



Office for  
Nuclear Regulation

# The UK Response to Fukushima

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# ONR Response to Fukushima

- 17000 UK nationals in Japan - securing the protection of people and society
- Incident Suite set up providing advice to Highest levels of UK Government
- Prompt assurance of UK fleet
- Chief Inspector's Interim Report to Secretary of State – May 2011
- Chief Inspector's Final Report to Secretary of State – September 2011

# Chief Inspector's Final Report

ONR's review of the information available did not reveal any vulnerabilities with UK nuclear facilities or shortcomings in safety methodology that would require operations to be curtailed

- Approach to design basis is sound.
- No gaps were revealed in ONR's safety assessment principles.
- Periodic safety reviews robustly identify necessary improvements to facilities in the UK.

# Recommendations

*General:* need for good comms, seek lessons for emergency preparedness & enhance openness

*For regulators:* review standards/guidance and emergency preparedness, particularly for severe accidents

*For industry:* review aspects of accident for implications, e.g. resilience, natural hazards, AC supplies, cooling, site/plant layout, human performance, emergency preparedness, data comms.

# EC Stress Tests

- European Council 24/25 March – safety of all EU nuclear plants should be reviewed
- WENRA developed, and ENSREG agreed a consistent approach applied across the EU
- Stress Tests applied to EU countries operating NPPs.
- Publication of National Action Plans delivering transparency of implementation programmes

# UK Approach to Stress Tests

- Each UK licensee produced stress test reports. NPP reports published - October 2011
- ONR issued “European Council Stress Tests for UK Nuclear Power Plants – National Final Report”, December 2011
- Raised 19 Stress Test Findings (STFs)



# Approaches to Safety Regulation

- Many regulators set out rules telling operators how to ensure safety – a ‘prescriptive’ approach
- UK instead has a ‘goal-setting’ approach, which makes it a legal duty to meet the safety goals, but does not set out in detail how operators should meet this duty.
- Requirement to “reduce the risk to workers and the public so far as is reasonably practicable,” places legal requirement to seek continuous improvement.



# UK Approach to Design Basis

- No prescribed lists of accidents to be considered in the design basis
- Probabilistic identification of the faults must be combined with deterministic analyses of representative faults to demonstrate that the protection would be effective
- Operator has initially to identify all events that could potentially lead to either a person receiving a significant radiation dose or a significant escape of radioactive material

# Application of standards to older plant

- Fukushima Daiichi reactors entered service between 1971 and 1979
- UK also has old nuclear facilities
- National and International standards evolve over time.



How can regulators ensure that the safety standards achieved at older facilities move with the times?

# Periodic Safety Reviews

UK operators must perform Periodic Safety Reviews (PSRs) every 10 years. They must:

- demonstrate that the facility still meets its original design standards
- identify any issues that might limit the future life of the facility or its components and explain how they will be managed
- review the safety case against modern standards and identify any emerging gaps

# Plant Improvements

Operators have a legal duty to identify and make plant improvements if “reasonably practicable”

ONR assesses the PSRs and does not allow operation to continue beyond the anniversary if not satisfied that this is being done

Magnox improvements included improving shutdown reliability, installation of additional cooling systems, and improving their seismic resistance

# Use of new information

UK approach: if new information might undermine a safety case, the regulator may immediately require the operator to show that risk is still reduced “so far as is reasonably practicable” and to take action if it is not

Prescriptive regimes: time lag as operators are not required to take action until the regulators have developed and enacted new decrees or rules tailored to the specific findings

# Regulatory Independence

- Significant topic post-Fukushima
- Japanese regulator was criticised and government has made major changes
- Managing risk to regulatory independence from use of technical support organisations

# Regulatory Independence & Intelligent Customer Arrangements

- In the UK the concept of “Intelligent Customer” has developed.
- Ensures nuclear licensees are able to meet legal reasonability for managing safety, even when commissioning work undertaken by external organisations.
- ONR’s Guide to “**Licensee Core and Intelligent Customer Capabilities**” outlines the concept ([http://www.onr.org.uk/operational/tech\\_asst\\_guides/ns-tast-gd-049.pdf](http://www.onr.org.uk/operational/tech_asst_guides/ns-tast-gd-049.pdf)).

# Regulatory Independence & Intelligent Customer Arrangements

- Regulators should have to have sufficient technically competent resource to:
  - Target areas for Assessment
  - Specify and communicate work let to TSO's
  - Supervise the work
  - Evaluate and interpret findings
- Regulatory decisions must be made by warranted inspectors to safeguard regulatory independence.



# Overall Conclusion

- No fundamental weaknesses in UK nuclear facilities or systems

## **But...**

- No matter how high the standards, continuous challenge and questioning of standards is vital and all must seek to improve
- This demands a vibrant and active safety culture