

# American Nuclear Society Special Committee Report



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## **FUKUSHIMA DAIICHI: ANS Committee Report**



**A Report by  
The American Nuclear Society  
Special Committee on Fukushima**

**March 2012**



# Report Findings

- Current level of oversight sufficient to protect the American public
- Overall lessons learned chiefly concern the facility's response to extreme natural events
- Tsunami design basis at Fukushima facility were insufficient



# Technical Recommendations

- Risk-Informed Regulation
- Hazards from Extreme Natural Phenomena
- Emergency Planning
- Health Physics
- Multiple Unit Site Considerations
- Hardware Design Modifications
- Command and Control During an Accident
- Severe Accident Management Guidelines
- Societal Risk Comparison



# Risk Informed Regulation

- Work harder to plan for unanticipated events
- Use a risk-informed approach
- Extend risk-informed approach to include mitigation of consequences of severe events
- Carefully evaluate regulatory changes with input from all stakeholders



# Extreme Natural Phenomena

- A risk-informed regulatory approach would have identified insufficient design bases for Fukushima
- Must consider hazards from extreme natural phenomena and plan with appropriate contingencies
- Report establishes criteria going beyond design basis for enhanced safety
- Recommend NRC periodically reanalyze and possibly redefine design and licensing for severe natural events



# Emergency Planning

- Should be based on a comprehensive assessment or “risk informed” approach
- NRC should work with other agencies, including the Department of Energy and industry groups to improve emergency planning using appropriate risk information



# Health Physics

- Confirming health effects will take time
- Early evidence suggests off-site health consequences and impact on workers and public may be minimal
- Area of on-going investigation
- ANS will continue to monitor and report back our findings



# Multiple Unit Site Considerations

- Multi-unit siting can be desirable
- Recommend regulatory body perform risk assessment when units are added to a site
- Risk analysis should consider extent multiple units increase or decrease risk
- Report includes specific factors to consider, including many focused on operation



# Hardware Design Modification

- May be considered by near-term regulation
- Ensures:
  - higher reliability of safety systems
  - better instrumentation
  - more robust delivery of makeup water
  - better venting of the reactor containment
- Plant specific
- Careful analysis to ensure no new problems are created



# Command and Control

- Unclear chain of command exacerbated situation at Fukushima
- Adequate in the US but should be reviewed
- Accident management decisions must be taken promptly at the proper operational level



# Severe Accident Management Guidelines

- Need to work with NRC on Severe Accident Management Guidelines
- Include how they interface with specific plant emergency operating procedures
- Possibly install additional instrumentation
- Tools could deliver valuable information to operators regarding accident progression



# Societal Risk Comparison

- Perform quantitative assessment of societal benefits and risks of all energy sources
- Risks of each source should be assessed comparatively
- Consider reliability, continuity of supply and indirect costs to secure fuel supply



# Special Committee Members



**Dale Klein**

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# Questions and Answers

Thank you all for coming!

[Fukushima.ANS.Org](http://Fukushima.ANS.Org)

