

**Implementation of safety upgrades following the  
assessment of vulnerabilities of Nuclear Power Plants**

Vienna, 1 April 2014

**ENSREG Activities after the European Stress Test:  
Follow-up implementation  
of safety improvements**

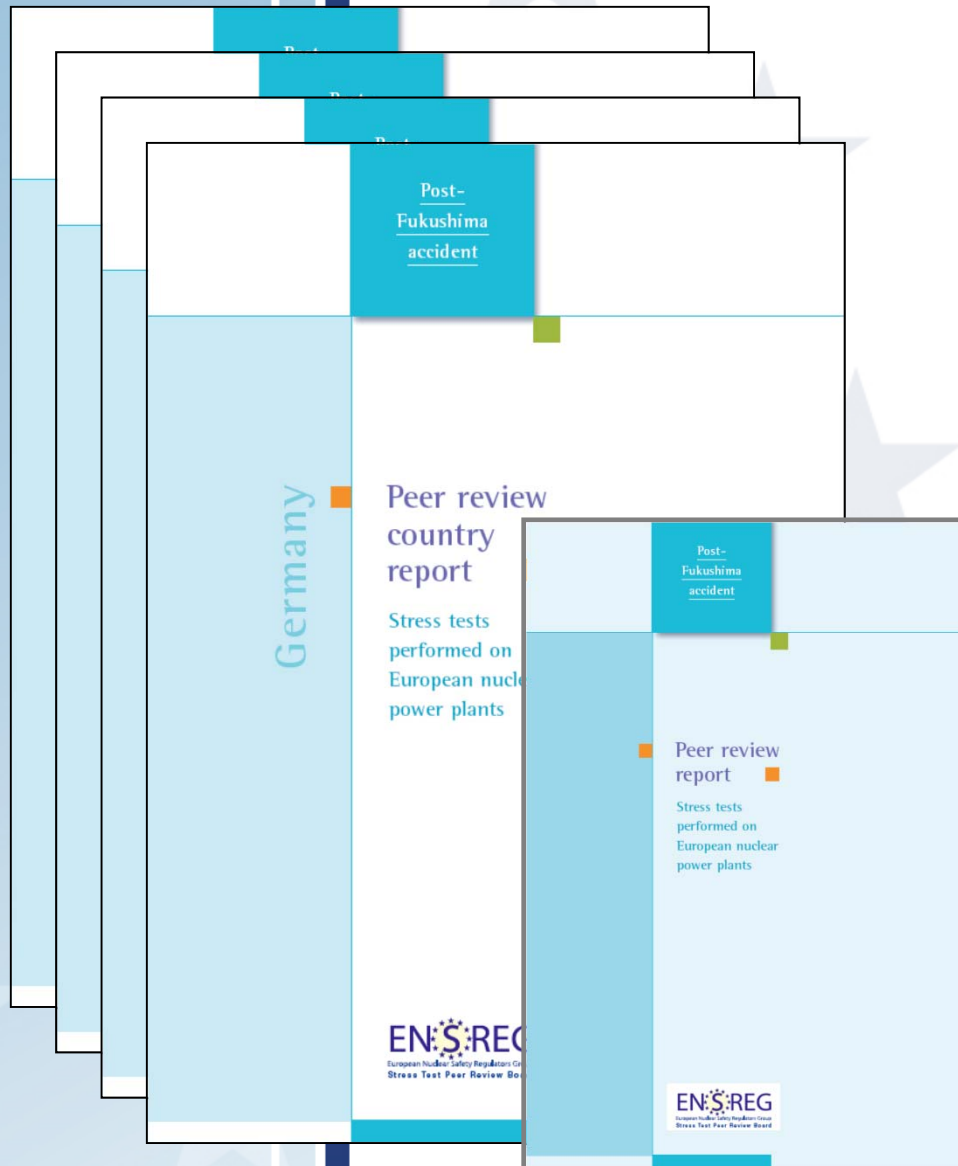
Gerald Hennenhöfer  
Hartmut Klonk

## Structure of Presentation



- Important results of the stress test
- Follow-up actions after the EU stress test
- National Action Plan Workshop
  - Workshop Findings and Future Steps
- Way forward to Improve Nuclear Safety:
  - Revision of Council Directive 2009/71/Euratom
  - Future Application of International Peer Processes

# EU Stress Test Peer Review Report



The Stress Test Board prepared a Peer Review Report from the 17 Country Peer Review Reports and submitted it to ENSREG at its 27th meeting on 25 April 2012.

Final report and Country Reports were published together.

Public events to inform the media, NGOs and stakeholders: 17 Jan and 8 May 2012 in Brussels .

<http://www.ensreg.eu/EU-Stress-Tests/>

## Results

### Most important results and recommendations from the Stress Test Peer Review Final Report:

- WENRA should develop **guidance on natural hazards assessment** further, including corresponding guidance on the assessment of margins beyond the design basis and cliff-edge effects.
- The importance of periodic safety reviews is underlined. The **risk** posed by natural hazards and relevant plant provisions should be **re-evaluated** at least **every 10 years**.
- Urgent implementation of the recognised measures to **protect containment integrity** should be considered by all national regulators.
- Necessary implementation of **measures allowing prevention of accidents** and limitation of their consequences in case of natural hazards should be considered by the national regulators.

## Follow-up actions after the EU Stress Test



### ENSREG and the European Commission agreed

- to implement the results within national responsibility, and
- to propose a joint **Action Plan** for further procedure:
  - *Implementation of the recommendations of the peer review report;*
  - *Implementation of the IAEA action plan on nuclear safety;*
  - *The outcomes of the extraordinary meeting of the Convention of Nuclear Safety;*
  - *Additional site visits as agreed.*

## 2012 - 2013: Follow-up Action by ENSREG



**ENSREG Action Plan** was finalized 25 July 2012 :

- *National Action Plans to be published by the end of 2012*
- *Workshop in spring 2013 to present National Action Plans and to peer review these via a common discussion*
- *Agreement on a set of fact findings site visits to nuclear power plants to review early follow-up activities already taken and planned*

**The ENSREG National Action Plan (NAcP) Peer Review Workshop was held in Brussels 22-26 April 2013**

- Results were presented at the ENSREG Safety Conference 11-12 June 2013

## Structure for the NAcP-Workshop



### Structure of the National Action Plans and the Workshop:

- ❑ The NAcPs were to be structured according to the six topics of the 2<sup>nd</sup> Extraordinary Meeting (EOM) of the CNS.
- ❑ The scope of the workshop was focussed on the topics 1-3 of the CNS-EOM, which are the same as the three topics of the EU stress tests.

#### **CNS-EOM Topics**

- (1) external events**
- (2) design issues**
- (3) severe accident management**
- (4) national organizations,**
- (5) emergency preparedness and response**
- (6) international cooperation**

## Findings: Reported Actions

- All countries identified **analysis needs, hardware improvements, and regulatory actions**.
- All participating countries reported their analyses of **safety margins under extreme natural hazards** and measures to further increase the robustness of the NPPs.
- All participating countries have introduced the general requirements for **Periodic Safety Review (PSR)**.
- A number of countries presented **concepts of bunkered or hardened systems**.
- Maintaining **containment integrity** under severe accident conditions remains an important issue.
- New installation or improvement of existing filtered containment **venting** and of passive autocatalytic recombiners (**PAR**) was reported.



## Findings: Implementation Schedule

- ✓ All countries outlined a **stepwise process** in implementing improvement measures.
- ✓ Several hardware improvements commenced **immediately** after the accident.
- ✓ Results of ongoing generic or plant specific analyses will determine scope and design of further hardware measures.
- ✓ **Analyses and reviews will mainly be finalized by 2014.**
- ✓ **Major modifications are expected to be implemented by 2015-2018.**
- ✓ Latest date mentioned is 2020.

## Findings: Challenges

- reassessing natural hazards systematically in the PSR process
- developing requirements for design, qualification and maintenance of mobile equipment that is not regularly used
- keeping the schedule for the implementation of appropriate hardware measures (industry capabilities available?)
- enhancing international exchanges on research and solutions on molten core cooling and stabilisation (in/ex-vessel)

## Findings: Transparency Issues

- All NAcPs are posted in English on ENSREG website.
- All NAcPs are posted on the member states national websites, about half of them also in national language.
- NAcPs will be updated according to status of implementation at least annually.
- All countries are committed to follow-up implementation of their NAcP until all measures have been finalized.
- The workshop provided transparency on the improvement measures and the schedule.

## Outcome of the Workshop:



This Workshop demonstrated that

- lessons are learned and
- Improvements are being implemented
- Timescales are ambitious
- Challenges are identified

The Workshop provided transparency about improvement measures, their scope and schedule.

**A follow-up peer review of national action plans and safety achievements is recommended for 2015 or later.**

## Value of the Stress Test Peer Review



- EU stress test delivered mutual understanding and a honest and trustful review between the European regulatory bodies.
  
- All regulatory bodies participated
  - by reporting to the community of peers
  - by acting as peers in the review
  
- This process has extensively contributed to a common understanding of nuclear safety in Europe.
  - **The European stress test was an extraordinary technical assessment and peer review undertaking requiring large resources: 500 man-years.**

Council Directive 2009/71/Euratom of 25 June 2009 establishing a *Community framework for the nuclear safety of nuclear installations*

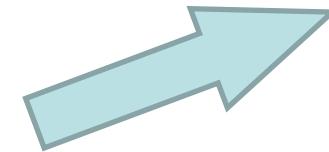


- ❖ First Draft of a revised Council Directive was issued by the European Commission at the end of 2012
- ❖ Comprehensive comment was prepared by ENSREG, agreed by consensus on 11 April 2013 and included own and new proposals:
  - A high and challenging safety goal
  - Peer Reviews to foster implementation of continuous improvements in NPPs
- ❖ Intensive discussion is ongoing

# Future Application of International Peer Processes to Improve Nuclear Safety

**Vision:**

**International peer processes**



**constantly  
improve  
nuclear safety**

**Thank you for your attention!**