




The French and European perspectives on Emergency Preparedness & Response

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Outline

1. IRSN the French TSO
2. Post-Fukushima EP&R improvements in France
3. The HERCA/WENRA approach: a tentative to harmonize the Emergency response in Europe




National Framework



Nuclear Outlook

- ▶ 24 Civil Nuclear Sites (58 Nuclear reactors)
- ▶ 10 Defense Nuclear Sites (Air & Naval Bases)
- ▶ 2 Mixed Nuclear Sites
- ▶ 2 Safety Authorities: ASN & ASND
- ▶ 1 TSO: IRSN
- ▶ 4 'big' Operators: Edf, AREVA, CEA, Ministry of Defense



Identity



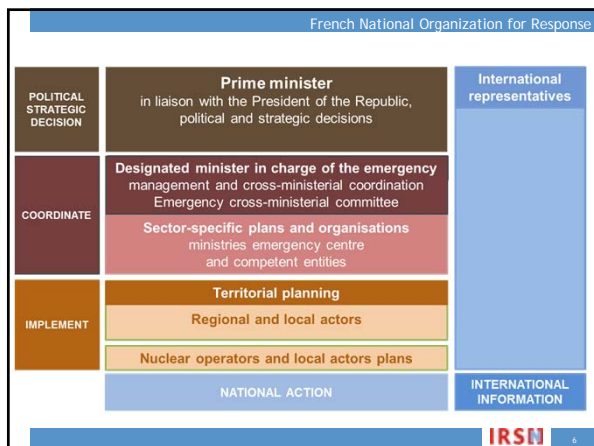
- ▶ A public body with industrial and commercial activities, under the joint supervision of the Minister of State, the Minister of Ecology, Energy, Sustainable Development and Planning, the Minister of the Economy, Industry and Employment, the Minister of Higher Education and Research, the Minister of Defense and the Minister of Health and Sport.
- ▶ Research, assessment and public service missions
- ▶ 1765 employees, including more than 1000 specialists: researchers, Ph.D. students, post-docs and engineers
- ▶ 11 establishments in France, including 3 major sites: Fontenay-aux-Roses, Cadarache and Le Vésinet

IRSN 4

Recent Improvements in France

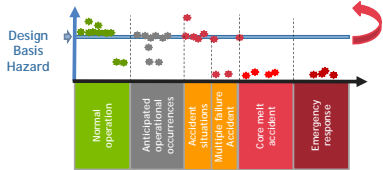
2. The Post-Fukushima EP&R improvements in France

IRSN 5



The FKS accident has pointed out the need to go further:

- To ensure robustness against more severe hazards than the design basis events (= design extension)
- To cope with long-lasting and multi-units accidents induced by extreme hazards



Following EDF "stress tests" it was decided to implement significant additional provisions → The « Hardened Safety Core » concept

A Hardened safety core added to **reinforce the robustness** of the plants against some accidental situations induced by some **extreme natural hazards**
= To be able to face some extreme situations **exceeding the design basis situations studied up to now** → **design extension**

Objective: avoid important releases into the environment and long-lasting contamination



1: reactor cooling system
2: full pool cooling system
3: reactor containment cooling system

FARN

A special force ready for action in less than 24h to rescue and support operations on any NPP site in France.



A force of 300+ men





Deployment in 2 hours






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The HERCA/WENRA approach

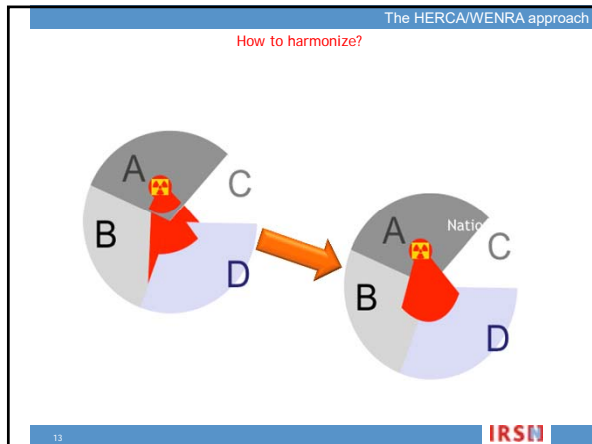
3. The HERCA/WENRA approach:
a tentative to harmonize the Emergency
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IRSN 11

The Nuclear Power Plants in Europe



IRSN 12

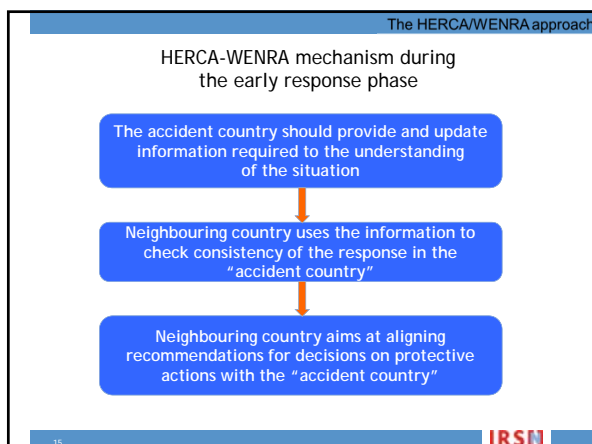


The HERCA/WENRA approach

General principle of the Approach

- The HERCA-WENRA Approach is an incentivizing approach that comprises the necessary mechanisms for countries :
 - to exchange adequate information
 - and to achieve practical and operational solutions on a voluntary basis during an emergency
 - → Leading to a uniform way of dealing with any serious radiological emergency situation, regardless of national border line, hence allowing for coherent and coordinated protective actions.
- HERCA-WENRA approach: a complementary approach to handle such situations temporarily.

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The HERCA/WENRA approach

Particular case of a very severe accident

- A major accident (considering also extreme natural hazard, terrorist attack, ...), with lack of sufficient information may happen in Europe
- Necessity for the Safety Authorities to recommend immediate and consistent protective actions to the relevant national Authorities (consistent with HERCA-WENRA general mechanism), thus the HERCA - WENRA recommends:
 - To enhance mutual understanding and shared knowledge of the neighbouring preparedness and response organizations
 - To prepare evacuation up to 5 km around nuclear power plants, and sheltering and ITB up to 20 km;
 - To define a general strategy in order to be able to extend evacuation up to 20 km and sheltering and ITB up to 100 km;
 - Radiation and nuclear safety regulators should continue to promote compatible response arrangements and protection strategies in Europe Authorities.

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To strengthen the International Technical assessment capability

IRSN promotes the strengthening of the International Technical assessment capability

- - A close cooperation with the US/NRC to reinforce the collaboration in preparedness and response phases
 - Preparation of a bilateral EP&R agreement
- - A commitment to reinforce the ETSO (European TSOs) works on EP&R
- - A support to IAEA regarding the technical assessment in case of an emergency
 - Providing IRSN experts to support IAEA/IEC
 - Technical assistance to the IAEA/IEC (emergency drills...)

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Conclusion

To conclude

Even if Nuclear safety is strong and effective, there is a need to have a sound Emergency Preparedness and Response organization in place

IRSN promotes a continuous improvement of EP&R

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Thank you for your attention

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Fundamental role of IRSN during an emergency

- ① Assess the risks induced by the emergency situation and potential consequences:
 - ▶ Diagnostic & Prognostic of the accident
 - ▶ Diagnostic & Prognostic of the consequences
 - ▶ Use of measurements to characterise the consequence into environment and on people
 - ▶ Adapt the organic environment monitoring mission
- ② Provide a technical expertise and support to public authorities and medical/health organisations
- ③ Be a source of technical and scientific information which support the action of public authorities

IRSN 20

