

July 13, 2006

MEMORANDUM TO: Roy P. Zimmerman, Director  
Office of Nuclear Security and Incident Response

THRU: Eric J. Leeds, Director  
Division of Preparedness and Response  
Office of Nuclear Security and Incident Response

FROM: Stephen F. LaVie, Sr. Emergency Preparedness Specialist */RA/*  
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Office of Nuclear Security and Incident Response

SUBJECT: FOREIGN TRAVEL TRIP REPORT

A summary of the report of my trip to the International Atomic Energy Agency (IAEA) in Vienna, Austria, is attached. The purpose of this trip was to participate in a consultancy to review the second draft of the *Manual for Extended Response to Radiological Emergencies*. This draft manual is the second in a series of guidance documents for emergency response to non-fuel cycle radiological emergencies. The consultancy was comprised by representatives from five member countries and IAEA staff. The representatives provided comments on the draft document and made recommendations to the IAEA staff. There are no issues that require Commission attention.

Enclosures:  
1. Trip Report  
2. Meeting Attendees  
3. Meeting Agenda

CONTACT: Stephen F. LaVie, NSIR/DPR  
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## **NRC FOREIGN TRIP REPORT**

**Subject:** International Atomic Energy Agency Consultancy Meeting to Review Second Draft of *Manual for Extended Response to Radiological Emergencies*

**Dates of Travel and Countries/Organizations Visited:** June 12-16, 2006, International Atomic Energy Agency (IAEA), Vienna, Austria

**Author, Title, and Agency Affiliation:** Stephen F. LaVie, Senior Emergency Preparedness Specialist, Division of Preparedness and Response, Office of Nuclear Security and Incident Response

**Sensitivity:** Not sensitive

**Background/Purpose:** The IAEA Division of Radiation, Transport & Waste Safety (NSRW) has been pursuing the development of a set of manuals that will provide practical guidance for emergency services personnel responding to incidents that involve accidental exposure to radiation from uncontrolled dangerous sources, misuse of dangerous industrial and medical sources, transport accidents, malicious acts (or threats thereof), or serious overexposures. The guidance will not address the response to emergencies involving facilities or operations for which specific emergency arrangements should have been developed in accordance with IAEA Safety Standard GS-R-2 (e.g., nuclear fuel cycle facilities). Within the context of these manuals, which will be published as part of the IAEA Emergency Preparedness and Response Series, a "dangerous source" is radioactive material that can result in severe deterministic effects (i.e., fatal, life-threatening, permanent injury that reduces the quality of life) if not under control. The manuals are to provide guidance in the form of action guides, instructions, and data that can be applied by a member state to build a basic capability to respond to a radiological emergency. The guidance could be adapted by the member state to fit its organizational arrangements, language, terminology, concept of operations, and capabilities.

The IAEA has divided the emergency response into four phases:

- A first response phase that addresses the response during the first few hours of a radiological emergency. The response during this phase involves local emergency services personnel who initially respond to the incident scene ("first responders") and regional or national officials who support this early response. The concept of planning for the first response phase assumes that the first responders will not have the expertise or equipment to fully deal with an emergency involving a radiological hazard. As such, the first response phase can be characterized by its lack of information regarding the specific hazard, quantity and type of material involved, extent of contamination, and the impact on humans and the environment. First responders will take all practicable and appropriate action to save lives, protect themselves, prevent serious injury including deterministic health effects, and minimize consequences by securing and isolating the incident scene.
- The second phase, known as the extended activation phase, runs from a short time after the event occurs (about four hours) to days or weeks depending on the extent of

the incident. The focus of the response in this phase is on assessing the nuclear or radiological hazard and implementing actions, based on the assessment, to preserve life, prevent serious injury including deterministic effects, and prevent the event from becoming catastrophic. In this phase, regional and national response capabilities would likely be deployed. International support may be obtained via the IAEA.

- In the third phase, known as the “recovery phase,” normal work practices and controls are implemented to move from an emergency response mode to recovery from the effects of the emergency. Activities in this phase could include recovery of sources and other radioactive materials, stabilization and/or remediation of damage and contamination, disposal of wastes, investigations of causes and lessons-learned, and characterization of human and environmental impacts.
- In the fourth phase, known as “return to normal,” interventions to control the radiological impacts of the incident are terminated or made permanent and long-term medical follow-up programs are implemented as necessary.

Guidance for the first responder phase is to be provided in the *Manual for First Responders to a Radiological Emergency* which is in the final draft stage and is scheduled to be published in August of 2006. Guidance for the extended response phase is to be provided in the *Manual for Extended Response to Radiological Emergencies*. This second document was the primary subject of the present consultancy.

**Abstract: Summary of Pertinent Points/Issues:** The consultancy, which included participants from Australia, United Kingdom, China, Russia, and United States along with IAEA contractor personnel, reviewed the second working draft of the *Manual for Extended Response to Radiological Emergencies*. In addition, the participants reviewed the concept (but not the content) of a proposed draft radiological assessment handbook. The consultancy developed recommendations for IAEA consideration.

The consultancy recommended that the extended response manual be split into two documents. The first would be focused on organizational implementation of the radiological assessment function (*Manual for Extended Response to Radiological Emergencies*), while the second (*Manual for Radiological Assessment and Control at the Scene of Nuclear Incidents and Emergencies*) would provide the radiological assessment and control team with guidance directed at assessing the radiological hazard and implementing appropriate controls.

The consultancy recommended that the proposed field radiological assessment handbook be published after detailed peer review by radiological assessment and emergency response practitioners.

**Discussion:** The consultancy included representatives from Australia, United Kingdom, China, Russia, and United States along with IAEA contractor personnel. See Enclosure 2 for the consultancy roster. The agenda for the consultancy is provided in Enclosure 3. IAEA staff explained the genesis of the current effort as rooted in the international experience from responses to radiological emergencies that have already occurred. Lessons-learned from these events have shown that the non-radiological consequences may have been exacerbated by the lack of preestablished guidance that was understandable to the public and public officials.

The participants reviewed the following four documents:

- Final draft of *Manual for First Responders to a Radiological Emergency*
- Second draft of *Manual for Extended Response to Radiological Emergencies*
- Draft revision of IAEA-TECDOC-1092, *Generic Procedures for Monitoring in a Nuclear or Radiological Emergency*
- IAEA-TECDOC-1432, *Development of an Extended Framework for Emergency Response Criteria*

As part of the document review, participants were asked to consider five key questions:

1. Does the draft *Manual for Extended Response to Radiological Emergencies* provide the necessary guidance to support the initial extended response?
2. Is the guidance complete and consistent with the first responder manual and with TECDOC-1432?
3. Is the guidance logically presented? Or should it be presented in some other fashion?
4. Should TECDOC-1092 be revised as a handbook companion to the extended response manual?
5. What should be included or removed from TECDOC-1092?

As a result of extensive discussion of these questions, the participants developed consensus recommendations:

- The draft extended response manual does provide the necessary guidance to support the initial extended response (Question 1). However, the participants felt that the document provided too much information, was too focused on radiation protection issues, and lacked plain language definitions of basic radiation terminology.
- The guidance was generally consistent with the first response manual and TECDOC-1432 (Question 2). However, the participants felt that ambiguity in the Command Section concept described in both the first response manual and the extended response manual needs to be addressed. Also, organization charts in the two manuals needed to be made consistent. Differences in stated dose limits for lifesaving actions need to be reconciled.
- The participants were of the opinion that the presentation of the guidance could be improved. In the present form, the extended response manual may not meet the needs of the target audience during an emergency (Question 3). Suggestions included reordering roles on the basis of priority, relocating common items to an appendix, removing Section B, revising action guides for brevity, and providing worksheets to improve flow.

- The proposed radiological assessment handbook should be published (Question 4). However, the participants felt that some of the assessment procedures (e.g., laboratory analyses) were unnecessary in a handbook intended for field use during the extended response phase and should be omitted in the interest reducing handbook size (Question 5). The participants further recommended that a separate consultancy consisting of radiological assessment and emergency response practitioners should be constituted to perform a detailed review of the handbook.

As a result of these discussions, the participants recommended that the extended response manual be split into two documents. The first would be focused on organizational implementation of the radiological assessment function (*Manual for Extended Response to Radiological Emergencies*) while the second, (*Manual for Radiological Assessment and Control at the Scene of Nuclear Incidents and Emergencies*) would provide the radiological assessment and control team with guidance directed at assessment of the radiological hazard and implementation of appropriate controls.

The participants provided recommendations to IAEA on the content of each document as well as a proposed work plan. The major elements of the proposed work plan include:

- The IAEA contractor will complete the work proposed by the consultancy (i.e., splitting the manual and making necessary edits).
- If this work is completed in time, it may be used to support a training program in China scheduled for October 2006. Based upon feedback obtained from the China program, the draft manuals may be modified.
- IAEA will review the proposed radiological assessment handbook and schedule a consultancy by April 2007. Based on feedback obtained from the consultancy the draft manuals and the assessment handbook may be modified.
- The draft manuals and radiological assessment manual will be used in a planned presentation in the Ukraine in September 2007. Based on feedback from the Ukraine activity the document will be modified and submitted for publication in December 2007.

Participation in this consultancy was worthwhile and participation in the international emergency preparedness community should be continued. It is important that the NRC be aware of ongoing actions within the international preparedness community. The United States and the NRC have much to offer other countries as they enhance their nuclear emergency preparedness programs as well as to learn from the programs already in place in other countries.

**Pending Actions/Planned Next Steps for NRC:** The work of this particular consultancy is complete. The NRC was not tasked with any actions at this time. The staff will continue to follow the development of the proposed manuals and the radiological assessment handbook.

**Points for Commission Consideration/Items of Interest:** The IAEA will be considering the consultancy's proposed work scope. There could be a request for NRC support on the tentative April 2007 consultancy to review the proposed radiological assessment handbook. The remaining tasks on the proposed work scope will likely be performed by IAEA contractors.

The IAEA is currently undergoing organizational changes that will combine the emergency preparedness and emergency response functions in a single organizational component.

**CS to review the second draft of the Manual for Extended Response to Radiological  
Emergencies**

ScieSecr.: Mr. T. McKenna  
Technical Assistant: Mr. G. Yuhas  
12 - 16 June 2006  
B0485, IAEA HQ, Vienna, Austria

06CT06513/CS-83

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AGENDA  
**Consultancy to Review Draft Manual for extended response to radiological emergencies**

**2006 12-16 June**

**IAEA, Division of Radiation, Transport & Waste Safety (NSRW)**

**Room B0485**

**Vienna, Austria**

- Monday, 12 June:
- 0830-0900 Participants check-in at Gate 1 Security Office
  - 0900-0930 Introductory remarks by Mr. Thomas McKenna
  - 0930-1000 The Path Forward, Dr. Elena Buglova, Emergency Preparedness and Response Section will describe what is planned for the emergency preparedness products in the next few years.
  - 1000-1200 Consultants are requested to read and review:
    - Final Manual for first responders to a radiological emergency*
    - IAEA-TECDOC-1432, Development of an extended framework for emergency response criteria*
    - Draft Manual for extended response to radiological emergencies*
    - Draft Revision of IAEA-TECDOC-1092, Generic procedures for monitoring in a nuclear or radiological emergency*
  - 1200-1300 Lunch
  - 1300-1700 Continued review of Draft documents
- Tuesday, 13 June:
- 0800-1200 Continued review of Draft documents
  - 1200-1300 Lunch
  - 1300-1700 Continued review of Draft documents
- Wednesday, 14 June
- 0800-1200 Group discussion to answer the following questions:
    1. Does the Draft *Manual for extended response to radiological emergencies* provide the necessary guidance to support the initial extended response?
    2. Is the guidance complete and consistent with the First Response Manual and TECDOC 1432?
    3. Is the guidance logically presented; or should it be presented in some other fashion?
    4. Should TECDOC 1092 be revised as a “handbook companion to the Extended Response Manual?

Enclosure 3

5. What should be included or removed from TECDOC 1092

1200-1300 Lunch

1300-1700 Group develops a short term course of action and decides what each participant can provide within the framework of the Consultancy

Consultants prepare suggested changes and input

Thursday, 15 June

0800-1200 Consultants work on individual inputs

1200-1300 Lunch

1300-1700 Consultants work on individual inputs

Friday, 16 June

0800-1000 Consultants present proposed input to group

1000-1100 Consultants develop conclusions and recommendations

1000-1200 Consultants meet with Tom McKenna and Dr. Buglova to present conclusions and recommendations

1200-1330 Working lunch

1330-1700 Individual contributions

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