



## Regulatory Applications of French Operating Experience

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ASN

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Regulatory and Safety Applications of International Safety - Significant Operating Experience*

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### Contents of the presentation

- Context of operating experience feedback
- Advisory committee of experts
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- Regulatory actions after Fukushima accident
- Conclusions

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### Context of operating experience feedback

- French licensees, nuclear industry, medical, research, industry to notify events to ASN
- Events notified according to criteria defined in ASN guides (available on [www.asn.fr](http://www.asn.fr))
- About 100 significant events per year rated at level 1 of the INES scale and subject to a public information, around 1 rated at level 2
- Events analysis reviewed by ASN and IRSN

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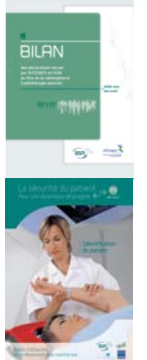
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**asn** Context of operating experience feedback *example of radiotherapy*

- ASN in charge since 2002 of radioprotection in medical sector
- Inspections for radioprotection of patients in 2006
- Evidences of a major radiotherapy accident in Epinal
- Reinforcement of operating experience
- Notifications for RT events to ASN
- ASN and professional periodic report on RT OEF
- Communication event scale dedicated to RT events



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**asn** Context of operating experience feedback *NPPs*

- In 2011 EDF declared 747 significant events to ASN
- 66 level 1, 1 level 2 subject to a public information,
- Events analysis reviewed by ASN and IRSN
- Quarterly review meeting with ASN, IRSN and EDF
- International OEF taken into account (outlined by IRRS mission)
- Regular analysis of OEF by the Advisory committee of experts (request from ASN)

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**asn** Advisory committee of experts

- 7 Advisory committees of experts, 1 on Reactors (RAC)
- Periodical requested by ASN to analyse OEF
- Topics selected on the basis of regular OEF review processes
- General OEF topics : safety, radiation protection for worker, protection of the environment, ...
- Specific topics for eg RAC: administrative lockout, requalification after maintenance, steam generators non compliances...
- Advice from AC and decision/position of ASN public
- In January 2011, RAC performed general OEF for 2006-2008
- In June 2011, RAC analysed specific 2003-2009 OEF for fuel

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**asn** Advisory committee of experts  
fuel and core behaviour

- RAC notably assessed :
  - Events connected to fuel assemblies and control rods
  - Safety demonstration of mixed cores
  - Corrosion of Zr4
  
- ASN requests to EDF (examples):
  - Improve demonstration that safety requirements are met for mixed cores
  - Maintain core and FA monitoring and R&D regarding fuel assemblies bowing
  - Increase experimental data on Zr4 corrosion

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**asn** 3 significant domestic events  
Nuclear auxiliary building ventilation flow rate

- Fessenheim NPP
- Containment spray system and safety injection system pumps are in the nuclear auxiliary building
- Minimum ventilation flow rate to be ensured to keep temperature below 45°C

1977: Safety Case: ventilation flow rate 8500m<sup>3</sup>/h.  
 2009: Periodic test introduced  
 2011: Periodic test performed one train 2800 m<sup>3</sup>/h, three trains 5200 m<sup>3</sup>/h

Non compliance to be corrected before start up  
 INES level 1

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**asn** 3 significant domestic events  
Structural defect on the spent fuel pool

- Cattenom NPP
- Absence of a "siphon breaker" orifice fuel storage pools
- Post Fukushima action

- Inadvertent operation of valves could lead to siphon effect emptying the pool
- ASN requested immediate compensatory measures and correction within 10 days.
- Event rated at level INES 2

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 **Regulatory actions after Fukushima**

- **Specific inspections**
  - 2 - 3 days per NPP
  - Fukushima-related topics
  - 38 inspections (June-Oct. 2011), 116 days of inspection
- **Complementary safety assessments (CSAs)**
  - based on European Stress Tests Specifications
  - 150 nuclear installations, 21 Licensees
  - Includes Human and Organizational Factors

**Approach supplementing safety regulation currently in force (notably periodic safety reviews)**

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 **Regulatory actions after Fukushima**

*« ASN considers that the facilities examined offer a sufficient safety level to require no immediate shutdown of any of them. At the same time, ASN considers that their continued operation requires an increase in their robustness to extreme situations beyond their existing safety margins, as soon as possible »*

**ASN will impose measures to licensees:**

- A "hardened safety core"
- A "nuclear rapid response force" (for EDF)
- A reduce risk of dewatering in SFP
- Studies on protection of groundwater & surface water in case of severe accident
- No subcontracting for the monitoring of safety related activities
- Strengthened compliance of facilities

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 **Conclusions**

- **OEF applies to all activities (safety, RP including medical, environment)**
- **OEF concerns operation (fuel) but also construction (ventilation, siphon breaker)**
- **OEF is a duty to operators and safety authorities following the Fukushima severe accident**

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