Bundesministerium
für Umwelt, Naturschutz,
Bau und Reaktorsicherheit

National Action Plan (NAcP) Germany

ENSREG

2nd National Action Plan
Workshop 2015

21. April, Brussels

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Content of the presentation

Previous Rapporteur‘s Report - response on identified issues

Progress and Additions for updating the NAcP

Generic concept of installed measures

New studies and analyses

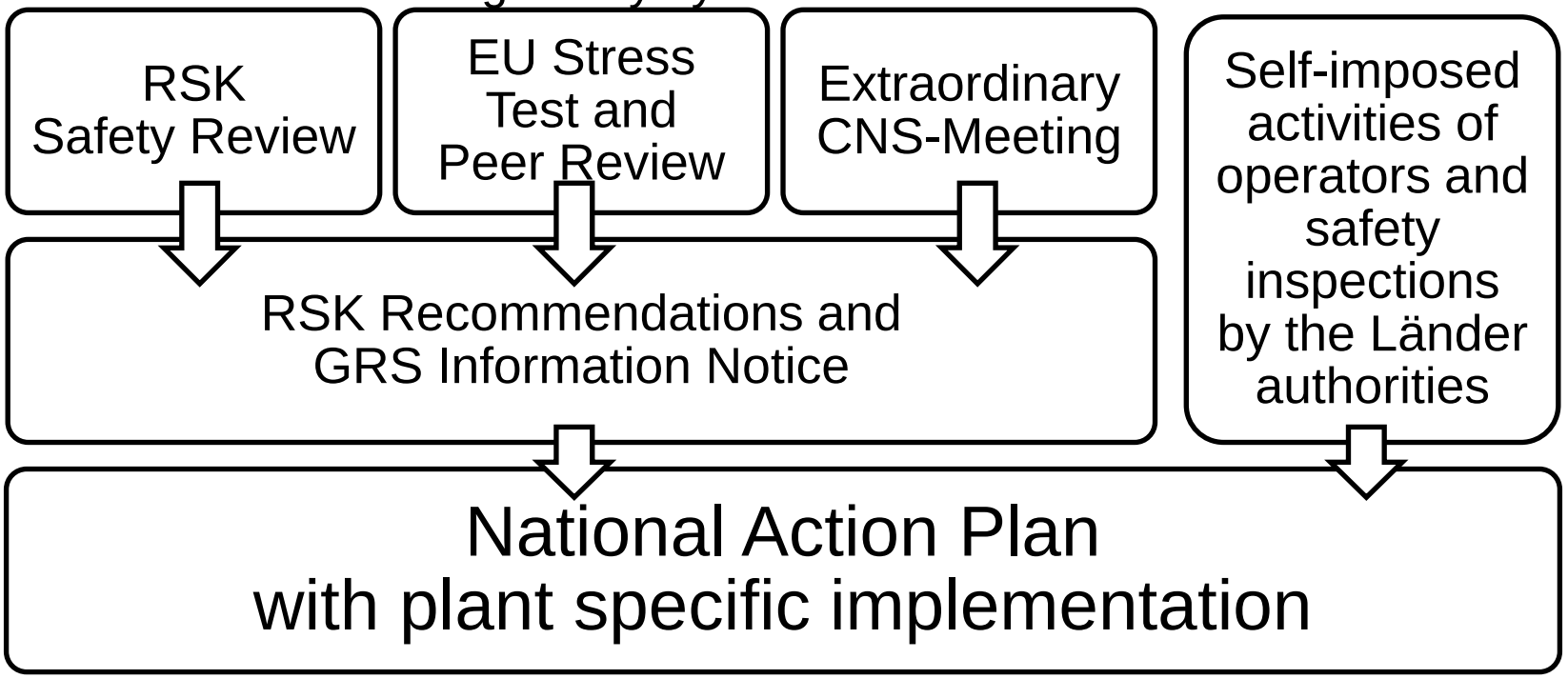
Good practices and challenges

Detailed response to selected questions

Previous Rapporteur‘s Report

Issue: Activities are not easy to fully understand

- as they are described according to the requirements of the German regulatory system



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Previous Rapporteur‘s Report

Issue: Development of publishing the NAcP

- After the ENSREG Workshop in 2013, Bund and Länder agreed on an Update of the NAcP once a year for a transparent reporting to the public

Published versions of the NAcP

- German Action Plan (December 2012)
- Updated German Action Plan (January 2014) (German Version only)
- Updated German Action Plan (December 2014)

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Progress and Additions

RSK Safety Review in May 2011

National Action Plan (December 2012) includes

- 2012-05 Loss of the primary ultimate heat sink
- 2012-09 Recommendations on robustness

National Action Plan (January 2014) includes

- 2013-04 min PGA value 0.1 g

National Action Plan (December 2014) includes

- 2013-11 Extreme weather conditions

Implementation of most corresponding measures reported by the operators until the end of 2014

Review of the Länder authorities almost finished

Generic concept (1)

Scenario	Concept
Long lasting loss of offsite power	Concept to increase the runtime of necessary diesel-generators up to 7 days
Station-Blackout	Assurance of DC power supply for up to 10 h Obtaining and providing mobile emergency power generators and connections points protected against external hazards Venting is possible during a station blackout

Generic concept (2)

Scenario	Concept
Loss of the primary ultimate heat sink	Creation of a diverse source of cooling water for NPPs which had not realised a diverse water source before Fukushima Mobile shortened residual-heat removal chain developed
Fuel Pools (PWR)	Creation of a permanently installed injection path into the spent fuel pool that is accessible from outside the containment Evaporation cooling concept

Generic concept (3)

Scenario	Concept
Beyond design basis	A SAMG-concept was developed in addition to the previously more on preventive emergency measures concentrated approach

New studies and analyses

Minimum value of 0.1g

for the max horizontal ground acceleration in earthquakes

- If the site-specific max. PGA value is less than 0.1 g, the RSK recommends that the robustness for a postulated PGA value of 0.1 g should be determined
  (2013-04, already presented on peer review 2013).

Extreme weather conditions

- It should be examined whether any vital safety functions may be impermissibly impaired by impacts due to extreme weather conditions as listed in the RSK Statement "Assessment of the coverage of extreme weather conditions by the existing design“ (2013-11).

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Good practices and challenges

Good practices

- Existence of bunkered systems
- 10 hours autarky time
- Existence of emergency measures implemented before Fukushima (e.g. Venting, Primary and Secondary Feed and Bleed, Passive Autocatalytic Recombiners, Nitrogen Inertisation for BWRs)
- Implementation of lessons learned from Fukushima into the Safety requirements for NPPs (published November 2012)

Open Issues

- Generic analysis of the NAcP related recommendations by RSK
- Hydrogen outside the containment
- Airplane crashes

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Hydrogen outside the containment

Approach

- The issue of hydrogen release in rooms outside the containments and the corresponding recommendations are currently being discussed within RSK (reactor safety commission) and its working group RSK-AST.

Discussion Basis of the RSK-AST

- Hydrogen during filtered venting within the filtered venting system
- Beyond design basis accidents with (design) leakages out of the containment

Preliminary Result (as recommendation)

- Ventilation of rooms outside the containment as SAMG-measure

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Detailed response to selected questions

74 questions have been raised regarding the updated NAcP

- 57 questions from other countries/DG Ener (answered for the peer review workshop)
- 19 questions from the public (will be answered after the workshop)

2 Examples:

Could you please provide more information on emergency operating procedures and SAMGs developed by the licensees?

- The emergency operating manual exists since the early 90s in all German NPPs. After Fukushima the manual has been extended regarding external feeding of the SFP and implementation of a mobile emergency power supply. The extensions have been reviewed by the regulatory body and its TSO. SAMG concept has been developed by AREVA on behalf of the operators and has been submitted for a review to the regulatory body. The SAMG measures have been implemented in all German NPPs.

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Detailed response to selected questions

Do you have a description of the "mobile shortened residual-heat removal chain" developed ?

- This concept was developed for PWR without a diverse cooling water source and is included in the emergency handbook of the specific plants. It connects a mobile pump to nuclear intermediate cooling system and ensures free outflow after the cooling positions in order to guarantee heat removal in case of loss of UHS. This mobile shortened chain is able to supply cooling for the reactor and the fuel pool.

Discussion

WENRA

- After Fukushima the Reference Levels of WENRA were revised.
- These Reference Levels contain requirements for design and operation as well as provisions against emergencies in nuclear power plants.
- The additional requirements of the WENRA Reference Levels are either fulfilled by the requirements stipulated in the German regulations or are specified further by the recommendations that have been included within the framework of the German National Action Plan.