D. Degueldre (Bel V), T. Funahashi (JNES), O. Isnard (IRSN), E. Scott de Martinville (IRSN), M. Sogalla (GRS)

Harmonization in emergency preparedness and response

Eurosafé forum. November 8, 2011
Experience feedback on the Fukushima accident
Harmonization in emergency preparedness and response

Content of the presentation

- Introduction
- Experience of European TSOs during the emergency
- Institutional background and international collaboration
- Conditions for emergency preparedness
- Future ETSON actions in the Fukushima emergency situation
  - Participation in the Fukushima NPS post accident management
  - Emergency preparedness
  - Emergency response
- Next ETSON steps in the emergency and response
Harmonization in emergency preparedness and response

Introduction

- Independent initiatives by national nuclear emergency centers
- Difficulties encountered during the emergency situation
  - Obtain relevant and reliable information in the frame of international conventions (CNS or IRS) inadequate for design, operating regime, planned emergency actions
  - Knowing up to date and consistent status of NPS and fuel pools; not consistent, Japanese language
  - All TSOs don’t know in detail the BWR technology
  - New challenges: communication with the public
  - After some delay the difficulties were overcome and TSOs regularly exchanged information and compared their status of understanding (not online interactive)
- TSOs wish to get clear information, to participate in follow up, and to help each other in understanding causes and consequences during the emergency situation
- Seminar in July 2011 and group working for this presentation on emergency and response harmonization
Harmonization in emergency preparedness and response
Experience of European TSOs during the emergency

Modelisation or measures of the release

Modelisation or measures of the meteorological conditions

Geographical data

Modelisation of atmospheric transfers

Evaluation of consequences (doses)
Experience of European TSOs during the emergency Assessment at small scale

Coherency between core degradation scenario and radioactive deposits in the near field are essential for understanding the situation.
Experience of European TSOs during the emergency
Releases to the atmosphere: total release

Assessment consistent between the different institutions

IRSN

Noble Gas (Bq) | 4.5 e+18
Iodine 131 (Bq) | 1.1 e+17
Cesium 137 (Bq) | 1.1 e+16

NISA - JNES

<table>
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<tr>
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<th>Noble Gas (Bq)</th>
<th>Iodine 131 (Bq)</th>
<th>Cesium 137 (Bq)</th>
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<td>1.3 – 1.6 e+17</td>
<td>0.6 – 1.5 e+16</td>
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Release rate of total Iodine

Experience of European TSOs during the emergency
Releases to the atmosphere: total release
Support from Météo France

World scale: ARPEGE model @ 0.5° resolution

Country wide: ECMWF model @ 0.125° resolution

Small scale: AROME model @ 2.5 km resolution
Release to the atmosphere and dispersion of Iodine at Japan scale

11/03/2011 10h00 (Heure locale)

Concentration de l-131 en Becquerel par mètre cube dans l'air (Bq/m³)
Atmospheric dispersion of Iodine at world scale

Concentration en Iode 131 (Bq/m³)
11/03/2011 01h00 (Heure française)

Large part of the contamination was carried toward the sea

March 15-16 radionuclide detected in Canada - US
March 20-21 radionuclide detected in Europe; predictions before measurement
Harmonization in emergency preparedness and response
Experience of European TSOs during the emergency

- Experience of European TSOs during the emergency
  - Some initial delays in receiving data due to overloading of national emergency teams, as well European as Japanese,
  - A larger and direct access to international data such as ECURIE should be possible for recognized technical safety organizations
  - A strong impact by the TSOs to select the right information and to use it towards their national authorities and towards public at large
  - Each country and each international organization is making its own experience feedback and preparing improvements at national and international levels
  - Some cooperation among the emergency teams but could be improved, under several conditions to be described here after
The METI has jurisdiction over nuclear power reactor facility in Japan. NISA has definitive authorities and functions for the safety regulation based on the provisions of the Reactor Regulation Act and the Electricity Business Act. The NSC Japan supervises and audits the safety regulation implemented by the regulatory bodies from the independent perspective. NISA established the JNES as their technical support organization in October, 2003.

JNES is delivering direct support to NISA.
Institutional background and international collaboration: Japanese organization of nuclear emergency preparedness and response

More direct information exchange between safety and radiation protection aspects would improve the efficiency of the emergency response.

NPA (National Police Agency): Disaster Security
FDMA (Fire & Disaster Management Agency): Firefighting and Life-saving
NIR (National Institute of Radiological Sciences): Technical Support

Residents
Evacuation, Sheltering Exposure Measurement etc

EUROSAFE
Towards Convergence of Technical Nuclear Safety Practices in Europe
Institutional background and international collaboration
Emergency preparedness organization in Germany

In this NEP&R organisation, the federal government has no direct access to data from monitoring system.
Institutional background and international collaboration
Nuclear Emergency Preparedness structure in Belgium

In this NEP&R organization, both cases of national and foreign accidents are considered.
Institutional background and international collaboration
French National Emergency organization

Organization with one operator and one national TSO. Emergency decisions are based on separated technical evaluations together with permanent dialogue.
Harmonization in emergency preparedness and response
Institutional background and international collaboration

- Limitations in cooperation during the emergency response
  - Security of the population is a primary responsibility of the state; each national organization is different from the others
  - In case of emergency which may affect it, each national organization demands for full use of its technical and human resources; the nearer the emergency, the stronger the need: no extra means available for the neighbor affected by an accident,
  - Fully trained and exercised professionals could be of help for another country undergoing an accident

- In line with international organizations
  - Review of national arrangements by the EU and IAEA member states
  - Improve the national emergency preparedness and response framework
  - Strengthen the international assistance mechanisms
Harmonization in emergency preparedness and response conditions for emergency preparedness

- Clear allocation of responsibilities and roles at the local, national and international scales
- Sufficient number of skilled and trained professionals for a long duration involvement
- Common methodologies and tools for all stakeholders (state representatives, operators, designers, safety authorities, technical safety organizations, local populations) in the same emergency organization
- Knowledge of the installations in the related domain
- Collect and understand data, evaluate the status of safety functions, evaluate the installation degradation and the radiological consequences
- Anticipate the status at different time scales for emergency management application
- Perform numerous exercises with all stakeholders
Harmonization in emergency preparedness and response
Future ETSON actions in the emergency P&R

- Possible sharing of post accident recovery and management actions with Japanese emergency organizations
  - Evaluation of the contamination status and natural evolution,
  - Participating in evaluating the decontamination actions,
  - Evaluation of the radiation doses for the population,
  - Participation in epidemiological studies,

- Any request from the Japanese organizations will be considered with favorable intentions
Harmonization in emergency preparedness and response
Future ETSON actions in the emergency P&R

- Emergency preparedness
  - Infrastructures and competences development
    - Emergency preparedness organization
    - Training and tutoring in emergency safety and radiological consequences
    - Post accidental consequences and management
    - Emergency exercises preparation and realization
  - Cooperation on emergency preparedness
    - Defining the different items and formats for emergency data exchanges
    - Sharing technical data for nuclear installations
    - Benchmarking the emergency response methodologies and tools
Harmonization in emergency preparedness and response
Future ETSON actions in the emergency P&R

● Emergency preparedness
  – Performing emergency management exercises
    • The best way to progressively harmonize the emergency preparedness and response
    • A committee to organize, define and observe the exercises
    • Develop exercise scenarios (installation, radiological consequences…) under confidential conditions
    • Pilot the exercise to be run by several emergency organizations; observe the response in terms of methodologies and human behavior
    • Evaluate the results of the exercises and elaborate the exercise feedback
    • Compare organizations, methods, tools, redefine training and tutoring
Harmonization in emergency preparedness and response
Future ETSON actions in the emergency P&R

- Emergency response
  - Involve all stakeholders in exercises with stress simulation
  - Develop the capacity to follow an iterative process to cope with any situation and any evolution of the situation
  - Keep up with the competence training and tutoring, with observers during the exercises
  - Diversify the nature and scenarios of emergency management accident
  - Test the capability to support a foreign emergency organization during a situation
Harmonization in emergency preparedness and response
Next ETSON steps in the emergency and response

- Cooperate with Japanese organizations
- Implement the experience feedback on a national and international basis
- Organize emergency exercises to test the existing response capabilities and improve them
- Develop the training and tutoring on emergency management
- ETSON working group to enhance cooperation in emergency management and promote the improvements towards national and international organizations