of the transport security or response plans and who have no media experience.
— A separate simulation cell would be established for the simulated media personnel. In some cases, several cells may need to be established at various locations. They would be linked through proper communications systems.
— The simulated media would be given as much freedom as possible in carrying out their function. Their script would be limited to key events and inputs.
— The simulated media would not know the scenario in detail.
— Information distribution, such assimilated media reports, can be broadcast through closed circuit televisions or radios.
— Written media products can be distributed by fax.

The simulated media would be instructed not to 'overplay'. Overplay is when the controllers put undue and unrealistic pressure on the players because 'it is just an exercise'.

8.3. GUIDE FOR FACILITATORS

8.3.1. Purpose

The purpose of this guide is to assist the facilitator(s) in preparing to assist organizations in conducting exercises for nuclear material transport security. Although facilitators may be highly experienced in preparing and conducting a variety of exercises, this guide will assist the facilitator(s) in maintaining consistency in preparing organizations to fulfil their roles and responsibilities before, during and after the conduct of an exercise. Planners/participants would be encouraged to be actively engaged in each phase of the exercise programme, from scenario development to after action reviews and follow-up actions.

8.3.2. Using a facilitator

As stated previously, a facilitator is mainly used in discussion based exercises. A primary exercise that would need to employ a facilitator is a TTX. These persons would be very knowledgeable in the subject matter that is serving as the basis of the exercise. The use of a trained facilitator is invaluable in preparing, conducting and evaluating an exercise involving the transport security of nuclear material. The facilitator can assist organizations by providing subject matter expertise in identifying the appropriate types of exercise to conduct based on the goals and objectives of the organizations, as well as assist exercise planners in designing an exercise and identifying the key components required to execute a successful exercise.

8.3.3. The facilitator's role

The facilitator team may be asked to serve in a variety of roles during the design, execution and after action follow-up, based on the exercise evaluations. In Section 3.1 (process overview), the potential roles and responsibilities can be derived from the objectives as stated in each step. Examples of where a trained and experienced facilitation team would be beneficial include:

— Pre-exercise planning facilitation would include bringing together the exercise management committee and assisting them in identifying realistic scenarios to evaluate each participating organization's goals and objectives. More than one facilitator may be required if the exercise is large. During the exercise, the facilitator provides situation updates and moderates discussions. The facilitator also provides additional information and resolves questions.
— Once the goals and objectives are established, the facilitator team can assist the exercise management committee by developing rules for exercise play, a detailed exercise agenda and accompanying handouts for distribution to each group involved in the exercise, including controllers, evaluators, safety officers, etc.

— Facilitate a variety of exercises leading up to a full field exercise. Typically, full field exercises are a result of smaller scale exercises such a functional exercise or TTX. This guide provides a wealth of information for the facilitator and it is recommended that it be followed by the facilitation team.
— Facilitate the after action review meetings to identify critical areas for improvement by participating organizations. The facilitation team in conjunction with the exercise management committee can assist organizations in identifying key issues observed during the exercise that require changes in procedures, operational activities or other organizations.

8.3.4. Characteristics of a good facilitator

A key facilitator role is to encourage all participants to contribute to the discussion, and to remind them that they are dealing with hypothetical situations in a no-fault environment. Facilitators also build and maintain an environment where all the participants feel comfortable speaking honestly and where differences of opinion are respected. Facilitators would ensure that everyone feels included in the conversation and has an opportunity to participate. Facilitators are not there to lecture or dominate the discussion, but rather to keep conversations moving. Additionally, facilitators may want to use an issues list or 'parking lot' to document valid points that are raised by participants during the exercise but which risk taking the conversation off topic.

Ideally, the facilitator will be someone who has both subject matter knowledge and facilitation experience. If this is not possible, using an experienced facilitator who can keep the discussion on track is more important than specific subject matter expertise.

On an administrative note, facilitators would discourage side conversations, ensure cellular telephones are turned off or made silent, and control group dynamics. Table arrangements for the exercise would try to maximize the interaction between the facilitator and participants. During the exercise, facilitators need to be constantly aware of time constraints, notifying participants about progress and letting them know when time is running short.

Facilitator's primary duties include:

— Keeping discussions on track and within established time limits;
— Controlling group dynamics and strong personalities;
— Speaking competently and confidently about the subject without dominating the conversation;
— Having subject matter expertise or experience;
— Having awareness of local plans and procedures;
— Capturing key findings and discussion points during the exercise.

8.3.5. Building rapport

During the first meeting, facilitators and planners are asked to introduce themselves. During the introductions, facilitators would be taking notes referencing the planner's background, level of experience in transportation security exercise planning and execution, and relevant information that could be beneficial to the facilitator when soliciting information and feedback.

In establishing rapport with the group, the facilitator may have a tendency to gravitate towards planners who have a common background and knowledge. Although not uncommon, it's to the facilitator's benefit to assess each planner and try to establish a connection. The list of benefits as a result of developing a rapport includes higher motivation, increased comfort in the exercise planning stages, and satisfaction with scenario design and evaluation; all of which leads to better comprehension of the exercise and expected outcomes.

Five factors have been identified that promote rapport between facilitators and exercise planners:

1) Respect: Facilitators and planners must show respect for each other, the design process and for the organizations involved.
2) Approachability: Planners must feel comfortable approaching the facilitator team and the team must be willing to speak with planners during breaks and after meeting discussions.
3) Open communication: There needs to be a consistent flow between the facilitators and planners, there needs to be a consistent flow with regard to 'what is said' and 'what they do'.
4) Caring: The facilitators must care about people involved in the exercise; they must see and respond to them as individuals.
5) Positive attitude: The facilitator would have a sense of humour and be open to other viewpoints, which can be difficult when keeping planners and resulting dialogue focused on the exercise planning task.

Rapport is not something developed by announcement; it's developed by actions and is a result of facilitators doing the right things.

8.3.6. Use of role players

The use of role players can greatly add to the exercise players' experience by providing them real world examples of how operational aspects play into their roles and responsibilities. They learn to deal with situations as they occur and develop an understanding of how to effectively manage changes and requirements.

As effective as role play can be, it does have the potential to yield disastrous results if not handled appropriately by the facilitator. There are numerous examples of poorly briefed role players who were allowed too much freedom and thereby failed to assist the facilitator in meeting the exercise objectives. The responsibility of an effective role play experience can be found in preparation. The following offers some helpful tips in designing a role play activity and outlines the things to do and to avoid when creating a role play handout.

The role play handout would include the following information. List the objectives and:

- Identify important points to be covered;
- Check for understanding often;
- Review objectives at the conclusion.

Ensure that the scenario objectives are designed to meet similar objectives seen within the organization:

- Information received during the exercise is applicable in the real world;
- Develop a script that describes what will occur during the scenario and how role players would respond.

Determine where the scenario will take place:

- Type of equipment required to make the environment realistic;
- Props for the role play;
- Controllers involved in the scenario, especially if they are role players.

As regards role play activity, then:

- Role players would not adlib their role without approval.
- Safety consideration would be maintained at all times.
- Those not involved would stay out of the way of the role play.
- Perform the role as instructed, regardless of personal desires.

Conduct an AAR of the event:

— Role players would participate in the review.
— The facilitator ensures that role players contribute to the after action follow-up reviews,

As regards rules, then:

— Roles would be well designed/scripted.
— Follow the exercise goals and objectives.
— Ensure non-role-players are kept away from players/actors.
— Ensure safety is adhered to.

8.4. GUIDE FOR EVALUATORS

Most organizations understand that evaluations are an essential part of preparedness for nuclear security events. However, evaluations are not always well understood or conducted. Without a proper understanding of evaluations, it is impossible to determine gaps or weaknesses in response capability. A poorly conducted evaluation could result in instilling a false sense of security as to the organization's state of preparedness, or it could unfairly single out an individual as being responsible for the failure of a plan.

The predominant principle for evaluating an exercise is that the performance of the entire organization and plan are measured as opposed to that of individuals. It is important to assess whether or not the organization, or a combination of organizations, as appropriate, is able to achieve the response objectives.

8.4.1. Roles and responsibilities

Evaluators are responsible for taking notes during the exercise and participate in the production of the final evaluation reports, as instructed by their respective lead evaluator.

The evaluation team is composed of a representative sample of personnel who possess the requisite knowledge and expertise in the area(s) to be evaluated. It is essential that the evaluation team has, as a minimum, an excellent understanding of the plan, the procedures and the distribution of responsibilities within the participating organizations. Evaluators other than the lead evaluator can lead a small team. For example, the lead evaluator may assign an evaluator to evaluate the response force. The response force evaluator may then lead a team of evaluators who assess tactical, post-incident recovery and other response force functions.

It is important to choose the right evaluators for each function. An operator's team would be evaluated by someone with operating experience. Guard and response force teams would also be evaluated by people with relevant experience. This is sometimes difficult owing to lack of resources. However, efforts would be made early in the exercise planning process to find suitable and credible evaluators.

During the exercise, the role of the evaluator is to observe and record facts on the organizations' response. The record of actions is the key to a good evaluation. For this, good chronological notes must be taken, concentrating on aspects that are critical to the response.

It is only once the exercise has ended that evaluators actually begin to evaluate. This evaluation is based on the evaluators' consolidated notes. Performance would not be evaluated until all the 'pieces of the puzzle' are put together.

8.4.2. Evaluators' instructions

These instructions provide guidance to evaluators prior to, during and following the exercise and would be included in the exercise instructions for evaluators. A sample guide for evaluators can be found in Appendix V.

8.4.3. Evaluation techniques

A thorough evaluation is normally made after the exercise, when all the observations from all evaluators are combined to provide a complete 'picture' of the exercise. Therefore, during the exercise, it is important to objectively observe response actions and make detailed notes on the sequence of events that can later be analysed to identify any problems and their cause.

The exercise manual would provide evaluation techniques, which may have to be supplemented by evaluator training. These techniques would include, for example, the need to:

- Record the time of arrival of players and observe their actions;
- Identify players by name and function;
- Record the actual time of major scenario events;
- Listen to and record the commands, instructions, information and announcements given by one player to another and to observe the actions that follow;
- Listen to input delivered by controllers;
- Evaluate the effectiveness of coordination and interfaces between organizations.

The way an exercise is conducted by the controllers can affect the response by the players, either in a positive or a negative way. Evaluators would record observations regarding the effectiveness of the exercise play:

- Note how controllers intervene when players depart significantly from the scenario.
- Look for problems with exercise realism. Does it look like the scenario was compromised or was executed in a previous drill? Are reports neatly written, even though they should have been prepared in a rush? Is anyone anticipating events? Is there any unusual equipment already in place, turned-on and ready to be used? Is anyone reading from a script? Is anyone pre-positioned in a place which unrealistically reduces response times?

Evaluation checklists, i.e. forms with check boxes, can make the evaluator's life much easier. However, they are not encouraged to be used in isolation for the following reasons:

- They can bias the evaluation by directing the focus away from performance or outcome and onto procedures or process;
- They are not appropriate for evaluating decision making or judgement and common sense in a complex environment with multiple locations;
- In most cases, they are very long and require the evaluator to 'shuffle' through paper during the exercise, which can distract attention away from the action.

However, it may be useful for the evaluator to have a list of the critical timings and functional requirements that must be met by the team being evaluated.

Evaluators would know what is important to note during the exercise. Experience, competence and training would be sufficient to allow this.

Appendix VIII shows an example of evaluator notes taken during an exercise as well as a worksheet.

After the exercise, the evaluators need to collect and review all material that was produced by the players during the exercise, including log files, status boards, maps, etc.

There are other evaluation techniques available, such as video recording or voice recording of the response teams. The exercise director would choose the method that is best suited to the group being evaluated. In some cases, for example, video recording may not be allowed by an organization for security reasons, or it may be too cumbersome because of the restricted space available at the emergency location, or there may not be sufficient staff to operate the necessary equipment at all the locations.

8.4.4. Players' feedback and debriefing

The participating group leaders usually conduct a player debriefing. The purpose of this debriefing is to ascertain the players' impression of what went well and what did not. It also serves as a stress reliever. The exercise manual would contain instructions for evaluators regarding the set-up and conduct of those sessions.

Evaluators would encourage players to hold a debriefing. They would attend these debriefing sessions as observers only; this is a chance for them to see how consistent their evaluation is with that of the players. They must not discuss the evaluation. If asked, evaluators can say that "this has been a useful exercise and the evaluators will be meeting shortly to discuss the evaluation". However, evaluators can elicit comments or suggestions from participants related to lessons identified or on the conduct of the exercise.

Another way to obtain feedback from the players is to prepare questionnaires structured along the list of exercise objectives. In some cases, it may also be useful to conduct post-exercise interviews with key players. For some types of exercise, such feedback can be useful for the evaluation.

8.4.5. How to evaluate performance

A performance based evaluation focuses on results, not process. In this type of evaluation, performance is measured against exercise objectives. Whether an objective is achieved or not is based on criteria such as:

- Key actions that should be completed.
- Time span within which an action should be completed.
- Did participants know their part in the plan? If not, is an organizational deficiency at fault?
- Was coordination between participants or organizations effective?
- Did guards and/or response forces defeat the malicious act?

Performance requirements address the ability of people and organizations to perform actions. Performance requirements are generally satisfied when the actions taken are the right ones, are performed adequately, are performed within the required time and lead to the desired results. Hence, in theory, whether or not procedures were followed does not matter, as long as the desired results are achieved. However, in practice, a proper evaluation must consider both the process and the results achieved because the result is not always easy to measure.

For example, unless weapons effects simulation is used, it is difficult to determine whether response force actions have defeated the adversaries. In this case, evaluators and controllers will have to make a determination on whether processes were followed and agreed tactics, techniques and procedures were used.

Focusing on performance is a departure from other traditional approaches, which often focus on the ability to adequately follow procedures. This can be misleading because procedures cannot account for all situations, and may prove to be inadequate during an exercise or a real event. Although experienced evaluators can usually differentiate between the ability of exercise players to follow procedures and their ability to adequately perform the required function, observing that procedures are followed during an exercise may not be a sufficient nor consistent way of measuring performance.

The main advantage of a performance based evaluation is that it concentrates on priorities: the significance of the observations is determined by their impact on specific goals that should be achieved. As a result, the evaluation is more credible, more thorough, more defensible and more useful. However, during an exercise, it is not always possible to measure the true result of actions, because many of the malicious conditions are actually simulated. It is therefore necessary to: (I) make a judgement on the

likelihood that the action taken would meet the desired goal and/or (ii) ensure that the process followed is appropriate. Therefore, in practice, evaluations would focus on:

— The results, when they can be measured;
— The process, i.e. the actions taken which led to the result.

It is thus important to record as many of the relevant facts and observations as possible during the exercise.

The problem of evaluating performance then becomes one of determining criteria by which performance can be judged. Evaluation criteria are indicators — but only indicators — that the right actions are being taken and that the response is achieving the right exercise objective. In a generic sense, in order to successfully complete an action, it is necessary to:

— Be able to gather the relevant information that could affect what action must be taken and how it must be implemented. It could, for example, be knowledge regarding the location of malicious forces or a malicious device.
— Be able to analyse the information available. This analysis may be simple or complex. For example, it is necessary to know whether to attempt to remove a suspicious device or to call on specialist support and evacuate the area, etc.
— Be able to promptly make decisions based on the available information.
— Be able to make a decision that leads to the desired action. In other words, the objective will probably not be met if the action taken is not in agreement with the analysis performed. There are many ways by which this could happen. An extreme example may be the response force opening fire on a group of protestors because the available information was misinterpreted, or because of a miscommunication between the decision makers and the response forces.
— Be able to communicate effectively, which is implicit in each of the items above.

In a performance based evaluation, it is not necessary to meet all criteria in order to meet an exercise objective. The actual success of the response depends on the conditions prevailing at the time and may require creative solutions on the part of the players, including prioritizing some actions over others. It is not always possible to guess which actions, and hence criteria, will be most important. Therefore, the evaluation would take into account the relative importance of each evaluation criterion based on the situation.

Whether or not objectives are met, lessons can be drawn from the exercise. For example, if an objective was met but the procedures were not used, this may indicate that the procedures should be revised. If the objective was not met, it may have been because of the scenario and may not be a reflection of the plan or ability of the players.

If the performance objective was met, ask the questions: Was the procedure followed? Was the result achieved in good faith or by accident? If the performance objective was not met, ask the questions: Why not? Was the procedure followed? Was training lacking? Was the procedure effective?

Examples of exercise objectives and evaluation criteria are presented in Appendix II and Appendix III, respectively.

8.4.6. Exercise report

An evaluation report would be prepared and submitted to the participating organizations in a timely fashion.

It is critical that the evaluation report be submitted, at least in draft form, within a reasonable period. What constitutes a reasonable period depends on the scale of the exercise and on the number of

organizations involved. The longer the delay, the less impact the report will have on the overall improvement of preparedness for, and response to, a nuclear security event. For small scale exercises, this delay should not exceed a few days. For major exercises, it should not exceed a few weeks.

The report is a compilation of the assessed observations of the evaluators. It would include observations, grades, deficiency classifications, good practices and, where pertinent, recommendations. The report would contain sufficient details to permit the evaluated organization to use the report to commence rectification of any problems.

After receipt of the evaluation report, participating organizations may seek clarification. Although the entire approach described above aims at ensuring that the evaluation is impartial, defensible and based on facts, it does happen that some aspects of the evaluation may be inaccurate or subject to a different interpretation. The lead evaluator must try to avoid this situation but when faced with it he/she would be receptive to criticism by the players. However, the evaluation should not necessarily be changed on the basis of players' feedback and comments on the evaluation report. The players would be reminded that the purpose of the evaluation is to improve preparedness and response by identifying potential weaknesses and not to ascribe blame to individuals or organizations. It is normally the participating organizations themselves that determine the actions to take in response to the evaluation report.

In some cases, inter-organizational approaches may be required to address deficiencies identified by the exercise which cross-cut multiple organizations. The solutions may require agreement on the best approach to be used.

An internal review of the organization, transport security, contingency and other plans and procedures used during the exercise and personnel training levels would commence as soon as possible after acceptance of the report. Plans, procedures, checklists, etc., would be amended as soon as possible after identifying and addressing the deficiencies. Stakeholders would be notified in writing of the changes and, if required, will be provided with amended copies.

Normally, the exercise director is responsible and accountable for the evaluation report. However, in some cases, the responsibility can be delegated to the lead evaluator.

8.4.7. Assessment of deficiencies

Deficiencies or weaknesses that are identified by the evaluation would be classified in terms of their impact on response performance. The following is an example of deficiency classification:

- *Critical*. The deficiency or weakness significantly impairs the ability of the organization to perform its role and responsibilities, or jeopardizes the security of nuclear material.
- *Major*. The deficiency significantly reduces the response effectiveness of the organization but does not prevent it from performing its role and does not, in isolation, jeopardize the security of nuclear material.
- *Minor*. The deficiency reduces the response effectiveness of the organization but does not prevent it from performing its role and does not jeopardize the security of nuclear material.

The purpose of this classification scheme is to help prioritize follow-up actions and to establish a target schedule for improvements.

The evaluation of the exercise performance will allow identifying lessons to be learned in order to increase efficiency of emergency response capabilities.

9. PRODUCING THE GUIDE FOR PLAYERS

This section describes what would be in the 'players' guide' portion of the exercise manual.

This guide is intended to prepare players for the exercise. Its purpose is NOT to promote top performance, but to ensure that the exercise progresses smoothly so that maximum value is obtained. Its purpose is to help the players orient themselves to the situation being exercised and provide the necessary information that places the exercise into context. It is also intended to be a source of important exercise information to ensure the safe and secure conduct of the exercise.

The guide for players would cover the following topics:

1. General statement of intent

This is generally a statement on the purpose of exercises that is consistent with the discussion elaborated in Section 2.

2. Applicable laws, statutes and regulatory texts

This is a brief statement on the regulatory and legal requirement for the exercise. It can help establish the seriousness and importance of the exercise.

3. Exercise scope and objectives

This is a summary of the exercise specifications determined in the first stage of the exercise preparation process.

4. Participating organizations

This is a list of the organizations that are participating, including the extent of their play. Players must know this to understand which organizations can actually be counted on or contacted (for real) during a nuclear security event. When omitted, this can lead to embarrassing situations.

5. Exercise rules and constraints

This is a brief description of how the exercise will be conducted, how the inputs will be provided, when they will be provided and what the players must do to deserve the information. It also provides rules for the players to interact with the exercise staff and for conducting themselves in the application of their procedures. Constraints, such as players only using existing real world resources, would be fully explained.

6. Exercise communications

This is a list of exercise telephone numbers and contact information that is to be used during the exercise. For example, this list will contain the simulation cell numbers of the organizations that are simulated.

7. Simulation cells

This is a list of the organizations that will be simulated by simulation cells.

8. Security

If there is a security plan for the conduct of the exercise (protection of sensitive information, disposition of printed documents, etc.), it would be included in the guide.

9. Safety

This section will make a strong statement regarding the need to maintain safety during the course of the exercise, the responsibility of the players to follow standard safety procedures, and the duty of the exercise staff to stop the exercise if the safety of the facility or personnel is jeopardized.

10. Media arrangements and guidelines

This section contains instructions regarding interaction with the media by the players.

11. Feedback required from players

This section will describe the importance of obtaining players' feedback at the end of the exercise and will provide instruction for the conduct of the post-exercise debriefing of the players.

Appendix VI has a sample guide for players, which addresses most of the topics mentioned above.

10. DEALING WITH THE REAL MEDIA IN THE CONTEXT OF AN EXERCISE

This section describes what would be in the 'media arrangement' section of the exercise manual.

10.1. LIAISON WITH THE MEDIA

Any exercise, especially a large scale one, may attract media interest. Access to the exercise by the real media would be strictly controlled. The presence of the real media presents several challenges, including the following:

- The real media can interfere with the conduct of the exercise;
- The real media may interfere with the simulated media;
- The presence of simulated and real media can confuse the players;
- The media may mistake the exercise for a real emergency;
- The results of the exercise can be misinterpreted by the real media and cause an unnecessary crisis after the exercise, especially if the exercise revealed areas for improvement in the plans and procedures.

Hence, it is important to develop an effective organization and strategy to interact with the real media. This strategy would be implemented several weeks or months prior to the exercise.

10.2. MEDIA AND PUBLIC ARRANGEMENTS AND GUIDELINES

10.2.1. Strategy

There must be a clear strategy for dealing with media and public requests for information concerning an exercise. It is preferable that the strategy be consistent for all exercises rather than specific for each exercise. If outside organizations (e.g. Federal, provincial and/or municipal authorities) are participating in the exercise, a joint, or at least coordinated, information strategy would be adopted. A strategy which takes into account the preceding points will reduce the opportunities for misinformation and confusion and a consequent loss of credibility for all concerned.

At any given time, the media may be viewed as any or all of the following: a possible asset, a potential resource and/or a time consuming liability. It is preferable that the media strategy foster a positive relationship with the media so that they are an asset and a resource. In general, the exercise would be viewed as an opportunity to inform the real media that there are plans and procedures in place to deal with nuclear security events.

Media arrangements

If a decision is made to engage with the media, then the following arrangements would be considered:

- *Media announcement*. The purpose of the media announcement is twofold: (I) to get timely and accurate information to the public and (ii) to keep the media informed. The announcement would include a brief description of the exercise, including approximate date, time and purpose. A telephone number for public enquiries would also be included. The person(s) responsible for answering the telephone would be properly briefed on the information of the exercise, what can be said and the proper context in which to phrase proper answers to enquiries. If deemed necessary by the senior exercise officials, a media briefing prior to the exercise could be presented to accredited media outlets. This would be in addition to any media announcement. The purpose of the briefing is to keep the media informed and to integrate them into the overall exercise process.

— *Media photo opportunity*. A particular exercise, for example a field exercise, may lend itself to media coverage such as a photo opportunity. This does not obviate the need for a media announcement and possibly a media briefing.
— *Media participation*. TTXs and field exercises may lend themselves to actual media participation in the exercise. This does not obviate the need for a media announcement and a media briefing. Media participation could include any or all of the following: briefings, photo opportunities, interviews, media 'scrums' and reporters providing spontaneous and/or scripted inputs.

In general, it is recommended that the real media strategy contain the following key points:

— The real media would be informed of the exercise prior to its conduct.
— The media would be informed of the purpose of the exercises, emphasizing the fact that it is normal and, indeed, desirable to uncover deficiencies, weaknesses and areas for improvements as a result of exercises.
— A separate section/department of the exercise organization would deal with the media during the exercise; the personnel in this group would not be players in the exercise. It would be communicated through the entire exercise organization that all communication regarding the media would be conducted through the dedicated department.

For all of the above, a spokesperson would be appointed. This person must be an articulate representative who is thoroughly familiar with the context of the exercise and with the elements of the particular exercise. This person would also have current media training.

10.2.2. Public notification

Persons who may be affected by or be concerned about exercise play would be notified of the exercise prior to its commencement or as soon as possible after the start of the exercise, commensurate with the exercise aim and objectives, taking into account information security considerations. For example, persons residing in the immediate vicinity of a field exercise would be informed of the time, nature and scope of the exercise. By doing so, the potential for conjecture, unfounded rumour or possible panic is reduced or avoided. Involve operationalise information strategy would be one of open dialogue geared to promoting public interest, awareness and also goodwill. The normal method for informing the public is the media announcement.

If the exercise is likely to:

— Involve operations near a neighbouring country,
— Generate a high level of interest in another country, or
— Generate rumours in another country,

Then the potentially interested countries would be notified in advance through the appropriate national organization and contact point.

11. SPECIAL CONSIDERATIONS

11.1. CONFIDENTIALITY

Prior knowledge of exercise scenarios is normally restricted to controllers and evaluators. However, for those exercises employed to test response to situations resulting from malicious acts, there are special needs regarding confidentiality in order to protect sensitive information about physical protection systems and their possible vulnerabilities that could otherwise be used by the possible perpetrators of such acts.

The need for confidentiality provides a challenge during conduct and evaluation, as well as preparation, which must be properly managed. Special attention would also be given to ensure confidentiality when observers are present during an exercise.

11.2. EXERCISE DATA AND INJECTS

Data and injects for these exercises are similar to those for traditional nuclear/radiological emergency exercises. However, depending on the type of exercise and on the scenario, managing exercise data and injects can be a very demanding task. Potential challenges include the following.

In the initial response to the scene of a malicious act, there may be several organizations and many emergency responders present. Radiological data and simulated injects must be provided to several people at the same time, by several controllers, in a coordinated manner. A lack of coordination on the controllers' part could create exercise induced confusion for the players. One way to minimize this risk is by minimizing the number of injects, using stage set-up as much as possible to represent realistically the scene and using's driven instruments to simulate field readings.

One major element of nuclear security exercises is the 'intelligence input'. This is very difficult to prepare and to script. During a threat, hostage situation, hijack, etc., there would be considerable intelligence resources engaged in supporting the front line response, where the objectives will be to identify the perpetrators, their organization and their aims. There would also be actions undertaken such as psychological profiling, voice analysis and a whole range of other functions to assist in the management of the contingency. This requires specialist knowledge and expertise to simulate. Therefore, if appropriate, members of intelligence services would be included in the scenario development team.

11.3. SIMULATION

The best exercises are those where the degree of realism is highest and the amount of simulation (i.e. pretending to do certain actions or obtain certain information) is minimized.

However, in practice, it is difficult to incorporate extensive realism in such exercises. The reason is simple: malicious acts, especially terrorist-related, are often aimed at maximizing damage, injuries and disruption, which is difficult to reproduce realistically in a safe manner or during an exercise. Furthermore, conducting a very realistic exercise involving a malicious act may unduly alarm on-participants, especially if it is unannounced. Therefore, the exercise designers must compromise between the need for realism while maintaining safety.

11.4. CONSIDERATION OF THE INTERFACE BETWEEN SECURITY AND SAFETY

Transport of nuclear and radioactive material always has implications about nuclear security and nuclear safety. In an actual transport, sharing information with safety officials is important to prepare for an emergency. In this context, what kind of information would be shared and how to maintain confidentiality would be well considered and prepared for.

For example, information regarding the transport route or what material will be transported may be shared with nuclear safety officials, even if such information is considered as sensitive/classified information. For emergency preparedness and response, safety officials would be kept well informed to protect people and themselves.

TTXs provide a good opportunity to identify nuclear security information, which would be shared with safety officials. These are also expected to identify gaps between security considerations and safety considerations. Possibly a TTX can uncover discrepancies between security officials and safety officials in the communication.

In an actual transport scene, it is important to prevent the transported material from being stolen or sabotaged. However, such an attempted theft is not always successfully prevented. If the recovery of dangerous sources, evacuation of a population, or decontamination of land is to be addressed by safety officials, then training in whatever type of communication is appropriate is vital.

In the same sense, security officials would be involved in an emergency exercise to provide advice to safety officials about security concerns and the actions dictated by the emergency situation.

Appendix I

EXAMPLES OF DRILLS

Drills can be performed to test transport security and/or response plans. Drills can be used to test many different security and response elements, including areas such as:

- Weapons handling procedures;
- Location and recovery;
- Conveyance or escort vehicle breakdown;
- Loss of communications;
- Tracking system malfunction;
- Medical emergency involving crew or driver;
- False alarms;
- Re-routing procedures;
- Adversary contact (road, rail, sea);
- Sabotage event.

Appendix II

EXAMPLES OF EXERCISE OBJECTIVES

II.1. EXERCISE OBJECTIVES FOR RESPONSE TO A NUCLEAR SECURITY EVENT FOR A CATEGORY I, II OR III TRANSPORT

An exercise for a nuclear security event in transport could include objectives to:

- Demonstrate the application of the security elements of detect, delay and respond.
- Demonstrate the effective actions considered, determined and used to respond to a nuclear security event in transport.
- Demonstrate efficient and effective notification and alerting procedures and methods.
- Demonstrate the precise and clear transfer of responsibilities, if appropriate.
- Establish an effective command and control system at all levels in a multi-agency and multi-jurisdictional response environment.
- Develop an appropriate plan for precautionary protective actions in case of a credible threat.
- Demonstrate the reliability and effective use of communications equipment, procedures and methods between relevant organizations, such as;
  - Between the transport control centre (TCC) and the conveyance;
  - Between the TCC and/or conveyance and the shipper or receiver, as appropriate;
  - Between the TCC and/or conveyance and the emergency services;
  - Between the TCC and any relevant State authorities (security and nuclear safety).
- Demonstrate the TCC's and/or guards' ability to recognize and respond to a nuclear security event.
- Demonstrate all organizations' knowledge of, adherence to and ability to implement transport security, contingency and other relevant plans.
- Demonstrate the ability to conduct a post-exercise review to determine areas requiring further capability improvements.
- Demonstrate the functional responsibilities and/or problem solving capabilities of thick, guards and other relevant organizations.
- Demonstrate the ability of thick and/or guards to integrate its (their) activities with those of other relevant participating organizations.
- Assess the threat in terms of credibility, capability and potential consequence.
- Communicate effectively the threat to the relevant response and emergency organizations.

II.2. EXERCISE OBJECTIVES FOR RESPONSE TO A NUCLEAR SECURITY EVENT FOR A CATEGORY I TRANSPORT

An exercise for a nuclear security event in transport could include objectives to:

- Demonstrate the reliability and effective use of communications equipment, procedures and methods between relevant organizations, such as:
  - Between the response force and the conveyance;
  - Between the response force and the TCC;
  - Between the response force and the shipper or receiver, as appropriate;
  - Between the response force and the emergency services.
- Demonstrate response force knowledge of, adherence to and ability to implement relevant tactical plans, etc.
- Demonstrate the ability of the response force to maintain continuity of command and control throughout the exercise.

— Demonstrate the functional responsibilities and/or problem solving capabilities of the response force and other relevant organizations.
— Demonstrate the ability of the response force to integrate its activities with those of other relevant participating organizations.

Appendix III

EXAMPLES OF EVALUATION CRITERIA

In general, exercise evaluation is a measure of whether the objectives of the exercise were achieved. The exercise objectives are measured using specific evaluation criteria and individual and collective performance standards which are observed and reported.

The following example is drawn from a nuclear security exercise for a Category I transport. For other Categories, and different security events, this example can be used with variations as necessary.

The following examples contain an objective and sample evaluation criteria.

III.1. THREAT CLASSIFICATION

Objective

— The threat is correctly accessed and communicated.

Evaluation criteria

— The threat is assessed on the basis of the available information.
— The threat is classified according to the methodology in effect.
— The threat classification is communicated to the emergency response services.
— If appropriate, the threat classification is communicated to the public.
— The threat classification results in predetermined automatic actions.

III.2. THREAT RESPONSE

Objective

— Appropriate actions are taken to respond to the threat and to mitigate the risks.

Evaluation criteria

— Appropriate immediate actions are taken by guards.
— Physical protection measures are initiated.
— Situation report transmitted to the TCC.

III.3. COMMAND AND CONTROL

Objective

— The command and control system is effective.

Evaluation criteria

— An effective command and control system is established at all levels in a multi-agency and multi-jurisdictional response environment.
— Command relationships were clear and adhered to.
— Timely activation of command levels.
— Specialized support teams (e.g. radiological and medical experts) are promptly dispatched to the emergency scene.

III.4. SECURITY

Objective

— Security is maintained for the nuclear material and security procedures are followed.

Evaluation criteria

— A security perimeter is established and maintained.
— Security procedures are followed.
— Chain of custody procedures is followed.
— First responders, radiological specialists and medical experts work effectively in cooperation with law enforcement agents.

III.5. MEDIA COMMUNICATIONS

Objective

— Communication with the media is effectively coordinated in a multi-agency environment.

Evaluation criteria

— A joint media centre is established at the scene.
— A single spokesperson is designated at the scene.
— All agencies coordinate media liaison.
— First responders are briefed on media communications protocol.

Appendix IV

EXAMPLE GUIDE FOR CONTROLLERS

The following instructions provide guidance to controllers prior to, during and following the exercise and would be included in the exercise instructions for controllers. It is the responsibility of the controllers to ensure that working locations are kept, and left, in a safe and secure state.

As a minimum, all personnel would receive an orientation briefing and handout materials that cover the exercise plan, including the scenario, objectives, procedures and ground rules. Training may be provided by exercise design team members or by outside sources. For complex exercises, a tabletop activity could be conducted to help familiarize participants with their roles and responsibilities, as well as related plans, procedures and policies.

Training would emphasize the roles and responsibilities of both the control and evaluation teams, as well as functional interaction between the two. In general, controllers and simulators would be thoroughly familiar with the following:

- Purpose and objectives of the exercise;
- MSEL and scenario timeline;
- Message forms and flow of information;
- Content of exercise messages;
- Accuracy, timeliness and realism of expected responses;
- Requirements for coordination with evaluators and other personnel;
- Procedures and communications systems for injecting messages;
- Procedures for monitoring the sequence of events and message flow;
- Procedures for controlling spontaneous exercise inputs and for responding to unplanned or unexpected situations;
- Procedures for recording and reporting exercise information;
- Procedures for post-exercise debriefings and evaluation.

IV.1. KEY ROLES AND RESPONSIBILITIES

This section identifies the responsibilities of the lead controller as well as those of the control team chiefs, individual controllers and individual simulators.

Prior to the exercise, all exercise control and simulation personnel would be familiar with this control plan, the exercise plan and the exercise scenario. They would also be familiar with the exercise MSEL events, especially those to be injected into play from their assigned location.

IV.2. CONTROL TEAM CHIEF

The person in charge of controllers and simulators at each primary location will be referred to as control team chief and will be responsible for directing all functions of his/her respective team and subordinate elements. Control team chiefs are responsible for managing the control functions at a specific site. During exercises in which all controllers and simulators are located at a single facility/location, the lead controller usually fills this role. For complex exercises, multiple control team chiefs may be necessary. Therefore, in some situations, these duties may be separate and distinct or fulfilled by one person.

Control team chief responsibilities may be found detailed in Ref. [6].

IV.3. INDIVIDUAL CONTROLLER RESPONSIBILITIES

Each controllers responsible to the control team chief at his/her assigned location to assist in monitoring and facilitating exercise play. Specifically, individual controller responsibilities include the following:

- Reviewing control plan materials and attending controller training;
- Performing duties under the management of the control team chief at the assigned location;
- Monitoring player actions and assist the control team chief and other exercise control team members in tracking exercise events;
- Reporting to the control team chief any problems or issues that may arise concerning control, including deviations from the scenario or exercise artificialities that may interfere with exercise realism or exercise progress, and recording these problems in the controller log;
- Monitoring the scenario to ensure that the exercise is progressing as planned and inject event implementer messages into exercise play at the scheduled times;
- Preparing ad hoc messages required by the control team chief to adjust or enhance exercise play in order to achieve an exercise objective;
- Recording the responses of players and maintaining logs and forms;
- Recording any ad hoc implementer messages that are created on an ad hoc implementer log sheet to be used for exercise reconstruction and evaluation;
- Providing observations using the key player observation and comment form for input to the exercise evaluation;
- Acting as simulators for unanticipated actions for resource requests, if necessary;
- Coordinating spontaneous messages from other simulators and 'free play' as necessary;
- Attending the simulator/controller debriefing as instructed by the control team chief.

IV.4. LEAD CONTROLLER/ASSISTANTS

The lead controller will have similar but greater responsibilities than individual controllers and these responsibilities are detailed in Ref. [6].

IV.5. INDIVIDUAL SIMULATOR RESPONSIBILITIES

Each simulator is responsible for providing the interface between non-participating individuals or organizations and exercise players. Specifically, individual simulator responsibilities include:

- Reviewing simulator materials and attending training;
- Performing duties under the management of the [identify title of person] at the assigned location;
- Representing the 'outside world', i.e. other organizations, agency, field units, victims, citizens, the media, etc., by responding to players' enquiries and requests;
- Answering enquiries from players directed to non-participating organizations and individuals for general information or information concerning MSEL events already injected into play and recording each of these enquiries on a simulator log;
- Receiving and acting on player produced exercise materials, such as messages, memorandums, etc., to non-participating agencies and individuals;
- Recording actions and/or decisions on tactical maps, situation status boards, resource status boards and logs;
- Assisting controllers in monitoring the flow of the exercise and completion of scenario events;
- Informing the control team chief of possible deviations from the scenario and expected actions;
- Providing observations using the observation/comment form for input to the exercise evaluation report;
- Attending the simulator/controller debriefing as instructed by the control team chief.

IV.6. LEAD CONTROLLER EXERCISE CONTROL PLAN CHECKLIST

The following checklist provides a comprehensive list of the tasks to be accomplished by the lead controller or their designees.

- ☐ Assess the exercise plan to determine if the following information is provided:
  - ☐ Needs assessment.
  - ☐ Type of exercise.
  - ☐ Duration of exercise.
  - ☐ Action sites.
  - ☐ Exercise objectives.
  - ☐ Extent of plays/any actions performed out of sequence.
  - ☐ Scenario events and messages/simulations needed.
  - ☐ Participating/non-participating organizations.
  - ☐ Scenario/scenario story line.

- ☐ Determine the number of controllers needed and:
  - ☐ Consider the type of exercise: TTX, functional, or full scale. (This will generally provide an idea of the scope).
  - ☐ Determine if action sites are operating at the same time:
    - ☐ Some actions sites may be operating out of sequence (on different days, or perhaps in the evening).
    - ☐ Action sites may include full activation of a facility or a key action by one or more individuals. (For example, full EOC activation or dispatcher at another location making key notifications.)
  - ☐ For each individual action site, answer, using the extent of plays, the following questions:
    - ☐ Does the action site cover a large area (such as a large one room facility, multiple room facility, indoor and outdoor activities)?
    - ☐ Do the key activities occur during the same time frame?
    - ☐ How many players are performing key actions?
    - ☐ Does the facility or area have space limitations that may affect the number of controllers assigned? (Remember, besides players and controllers, evaluators will be present and perhaps observers.)
  - ☐ Examine MSEL and messages for each action site and:
    - ☐ Determine the number of messages issued per key activity/exercise players/location at the action site.
    - ☐ Determine the appropriate number of messages reasonable for a controller to inject and still be able to perform other controller actions (monitoring timeline, observing expected actions, etc.).
  - ☐ If the exercise duration exceeds 8–12 hours, a shift change for controllers may be needed.
    - ☐ Evaluate each action site. Depending on when some action sites are activated and operating, a shift change may not apply.

- ☐ If the exercise proceeds into the night, or a period of time when activity lessens, a shift change may not be required for all controller positions. Staffing may be able to be reduced.

- ☐ Consider the following when making final determinations of controllers:
  - ☐ Use of the same controllers in more than one location, if events are out of sequence or if time frames for activities are different.
  - ☐ The control team chief can also inject some messages.
  - ☐ Some controllers, simulators and evaluators have dual assignments, such as responsibility for both evaluation and control functions. (Ideally, these functions would be performed by different personnel. However, this may not be practical for tabletops or locations that do not have a much activity.)
  - ☐ If crowded conditions are anticipated at an action site, consider using innovative techniques to accomplish some functions (such as monitoring the players via a video camera to reduce the number of control/evaluation staff needed at the action site).

☐ Determine the number of control team chiefs needed and:
- ☐ Identify locations that have more than one controller.
- ☐ Designate team chiefs.

☐ Identify the chain of command/organizational control structure and:
- ☐ Examine the organizational structure of exercise action sites. (For example, EOC playing with perhaps that jurisdiction's staging area, special facilities, reception centres, mass care)
- ☐ Designate the reporting structure of controllers and team chiefs to lead controller/assistant lead controllers.

☐ Determine qualifications and experience level needed for controllers, team chiefs and assistant lead controllers, as required, and:
- ☐ Examine the controller, team chief and assistant lead controller positions for level of activity, any anticipated problem areas, type of position (EOC, joint information centre, fire, etc.) and procedure familiarity.
- ☐ Assess the experience level needed for each controller, team chief and assistant lead controller position.
- ☐ Estimate the preparation time required for these positions.

☐ Assess avenues for acquiring controllers, team chiefs and assistant lead controllers, and:
- ☐ Identify individuals from participating organizations, departments and agencies who know organizations and procedures.
- ☐ Identify individuals from neighbouring local jurisdictions and from State, federal and private sector organizations.
- ☐ Examine the budget and estimate expenditures for accessing controllers, team chiefs and assistant lead controllers.

☐ Telephone controllers, team chiefs and assistant lead controllers to assess their availability on the relevant dates, such as controller training, exercise and exercise critique. Confirm with a letter. (Complete calls and letters 30–50 days prior to the exercise.)

- ☐ Determine training required for controllers, team chiefs and assistant lead controllers. Training would cover the following:
  - ☐ Purpose and objectives of the exercise/extent of plays;
  - ☐ Scenario events and timeline;
  - ☐ Message forms and flow of information;
  - ☐ Content of exercise messages;
  - ☐ Accuracy, timeliness and realism of expected responses;
  - ☐ Requirements for coordination with evaluators and other personnel;
  - ☐ Procedures and communications systems for injecting messages;
  - ☐ Procedures for monitoring the sequence of events and message flow;
  - ☐ Procedures for controlling ad hoc exercise inputs and for responding to unplanned or unexpected situations;
  - ☐ Procedures for recording and reporting exercise information;
  - ☐ Procedures for post-exercise debriefings and evaluation.

- ☐ Determine the number of simulators needed. Remember, simulators play organizations and/or individuals not participating in the exercise, such as nursing homes, general public, business and industry, victims, evacuees, etc.
  - ☐ Determine the number of simulations and method per action site:
    - ☐ Face-to-face;
    - ☐ Written;
    - ☐ Telephone;
    - ☐ Video;
    - ☐ Fax;
    - ☐ Computer generated;
    - ☐ Radio;
    - ☐ Advanced simulation techniques.
  - ☐ Identify the number of simulations required per action site and the time frame for those actions.
  - ☐ Identify the number of simulations needed by the communication method.

- ☐ Identify the preparations needed for advanced simulation techniques, including:
  - ☐ Make-up, props for victims/patients;
  - ☐ Newscasts;
  - ☐ Setting up scenes.

- ☐ Identify training needs for simulators:
  - ☐ On plans, procedures and organizational practices;
  - ☐ On where to obtain additional information for questions and/or responses;
  - ☐ On realism required;
  - ☐ On scenario, objectives and the extent of play for their particular simulation.

- ☐ Assess avenues for acquiring simulators and:
  - ☐ Identify individuals from participating organizations, departments and agencies who know organizations and procedures, but are not exercise players.
  - ☐ Identify individuals from neighbouring local jurisdictions and State, federal and private sector organizations.
  - ☐ Examine the budget and estimate expenditures for obtaining simulators and making preparations for advanced simulation techniques.

- ☐ Begin telephoning simulators to assess their availability on the relevant dates, such as simulator training, exercise and exercise critique. Confirm with a letter. (Complete telephone calls and letters at least 30–50 days prior to the exercise.)

- ☐ Begin preparations for simulations (gathering supplies, etc.).

- ☐ Finalize recruitment of controllers/simulators.

- ☐ Identify communications required to support controller/simulator organization for exercise play and for reporting:
  - ☐ Telephone (cellular or landline);
  - ☐ Radio;
  - ☐ Computer (email);
  - ☐ Fax.

- ☐ Establish the process for communications equipment installation and provision of directories for telephone, fax, radio frequencies, etc., to be used for simulations and controller injects.

- ☐ Develop the following procedures for exercise control and simulation:
  - ☐ Reporting systems through chain of command.
  - ☐ Purpose and description of how to read the list of scenario events and implementers.
  - ☐ Problem resolution procedures to include the following:
    - ☐ Addition of ad hoc implementers;
    - ☐ Objective will not be met;
    - ☐ Action site not on track with scenario;
    - ☐ Mechanism to track messages to completion;
    - ☐ Players' use of computers and electronic equipment and how to monitor and obtain this information;
    - ☐ Key event does not occur.
  - ☐ Safety procedures.
  - ☐ Guidelines for emergency call-off.
  - ☐ Assumptions/artificialities.
  - ☐ Rules governing free play (when, how, why).
  - ☐ Interaction procedures between the following groups:
    - ☐ Controllers;
    - ☐ Simulators;

- ☐ Evaluators;
- ☐ Players.

- ☐ Post-exercise debriefing procedures.

☐ Develop reports needed to indicate status of controller/simulated organization:

- ☐ Controller log sheet;
- ☐ Simulator log sheet;
- ☐ Ad hoc implementer form;
- ☐ Scenario events implementer form;
- ☐ Participation/observation comment forms;
- ☐ Key participation comment forms;
- ☐ Routine reports.

☐ Develop control and simulation roles and responsibilities for the following:

- ☐ Lead controller;
- ☐ Assistant lead controllers;
- ☐ Control team chiefs;
- ☐ Controllers;
- ☐ Simulators.

☐ Develop overall management concepts for control and simulation and:

- ☐ Describe overall management structure of the exercise.
- ☐ Describe overall control and simulation structure using organizational chart and chain of command developed previously.

☐ Prepare a letter for participating organizations describing specific objectives and the extent of plays relating to them and the equipment, preparations and resources that would be available for the exercise.

Appendix V

EXAMPLE GUIDE FOR EVALUATORS

The following provides the type of information that the evaluation guidelines would contain at a minimum.

V.1. EXERCISE EVALUATION TEAM STAFFING, RULES AND PROCEDURES

The team chiefs and personnel selected as exercise evaluation team members would be knowledgeable of emergency management and response functions. This knowledge is required to understand ongoing exercise activities and to be able to track them with events in the scenario. In order to meet this need, individuals may be recruited as evaluators from non-participating or participating emergency response organizations.

V.2. EXERCISE OBJECTIVES AND POINTS OF REVIEW

This section identifies the exercise objectives and evaluator checklists. Points of review would be based on the emergency operations plans, policies, procedures, guidelines and checklists.

Prior to the exercise, all exercise evaluation documents would be appended to the plan. They may be organized by site location, by function, or by any other method as determined by the evaluation team.

V.3. EXERCISE EVALUATION TEAM STAFF RESPONSIBILITIES

This section identifies the responsibilities of the lead evaluator evaluation team chiefs as well as those of the individual evaluators.

Prior to the exercise, all exercise evaluation personnel would be familiar with this evaluation plan, the exercise plan, the exercise scenario and the control plan. They also would be familiar with the exercise scenario events, especially those to be injected into play at their assigned location, and any others from other locations that will impact play at their location.

V.4. LEAD EVALUATOR/ASSISTANTS/TEAM CHIEF RESPONSIBILITIES

The lead evaluator and team chiefs are responsible for managing and directing all evaluation functions during the conduct of the exercise. They may be assisted in this function by one or more individuals. Specifically, their responsibilities include:

- Participating in the exercise design team (lead evaluator);
- Analysing and assessing the exercise plan to determine an appropriate evaluation strategy (locations of evaluation, number of evaluations required, roles and responsibilities, etc.);
- Developing and disseminating the exercise evaluation plan;
- Establishing evaluator communications systems and information support mechanisms;
- Designing and developing the evaluation organization and chain of command;
- Defining the roles and responsibilities of the exercise evaluation team, including evaluation team chiefs and evaluators;
- Developing policies, guidelines and procedures for implementing the exercise evaluation plan;
- Developing the administrative and logistical systems needed for reporting, problem resolution, and safety and site preparation for both participating and evaluation organizations;
- Determining the qualifications and experience level of evaluators needed and identifying avenues for acquiring them;

— Designing and developing training for the exercise evaluators;
— Developing procedures for debriefing of players and the exercise evaluation team;
— Managing and coordinating activities of the exercise evaluator team during the exercise to ensure that exercise play achieves its objectives;
— Monitoring exercise progress and making decisions regarding any deviations or significant changes to the scenario caused by unexpected developments in the course of play;
— Coordinating any required modifications to the scenario and supporting event implementers with the appropriate exercise evaluators;
— Conducting debriefing of exercise evaluation team;
— Providing observations for input to the exercise evaluation using the key player observation and comment form;
— Completing routine reports to log exercise events and any special reports, as necessary;
— Conducting control and simulation debriefings for subordinate controllers/simulators;
— Chairing the post-exercise critique session at own location;
— Attending evaluation team debriefings.

V.5. INDIVIDUAL EVALUATOR RESPONSIBILITIES

Each evaluator is responsible to the evaluation team chief at his/her assigned location to assist in monitoring and facilitating exercise play. Specifically, individual evaluator responsibilities include:

— Reviewing evaluation plan and control plan materials and attending evaluator training;
— Performing duties under the management of the evaluation team chief at the assigned location;
— Observing assigned objectives;
— Monitoring player actions and assisting the evaluation team chief and other exercise control team members in tracking exercise events;
— Reporting to the evaluation team chief any problems or issues that may arise concerning control, including deviations to the scenario or exercise artificialities that may interfere with exercise realism or exercise progress, and recording these problems in the evaluator log;
— Providing observations using the key player observation and comment form for input to the exercise evaluation;
— Attending the end-of-exercise participant debriefings/critiques and any evaluator debriefings as instructed by the evaluation team chief;
— Reviewing simulator materials and attend training;
— Performing duties under the management of the [identify title of person] at the assigned location;
— Answering (if allowed) enquiries from players and individuals for general information or information concerning scenario events already injected into play and recording each of these enquiries in a log;
— Recording actions and/or decisions on tactical maps, situation status boards, resource status boards and logs;
— Assisting controllers in monitoring the flow of the exercise and completion of scenario events;
— Informing the evaluation team chief of possible deviations from the scenario and expected actions;
— Recording observations using the evaluator checklists and points of review, and completing summary forms for input to the exercise evaluation report.

V.6. EXERCISE EVALUATION TEAM PROCEDURES

This section, if necessary, describes pre-exercise procedures as well as procedures during the exercise for the exercise evaluation team. It also describes how the exercise evaluation team will interact with other participants. These are procedures that exercise evaluation team members will follow to fulfil their responsibilities.

Pre-exercise procedures

Once the evaluator has completed training, he/she would continue to review the primary documents for the location at which he/she will be stationed as well as the evaluation report forms. This will give the evaluator more familiarity with the many systems, procedures, scenarios and evaluation checklists that will be used.

Evaluation personnel would be in place at their assigned location at a designated time and be prepared to initiate exercise activities at that location, as required. The lead evaluator will establish communications with the evaluator team chief at the primary exercise locations. During this communication, coordination and/or special instructions related to the exercise will occur and/or be conveyed.

Reporting procedures

In this section, an explanation of each evaluator information form and the procedures used to complete the forms would be completed and submitted after the exercise. In addition, a description of the scenario format and its use by evaluators would be presented.

V.7. EXERCISE EVALUATION TEAM TRAINING

As a minimum, all personnel would receive an orientation briefing and handout materials that cover the exercise plan, including scenario, objectives, procedures and ground rules. Training may be provided by exercise design team members or by outside sources.

For complex exercises, a tabletop activity could be conducted to help familiarize participants with their roles and responsibilities, as well as related plans, procedures and policies.

Evaluators would receive additional training, which may include EOC operations, the incident command system, and all exercise control plan elements. Training would emphasize the roles and responsibilities of both the control and evaluation teams, as well as the functional interaction between the two. In general, evaluators would be thoroughly familiar with the following:

- Purpose and objectives of the exercise;
- Scenario events and scenario timeline;
- Message forms and flow of information;
- Content of exercise messages;
- Requirements for coordination with controllers and other personnel;
- Procedures for monitoring and tracking player actions;
- Procedures for recording observation of player actions;
- Procedures for reacting to player enquiries;
- Procedures for notifying the evaluation team chief or lead controller of problems and exercise deviations;
- Exercise objectives and points of review.

In this section, the exercise objectives and evaluator checklists would be identified. Points of review would be based on the emergency operations plans, policies, procedures, guidelines and checklists.

Prior to the exercise, all exercise evaluation documents would be appended to the plan. These may be organized according to site location, function, or any other parameter, as determined by the evaluation team.

Support for the evaluation team

This section establishes and defines the communications structure required to support the exercise evaluation team during the conduct of the exercise. It describes the communications capabilities required at, and between, each of the action sites and between evaluators and other staff and how those capabilities will be used. It also delineates responsibilities for accomplishing communications tasks, including the installation of additional communications capability to support evaluation.

Logistical/administrative support

Areas to consider when developing logistical/administrative support for the exercise evaluation team includes provision of the following:

- Administrative support at exercise locations/action sites for evaluators;
- Personnel to assist with pre-exercise training registration, training and packaging of training materials;
- Directions to facilities for the evaluator assignment(s).

Site preparation/support

It is important to ensure that all site preparation activities have been completed. Sites or facilities not properly prepared may skew the evaluation results and prevent identified objectives from being achieved. Evaluators and controllers would work together on reviewing scenario requirements and conduct reviews jointly.

Appendix VI

EXAMPLE GUIDE FOR PLAYERS

The player guides used during the player briefings/orientations and identifies the scope, concept of play, key exercise assumptions, artificialities and simulations of the exercise. It provides the exercise players with the basic information needed to participate. The guide establishes the scenario narrative consisting of background information leading to the start of the exercise and other information to maintain exercise flow.

The guide provides the exercise players with information required to participate effectively in the exercise. This information is also discussed at the player briefings/orientations conducted prior to the start of exercise play. The players are free to ask questions concerning their roles and responsibilities and the rules of exercise play.

Training players on the guide would include treatment of the following items;

- The scope and concept of play;
- Key exercise assumptions, artificialities and simulations;
- Message preparation instructions;
- Safety and security.

Players would be given a schedule indicating where they need to be and the expected time. Time would be allocated for players to check out the equipment and prepare for any events requiring preparation. Exercise play may end before originally designated if the exercise director, lead controller and evaluation team leader determine that all objectives and performance criteria (anticipated actions) have been sufficiently addressed that evaluators can complete their assessments.

VI.1. CONCEPT OF PLAY

Concept of play provides players with the parameters of the exercise. Examples include:

- EOC operators may need to be prepositioned before the start of the exercise.
- Players will not be allowed to bring any additional equipment into the exercise that they do not normally carry.

VI.2. EXERCISE ASSUMPTIONS

The following list of assumptions would be modified to meet specific exercise criteria.

- All participating agencies, departments and organizations have in-place established emergency management plans, annexes and procedures.
- These plans, annexes and procedures contain mitigation, response and recovery elements.
- Exercise players will respond in accordance with the existing plans, procedures and policies.
- In the absence of applicable plans, procedures, or policies, players will be expected to apply individual and/or team initiative to satisfy response requirements.
- A multi-agency response to an emergency situation will be required to protect the community.
- To ensure effective response, EOC coordination of response activities will be required.

VI.3. EXERCISE ARTIFICIALITIES

It is recognized that certain artificialities and constraints detract from exercise realism. However, exercise players have to accept artificialities as a means of facilitating the accomplishment of the

exercise objectives and the performance criteria. Additional artificialities can be added, depending on the exercise. It would be noted that:

- The exercise will be played in real time with the exception of the EOC being fully activated and staffed at the start of the exercise.
- Many of the alert, notification and initial activation activities will not be a part of the exercise.
- External organizations which are not participating will be designated as 'arrived-on-scene' without further play required.

Simulation during this functional exercise is required to compensate for non-participating organizations, individuals and field units that would actually be deployed in a real world response. Although simulations may detract from exercise realism, the simulated incidents (messages from and to simulated entities) provide the means to facilitate exercise play and provide for the testing of exercise objectives and the performance criteria.

All persons, agencies, response units, citizens of the community and higher levels of government will be represented by the exercise control/simulation team. When players determine the need to deploy, recall, or otherwise task any resources, they would follow existing procedures and contact the appropriate individual(s) on the control and simulation team. As the exercise is being played in areal time environment, the control/simulation team will advise the players of information such as when the resources arrive on-site, the situation found upon their arrival, and so on.

VI.4. SCENARIO NARRATIVE

This section includes meteorological information and all relevant background information that would be available to the exercise players at the start of the exercise. Scenario narratives would be reviewed to ensure criteria scenario information is not inadvertently disseminated, which may affect the evaluation of the exercise.

VI.5. PLAYER PROCEDURES AND RESPONSIBILITIES

It is necessary to describe how the exercise will be conducted, including player procedures for beginning the exercise and ensuring play continues. This would include the specific roles and responsibilities of the exercise players, their interaction with the control/simulation team and the evaluation team, and procedures for dealing with any problems which may arise during the exercise.

VI.6. SAFETY AND SECURITY

It is necessary to describe the safety procedures, including safety concerns and point of contact on safety issues. An overview would be provided of security measures such as access control, site restrictions, badge procedures and incident reporting related to the exercise participants. Use of "This is an Exercise" at the beginning and end of written messages, voice communications over radios and telephones, etc., is also permissible. Calling a temporary STOP to an exercise would be discussed in detail and the process used to re-start an exercise once the situation that caused the stop has been rectified.

VI.7. COMMUNICATIONS

An overview of communications and information systems would be provided, including instructions for all players and information system personnel concerning the preparation, transmission and handling of voice and recorded communications and traffic generated by the players. Reference to the exercise communications directory would also be made.

VI.8. REPORTING

The data produced by players (e.g. staff duty logs, staff officer action logs/reports, minutes from staff meetings and telephone conversation records) would be discussed. Player responsibilities in the evaluation process would also be discussed (e.g. players are complete exercise evaluation forms (narrative summary) to record their comments about any action, event, strength, or weakness that was observed during the exercise, or if they are asked to comment on selected areas of exercise planning, execution, training, etc.).

VI.9. ADMINISTRATIVE SYSTEMS

The support provided to players such as copying, word processing, office supplies and chart paper would be discussed. The set-up of the room to conduct the functional exercise, including name tags, plans, standard operating procedures, chart paper, office supplies, audio-visual equipment, and refreshments for participants, etc., would also be discussed.

Appendix VII

EXAMPLE GUIDE FOR FACILITATORS

Once the facilitator(s) has been selected, the following table lists the activities which will aid the facilitator in preparing to assist the exercise management committee in pre-planning the exercise, executing the various aspects of the exercise programme plan and finally assessing the results of the exercise.

TABLE VII.1. FACILITATOR PRE-PLANNING CHECKLIST

ACTIVITY/ACTION	COMPLETED
Facilitator is familiar with the evaluators, controllers and players' guides (these guides are useful in facilitating exercise programme requirements to be completed)	
Create a facilitator's tool kit, to include a checklist of equipment required for facilitation activities, i.e. computer, projector, flipchart material, markers, room set-up and design, speakers/microphones, PowerPoint presentation, handouts, etc.	
Identify and train the facilitator's team prior to any activity to ensure an adequate level of understanding of the facilitator's role and responsibilities	
Exercise management committee and lead member/point of contact identified	
Exercise pre-planning meeting established, to include location, time, key member participants	
Roles and responsibilities of each participant organization identified	
Exercise goals and objectives developed, with each organization developing specific a sub-set for use in evaluation	
Establish specific scenarios and event master listing for the exercise, ensuring that all participating organizations are treated fairly	

TABLE VII.1. FACILITATOR PRE-PLANNING CHECKLIST (cont.)

ACTIVITY/ACTION	COMPLETED
Be familiar with the different types of exercise, their purpose and the processing which they are to be conducted	
Ensure that exercise play is recorded and that the flow of the exercise progresses without being derailed by participants/controllers or evaluators	
Ensure exercise evaluations are being conducted and that the results can be reported during after action follow-up meetings	
Coordinate follow-up meetings to discuss exercise feedback, evaluation results and the reporting of changes/actions taken as a result of the exercise	
Conduct a facilitator(s) review after the exercise review to determine which facilitation techniques worked and those that did not and why, and identify any improvements for the future	

Appendix VIII

EXAMPLE OF EVALUATORS WORKSHEET AND NOTES

The evaluator's worksheet would be consistent among all organization involved in the exercise. The following is an example of a worksheet; modifications would be made to accommodate additional information, as required by exercise designers. Appendix II provided a generic list of objectives that could be used in a worksheet, the example below illustrates an objective and required performance criteria.

TABLE VIII.1. EXAMPLE OF EVALUATOR'S WORKSHEET

EXERCISE _____ WORKSHEET

Organization Evaluated: _____ Date: _____

Evaluator: _____ Location: _____

Objective #: __ Description: _____

Performance Criteria: _____

_____

Points of Review: Answer the following questions with:
Y = Yes, N = No, N/A = Not Applicable or N/O = Not Observed

[Y] [N] [N/A] [N/O]

1. _____

2. _____

3. _____

Narrative:

Worksheet ___ of ___

TABLE VIII.2. EXAMPLE OF COMPLETED EVALUATOR'S WORKSHEET.

Example of completed worksheet:

EXERCISE "XXXX" WORKSHEET

Organization Evaluated: National Power Company **Date:** xx/xx/20xx

Evaluator: xx Location: EOC

Objective #1 Description: Demonstrate efficient and effective notification and alerting procedures and methods.

Performance Criteria: Once the initial call is received in the EOC, operators will follow designated notification procedures in contacting responsible organizations and personnel within 10 minutes of initial call.

Points of Review: Answer the following questions with:
Y = Yes, N = No, N/A = Not Applicable or N/O = Not Observed

[Y] [N] [N/A] [N/O]

1. Did the operator record all information from caller concerning the emergency?

2. Did the operator follow the emergency notification standard operating procedure to contact responsible organizations and personnel?

3. Were notifications conducted within the designated time (10 minutes)?

Narrative: Operator could not find the standard operating procedure immediately, which prevented notification within the allotted time.

Worksheet 1 of 1

Appendix IX

TEMPLATES FOR PLANNING CONSIDERATIONS FOR EXERCISE SUPPORT

Italicized references to section numbers in this Appendix refer to the guide on PREPARATION, CONDUCT AND EVALUATION OF EXERCISESFOR NUCLEAR MATERIAL TRANSPORT SECURITY.

Examples of some input fields for different types of exercise are given at the end of this Appendix.

1. Design

→ Section 2.3 (TYPES OF EXERCISE)

Type of exercise:

☐ Tabletop Exercise

☐ Game or Simulation

☐ Field Exercise (☐ Partial Scale / ☐ Full Scale)

Topic of Exercise: _____

Date of Exercise Conduct: _____

Name of Exercise: _____

Location of the Exercise: _____

2. Timelines and Milestones

→ Section 2 (PROCESS OVERVIEW AND MANAGEMENT)

Initial Planning Meeting:

Suggest 3 months prior to Exercise Conduct date for Discussion based exercises.
Suggest 6 months prior to Exercise Conduct date for Operations based exercises.

Mid-term Planning Meeting:

Not required for Discussion based exercises. Suggest 3 months prior to Exercise Conduct date for Operations based exercises.

Final Planning Meeting:

Suggest 1 month to 2 weeks prior to Exercise Conduct date for both Discussion based and Operations based exercises.

After Action Meeting:

Suggest 45–60 days past Exercise Conduct date for both Discussion based and Operations based exercises.

3. Purposes

→ Section 5.1 (EXERCISE PURPOSES)

Goals of the exercise:

_____

_____

_____

Purpose statement: ("The purpose of the exercise is to…")

_____

_____

_____

_____

4. Scope

→ Section 5.2 (EXERCISE SCOPE)

Scope of the exercise includes:

_____

_____

_____

Type of event/threat/emergency:

_____

_____

_____

Core capabilities to be tested:

_____

_____

_____

5. Objectives

→ Section 5.3 (EXERCISE OBJECTIVES)

_____

_____

_____

_____

_____

6. Major Participating Agencies/Organizations

Types/levels of personnel that may be needed:

☐ Policy making (elected officials, chief operation officers, department heads)
☐ Coordination (managers, emergency centre representatives, department deputies)
☐ Operations (field personnel, headquarters staff level)
☐ Public representatives (media, public information officers, general public)

☐ _____

Observers: _____

_____

Supporting Agencies/Departments:

- ☐ Competent Authority (all agencies comprising the Competent Authority)
- ☐ National Crisis Coordination/Management Group
- ☐ Emergency Management
- ☐ National Security Services
- ☐ Intelligence Services
- ☐ Department/Ministry of the Interior
- ☐ Department/Ministry of Defence
- ☐ Department/Ministry of Justice
- ☐ Department/Ministry of Health
- ☐ Environment and/or Energy Department
- ☐ Transportation Regulatory Authority (for the used mode of transport)
- ☐ State Security Advisor
- ☐ _____
- ☐ _____

Law Enforcement and Response Forces:

- ☐ National Police
- ☐ Provincial/Regional Police
- ☐ Local Police
- ☐ Port Authority/Modal Police (e.g. Coastguard)
- ☐ Explosive Ordnance Disposal Squad
- ☐ _____
- ☐ _____

Fire/Emergency Medical Services:

- ☐ Emergency Services (fire, medical, etc.)
- ☐ Hazardous Materials Response Team
- ☐ _____
- ☐ _____

Industry:

- ☐ Shipper
  - ☐ Security Manager
  - ☐ Emergency Manager
  - ☐ Shipping/Packaging/Logistics Manager
  - ☐ Health Physics/Safety
  - ☐ _____
- ☐ Carrier
  - ☐ _____
- ☐ Receiver
- ☐ _____
- ☐ _____
- ☐ _____

Others:

- ☐ Transport Control Centre Personnel
- ☐ Facility Manager of the Site of Exercise
- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____

7. Scenario Development Worksheet

→ Section 5 (DEVELOPING THE EXERCISE SCENARIO)

Scenario will be…☐ presented all at once.☐ given to the players incrementally.
Scenario presentation will…☐ involve multi-media.☐ need computer access.

EVENT INFORMATION:

Where is it? _____

What time/date? _____

Weather/environmental factors: _____

What is the event? _____

_____

What is the threat (insider, DBT, etc.)? _____

_____

What has happened so far? _____

_____

_____

What has been done about it so far? _____

_____

_____

Any prior intelligence? _____

_____

Other factors that would affect procedures (political, media, etc.): _____

_____

How do players find out about it? _____

_____

Expected actions: _____

_____

TRANSPORT INFORMATION:

Mode of transport: _____

Origin, destination, route: _____

_____

Nature and category of nuclear material and packaging type: _____

_____

Shipment characteristics (conveyances, guards/escorts, other vehicles, physical protection measures):

_____

_____

8. Exercise Documentation Checklist

For the content of the documentation, see Section 7 (DEVELOPING THE EXERCISE INFORMATION) and Section 8 (DEVELOPING THE GUIDE FOR CONTROLLERS, FACILITATORS AND EVALUATORS).

- ☐ Exercice Invitation
- ☐ Exercice Plan
- ☐ Situation Manuel
- ☐ Intelligence Documents
- ☐ Transport Security Plan (TSP)
- ☐ Additional Reference Materials (such as plans, policies, material information sheets, etc. and a few copies available)
- ☐ _____

- ☐ Presentation
- ☐ Facilitator Guide
- ☐ Controller/Evaluator Handbook
- ☐ Exercise Evaluation Guides
- ☐ After Action Report (AAR)
- ☐ Improvement Plan (IP)
- ☐ _____
- ☐ _____
- ☐ _____

9. Logistics Checklist

This checklist (for reference only) is based on experiences and does not claim to be comprehensive.

Room (Tabletop/Games/Simulations):

- ☐ Suitable room(s) (to allow for approximately 4 or 5 tables, each table seating 8–10 participants or a large 'U' shape configuration seating 40. This will also allow for 40–60 observers.)
- ☐ _____

Exercise Site (Field exercises):

- ☐ Suitable location for the layout of the shipment and deployment of response forces
- ☐ _____

Equipment:

- ☐ Projector and projection screen for presentations/videos or other types of media
- ☐ Sound amplification system (possibly including wireless microphones for a moderator/facilitator and participants)
- ☐ Computers and/or network access
- ☐ Tables and comfortable chairs

Field Exercise Considerations:

- ☐ Safety and security personnel for the exercise location
- ☐ Communications and exercise support control (radios, telephones, etc.)
- ☐ Simulators (blanks, explosives, etc.)
- ☐ _____
- ☐ _____
- ☐ _____

Additional Considerations:

- ☐ Name tags and/or table tents
- ☐ Writing utensils, notepads, easels
- ☐ Food and/or refreshments
- ☐ Registration table and staff
- ☐ Restrooms available
- ☐ Security of facility
- ☐ Ample parking adjacent to facility
- ☐ Access to public transportation
- ☐ _____

Appendix X

EXAMPLE DATA FOR A TABLETOP EXERCISE ON THE COMMAND LEVEL RESPONSE

These example data are given for reference only.

Design of Exercise

Type of exercise:	TTX
Topic of exercise:	Command level response

Purposes

Goals of exercise:	To evaluate the command level response to a nuclear security event
Purpose statement:	To test command level response elements — To test command and coordination elements of a response

Scope

Scope:	Multiple agency response on the command level
Type of event/threat/emergency:	Nuclear security event of attempted unauthorized removal of nuclear material during transport
Core capabilities to be tested:	Roles and responsibilities of involved organizations and agencies

Objectives

- To receive, analyse and disseminate information to relevant stakeholders;
- To demonstrate the national command level response to a nuclear material transport security event;
- To evaluate interagency coordination and cooperation on the command level.

Appendix XI

EXAMPLE DATA FOR A TABLETOP EXERCISE ON THE TRANSPORT SECURITY PLAN AND RESPONSE

These example data are given for reference only.

Design of Exercise

Type of exercise:	TTX
Topic of exercise:	TSP and response

Purpose

Goals of the exercise:	To validate that the physical protection measures contained in [TSP identification] provide the intended level of protection against unauthorized removal of nuclear material
Purpose statement:	To validate the [TSP identification] and an associated response to an attempted unauthorized removal of nuclear material

Scope

Scope:	To evaluate the provisions of the TSP
Type of event/threat/emergency:	Nuclear security event of attempted unauthorized removal (theft)
Core capabilities to be tested:	Roles and responsibilities of involved organizations (shipper, carrier, government agencies, etc.) and key personnel — Centre, response agencies, etc.) and other key personnel

Objectives

- To validate the TSP and the response to an unauthorized removal of the nuclear material;
- To receive, analyse and disseminate information to relevant stakeholders;
- To demonstrate the national response to a nuclear material transport security event;
- To evaluate interagency coordination and cooperation in support of a nuclear material transport security event;
- To demonstrate the relationships and interactions between the competent authority, other national organizations, shipper and carrier.

Appendix XII

EXAMPLE DATA FOR A FIELD EXERCISE OF RESPONSE TO AN ATTEMPTED UNAUTHORIZED REMOVAL OF NUCLEAR MATERIAL DURING TRANSPORT

These example data are given for reference only.

Design of Exercise

Type of exercise:	Field exercise (partial scale)
Topic of exercise:	Response to an attempted unauthorized removal of nuclear material during transport

Purpose

Goals of the exercise:	To evaluate the State's response to a nuclear security event involving the unauthorized removal of nuclear material during transport
Purpose statement:	To test response elements and their capabilities in the event of an attempted unauthorized removal of nuclear material during transport To test communication, command and coordination elements of response

Scope

Scope:	Multiple agency response Inter- and intra-agency communication, command and coordination capabilities
Type of event/threat/emergency:	Nuclear security event of attempted unauthorized removal (theft)
Core capabilities to be tested:	Roles, responsibilities and capabilities of involved organizations (shipper, carrier, transport control centre, response agencies, etc.) and other key personnel

Objectives

- To demonstrate the response to an attempted unauthorized removal of the nuclear material during transport;
- To evaluate interagency coordination and cooperation in support of a response to a nuclear material transport security event;
- To demonstrate the deployment of response resources in support of a nuclear material transport security event;
- To receive, analyse and disseminate information to relevant stakeholders;
- To demonstrate the relationships and interactions among the competent authority, other national organizations, shipper and carrier.

Appendix XIII

EXERCISE PLANNING PROCESS

"Planning is the art and science of envisioning a desired future and laying out the effective ways of bringing it about." Ref. [6-7].

Like any other training event, there needs to be deliberate planning to ensure the success of the event. Exercises are no different. The size and complexity of the evolution determine the level of planning necessary to ensure success. Elements that dictate the complexity will include the scope, type, and duration of the exercise, as well as the number of participating agencies, seniority of the involved stakeholders, and public perception of the exercise.

This guide covers all the necessary elements needed to plan an exercise. However, as the sponsoring agency works through the planning process, it is necessary to effectively communicate the elements in the planning process. This is typically done through the use of meetings or planning conferences. Typical meetings and conferences in support of exercises are:

— Concept and objectives meeting;
— Initial planning conference;
— Scenario development meeting;
— Mid-planning meeting;
— MSEL conference;
— Final planning conference (FPC).

The need for, and the size and duration of the above mentioned meetings/conferences again depends on the complexity of the exercise, the familiarity of all the participating agencies and the timeline.

XIII.1. CONCEPT AND OBJECTIVES MEETING

For information on concept and objectives meetings, please refer to Page 3-4 of Ref. [7].

XIII.2. INITIAL PLANNING CONFERENCE

This meeting is one of the most important. It is during this meeting that the foundation for exercise development is laid out. The purpose of this meeting is to determine the objectives, levels of participation, and scenario variables of each participating agency, as well as to gain concurrence from the exercise planning team on the scope, design requirements and conditions.

Points that would be covered during this meeting include:

— Ensuring objectives are clearly defined and measurable.
— Incorporating the following:

  - Response and emergency operating plans and/or relevant agency standard operating procedures;
  - Local issues, concerns, or sensitivities;
  - A 'teamwork' approach.

— Exercise design teams.
— Developing a planning schedule.

In an effort to make this meeting as productive as possible, it is imperative to ensure that all the attendees are properly informed. A common practice to help facilitate the necessary communication of information that will help make this meeting more efficient is to send 'read-ahead' documents, such as

- Concept and objectives papers.
- An agenda.
- A briefing to present an overview of the exercise to the planning team, including:
    - Purpose;
    - Goals;
    - Objectives; and
    - Narrative.

During the meeting, the topics that need to be discussed, agreed upon and require actions to take are as follows:

- Clearly defined, achievable and measurable objectives;
- Exercise narrative;
- Identifying major events;
- Identifying scenario variables (e.g. threat scenario, number of casualties, venue);
- Providing details of those agencies participating;
- Identifying and recruiting subject matter experts and facilitators;
- Assigning responsibility for exercise document development and presentations/briefings;
- Acquiring all source documents (e.g. policies, plans, procedures) needed to draft exercise documents and presentations;
- Identifying and assigning responsibility for logistical issues (e.g. registration, badges, invitations);
- Establishing dates for completion of action items and tasks;
- Developing a planning schedule;
- Identifying critical tasks for the next conference.

As with any effective meeting, it is important that there is follow-up in order to document and communicate the next steps to all stakeholders. The minutes taken at the initial planning conference would be prepared and disseminated among planning team members within four (4) working days of conference conclusion. Direct and continual contact would be made between all members of the exercise planning team regarding outstanding information and the logistics for conducting additional planning conferences and the exercise itself.

XIII.3. SCENARIO DEVELOPMENT MEETING

This meeting is designed to bring together all the necessary planners that would be involved in developing, validating and implementing the scenario of the exercise. The level of formality and participation is dependent upon the complexity of the exercise and the direction of the lead exercise planner. It is during this meeting that the scenario is drafted, that there is concurrence that the scenario will support the exercise objectives and that it is within the scope and abilities of the exercise participants.

A final scenario may require multiple meetings and extensive collaboration to complete. This meeting is the 'kick-off' to the scenario development process, as noted in Section 5.

XIII.4. MID-PLANNING CONFERENCE

This planning meeting is not required and its need and purpose would be determined by the lead exercise planner. Depending upon the complexity of the issues facing the exercise design team, this meeting affords the lead planner the opportunity to 'check in' officially with his staff and with other identified

stakeholders to receive current status reports on deliverables, action items, problems or other issues that may impact the conduct of the exercise.

XIII.5. MSEL CONFERENCE

This meeting is, like the scenario development meeting, dependent upon the complexity of the exercise. During this meeting, the MSEL is developed and agreed upon by the exercise planners in order to effectively coordinate and synchronize the events with the injects that will drive the play of the exercise. The MSELs will link the simulations to the actions of the participants, with the intention of enhancing the participants' exercise experience.

XIII.6. FINAL PLANNING CONFERENCE

Information on the final planning conference may be found in Ref. [7] and [8].

Appendix XIV

GUIDE FOR EXERCISE SAFETY OFFICERS

The primary purpose of the safety team is to protect all personnel involved in an exercise from any hazard that could cause injury or harm. As simple as this appears, the role of the lead safety officer and the safety officer team can be complex and daunting. The balance between realistic exercise play and associated risks are constantly being scrutinized and mitigated by safety professionals. The following provides advice in developing a safety plan.

The safety plan would identify the lead safety officer and members of the safety officer team. Membership on the safety team would be consistent with the various discipline requirements for the exercise. As an example, if nuclear/radioactive material is to be used during exercise play, a safety officer with an expert background in handling radioactive material would be a member of the team. Another area of concern during functional and field exercises is the use of firearms and firearm simulators. In such a case, a safety officer experienced in the safe handling of firearms and in special firearm configuration for exercise play would be a member of the team.

Although the use of safety officers is primarily for functional and field exercises, it is recommended that any tabletop exercise resulting in a field exercise would have safety officers in attendance. This will help the safety officer team in preparing for the upcoming field exercise events by gaining an understanding of the exercise nuances.

TABLE XIV.1. ASSIGNMENT OF DESIGNATED EXERCISE SAFETY OFFICERS

EXERCISE SAFETY TEAM DISCIPLINES	DESIGNATED INDIVIDUAL
Lead Safety Officer	
Nuclear/Radiation Safety Officer	
Firearms/Tactics Safety Officer	
Exercise Venue/Site Safety Officer	
Transport Safety Officer (air, sea and ground specialists)	
Other(s)	

Total operational safety is an absolute imperative in a full scale exercise. Awareness of safety issues must be uppermost throughout the planning and conduct of the exercise to ensure that safety problems are noted and eliminated. The safety officer team has responsibility for analysing the entire exercise from a safety perspective. The following checklist provides the general requirements for an exercise safety plan.

TABLE XIV.2. EXERCISE SAFETY PLAN CHECLIST

ACTIVITY TO BE COMPLETED	ASSIGNED SAFETY OFFICER	COMPLETED
Each Safety Officer develops discipline specific information for inclusion in the plan		
Prepare a safety briefing for Controllers/Players/Observers/VIPs/Evaluators		
Identify any climbing, tunnelling and confined space activities and prepare safety mitigation procedures		
Examine field locations to assess safety issues		
Prepare 'exercise hold' procedures in the event of a 'real world' emergency		
Ensure Safety Officers are assigned to high risk locations, i.e. tactical play areas		
Ensure that all tactical gear is excluded from 'live fire weapons' or other real world tactical munitions		
Assign Safety Officers to ammunition check procedures to ensure live ammunition is not introduced into exercise play		
Develop weapons handling procedures within the exercise play area(s)		
Brief 'shadow force' personnel on safety issues related to live fire weapons (shadow forces are real world protective forces responsible for perimeter security)		
Assign Safety Officers to venues (play areas) where pyrotechnics will be used and stored		
Implement a Safety Officer identification programme, such as bright coloured vests		
Identify use of specialized tactical devices in advance of the exercise so approvals for use can be issued		
Ensure assembly areas are designated for exercise group		
Each Safety Officer possesses the capability to notify the Exercise Control Centre of any emergency (radio or cell)		

Appendix XV

SPECIAL CONSIDERATIONS FOR OTHER RADIOACTIVE MATERIAL

This guide primarily outlines the use of exercises based on nuclear material, which is based on the concept of the graded approach. Owing to the type, quantity and nature of nuclear material, a State would typically deploy greater security measures and plans to protect it. However, as IAEA NSS No. 9 notes, this would not preclude a State from not conducting transport related exercises for other radioactive material. While radioactive material typically does not require the same level of protection, the reality is that threats to these materials exist, and all organizations associated with designing, protecting and responding to a malicious event need to be aware of their roles and how they interact with other agencies and authorities in order to test the best methods of mitigating the consequences of these malicious events. In some cases, it can be argued that owing to the closeness of the material in the public domain and the quality of typical radioactive material shipments, the probability of a malicious event directed towards radioactive material is higher than that for nuclear material.

XV.1. PURPOSE

As stated previously, exercises involving radioactive material as the target for the malicious actors seeking to steal or sabotage for the purposes of a consequential release would be able to accomplish the same objectives as those listed in Section 2.2. Also, as previously stated, the desired outcome is that the security regime for the radioactive material would be strengthened.

The same goals of validation of the plans, security measures, performance evaluations of the resources assigned to protect the material, training of those responsible for protecting the material, trials of new measures and tactics, as well as practising and improving coordination and interagency interfaces would all be accomplished using exercises based on radioactive material. The key difference could be the amount of funding or resources a State might dedicate, based on its allocation and its analysis of the associated risk, which depends on the perceived consequences and the threat.

XV.2. SCOPE

The scope or scale of an exercise to address malicious threats against radioactive material might be similar to that used for nuclear material. Again, the State would perform the analysis on the basis of allocation of resources and level of competency and capability, as well as on the threat, in order to determine what level of exercise is required.

A State or operator can utilize any of the types of exercise mentioned previously in this guide and based on radioactive material. It would be reasonable to assume that some exercises may be more cost effective and therefore more practical than others on the basis of the target material. For example, owing to a potentially lower consequential release, TTXs, drills and battle boards may be more practical than a full-scale exercise. However, in some international shipments of radioactive material, owing to the complexity and the number of actors involved, a State may determine that a partial or full-scale exercise is warranted.

XV.3. PLANNING

Other planning-matters to consider when using radioactive material for the basis of the scenario would require that the exercise designers consider, in light of the material transported, which organizations and participants to invite. This could be operators and shippers of these types of material, as well as

those possessing a comprehensive understanding of the contingency plans and response plans for these materials as opposed to those for nuclear material.

Appendix XVI

EXAMPLE OF A MASTER SCENARIO EVENT LIST

The master scenario event list (MSEL) provides a sequential means for events to occur throughout the exercise to ensure exercise play develops as intended by the emergency management committee. Although the following master event list example details some activities that could occur during an exercise, the complexity of the master event list is dependent on the emergency management committee and the participating organizations. As an example, the exercise director may feel the necessity to include radio checks among controllers/players and evaluators before the exercise start (Start EX). This annotation may appear as a -:20, indicating that 20 minutes prior to the exercise beginning radio checks are performed.

TABLE XVI.1. EXAMPLE MASTER SCENARIO EVENT LIST

Event Number	Event Time	Message/Action or Data Summary	Comments
1	Start exercise	Message to all Players/Controllers/Evaluators Exercise started	Acknowledgement received from all exercise participants required
2	+:20 (20)	Nuclear material transport is informed that they have been involved in an accident with a civilian vehicle	Transport driver is informed to pull the vehicle over next to a pre-staged vehicle accident
3	+:10 (30)	Transport driver is given an 'injury card' which states he is severely injured and cannot communicate with emergency control centre	Emergency control centre has not received any information at this time referencing the accident
4	+:05 (35)	The emergency control centre is notified by law enforcement that an accident to a nuclear transport has occurred and that immediate aid is required	Emergency control centre should be prepared to answer questions by law enforcement relative to transport contents
5	+:15 (50)	Law enforcement personnel request radioactive monitoring capabilities be dispatched to the scene of the accident	
6	+:15 (65)	Information received from the hospital that the transport driver has died from injuries sustained during the accident	This inject could be given earlier if the emergency control centre personnel are enquiring
7	+:10 (75)	Transport driver's spouse calls the emergency control centre because of a call she received from a relative seeing the accident in the media	
8	+:05 (80)	Media calls the emergency control centre requesting an update on the incident, the driver's condition and any dangers to the general public resulting from the type of material being transported	This event requires a role player

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LIST OF ABBREVATIONS

AAR	after action report
DBT	design basis threat
ENDEX	end of the exercise
EOC	emergency operations centre
EPR	emergency preparedness and response
FPC	final planning conference
IP	improvement plan
MSEL	master scenario event list
NSS	IAEA Nuclear Security Series
POC	point of contact
STARTEX	start of exercise
TCC	transport control centre
TSP	transport security plan
TTX	tabletop exercise
VIP	very important person

IAEA
International Atomic Energy Agency

No. 25

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