



Lessons Learned from the Fukushima Dai-ichi Accident

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Fields of Lessons Learned from the Fukushima Dai-ichi Accident

- Technical/Engineering
- **Institutional**
 - Regulatory Framework
 - Standards and criteria
- Operational
- etc.

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Root Causes of the Fukushima Dai-ichi Accident

【Before Fukushima Dai-ichi Accident】

Two major maladies had been prevailing in Japanese nuclear community.

- Complacency, self-conceit or vanity
- Lack of Imagination

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Complacency(1-1)

【Before Fukushima Dai-ichi Accident】

- Frequency of unplanned outage is very small in Japan
 - Reliability of Japanese nuclear plant is high
 - Japanese nuclear power plants are safe
 - Severe Accident will never happen in Japan
 - Not enough preparation against SA and AM training?
(Severe Accident Management was not a legal requirement but utilities voluntary efforts.)

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Complacency(1-2)

【After Fukushima Dai-ichi Accident】

- Severe Accident did happen in Japan
→Severe Accident Management procedures are implemented actually and to be legally incorporated in Japanese regulation.

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Complacency(2-1)

【Before Fukushima Dai-ichi Accident】

- There had been criticism that nuclear regulator is a part of the Ministry of Economy, Trade and Industry which promotes nuclear.
- There had been no fundamental reformation of the regulatory organization as there had been no major accident nor major trouble in Japan, after radiation leak incident of the nuclear ship Mutsu in 1974.

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Complacency(2-2)

【After Fukushima Dai-ichi Accident】

- The government will take forward the reform of an organization in charge of nuclear safety regulation in order to win public confidence on the government work on nuclear safety and strengthen its function ⁽¹⁾.

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Complacency(2-3)

【After Fukushima Dai-ichi Accident】

- "Nuclear Safety and Security Agency (NSSA) (tentative)" will be created as an Affiliated Organization of the Ministry of Environment in view of "the separation of nuclear regulation and promotion", separating the nuclear safety regulation section of the Nuclear and Industry Safety Agency from the Ministry of Economy, Trade and Industry and integrating the function of Nuclear Safety Commission.

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Complacency(2-4)

【After Fukushima Dai-ichi Accident】

- Minister Hosono cited the following five issues as basic points of the new nuclear safety regulation⁽²⁾.
 - Separation of nuclear regulation and promotion
 - Unification of work associated with nuclear safety
 - Incorporation a crisis management function into new organization
 - Development of human resources supporting the Organization
 - Strengthening of both regulation and safety

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Complacency(3)

【Before Fukushima Dai-ichi Accident】

- There had been criticism that it is necessary to enhance technical capability of Nuclear and Industrial Safety Agency ⁽³⁾.

【After Fukushima Dai-ichi Accident】

- In order to steadily implement operation of the new organization, the government will make every effort to secure competent human resources both from the public and private sectors⁽¹⁾.

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Lack of Imagination(1)

【Before Fukushima Dai-ichi Accident】

- Not prepared against loss of AC power for a long time (the Regulatory Guide declared no need to prepare for a long time loss of AC power)

【After Fukushima Dai-ichi Accident】

- The Regulatory Guide are under discussion how to deal with long time loss of AC power.

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Lack of Imagination(2)

【Before Fukushima Dai-ichi Accident】

- Not prepared against loss of entire civilian infrastructure after big earthquake
- Not prepared against larger Tsunami than assumed in design,etc.

【After Fukushima Dai-ichi Accident】

- Standards and Criteria are now under discussion.

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Stress Test

- Stress test is one of the countermeasure against lack of imagination.
- It assesses how the plant will reacts the extreme situations.

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Conclusion

- We must be humble, especially toward natural phenomena.
- We need to ask ourselves “what-if” questions and what we may have missed⁽⁴⁾.

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References

- (1) "Basic Policy on the Reform of an Organization in Charge of Nuclear Safety Regulation(Cabinet Decision)", 15 August, 2011
- (2) "Japan to Establish New Nuclear Safety Agency", Ministry of Foreign Affairs of Japan, 25 August, 2011
- (3) "IAEA International Fact Finding Expert Mission of the Fukushima Dai-Ichi NPP Accident Following the Great East Japan Earthquake and Tsunami", IAEA Mission Report, Division of Nuclear Installation Safety, Department of Nuclear Safety and Security
- (4) Testimony of Michael Corradini, Before the House Energy and Commerce Committee Subcommittee on Oversight and Investigations, April 6, 2001