

“Energy Perspective and Nuclear Role after Fukushima Daiichi Accident”

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First of all, Fukushima Daiichi accident issues will be presented. "Assuming while not considering such event". That is the phrase to represent the Fukushima Daiichi Accident problem. First priority of safety related personnel is that Human Factor & Common Mode Failure are always worth keeping in mind.

There are two items to be discussed. One is “Rare Event” treatment; the other is “Crisis Management” problem, while both are due to lack of imagination of responsible personnel. Rare Event is high consequence with low frequency. Low consequence with high frequency event is easy to treat by commercial reason, while it is very difficult to handle the rare event even the risk is just the same. Unexpected event has been used frequently, but it is the risk-benefit issues to assume or not. Tsunami Probabilistic Risk Analysis has been carried out, and safety related personnel knew the magnitude of the effect well. Regardless of the initiating event, lack of measures to “Complete Loss of Power” is to be asked. Anyway, rare event occurred on one occasion, measures had to be taken. Fukushima Daiichi Nuclear power plants as “National Privatization” destroyed by large-scale disasters should be taken same as infrastructure systems as a national policy.

There are many Crisis Management problems as follows;

- Delay in initial response, decision making, and external support request
- Poor collaboration among government (Prime Minister Kan), bureaucrats (NISA, JNES), and interested party (TEPCO)
- Poor information disclosure in emergency situation

After all, it is a matter of organizational culture.

Next, “Energy issue and role of nuclear energy after the Fukushima Daiichi Accident” will be discussed. Premise here is that "Global warming and energy security are the invariant problems". The long-term energy demand and supply simulation to minimize the total energy system cost was conducted for energy prediction during the 21st Century in the world. Taking the effort for energy-saving as major premise, carbon-sequestration for fossil fuel, renewable energy and nuclear energy should be altogether developed, which means energy best mix should be achieved, under the CO₂ constraint around 450ppm atmosphere. Nuclear phase-out scenario, in which new nuclear plant construction is prohibited, is possible from the simulation even considering the issue of global warming, with the following problems; increasing energy costs, little room for countermeasure, and large uncertainties of technology. Therefore, rational use of nuclear power is requested, that is each country should make decision, Japan and several European countries will be also phase out, while China, India and ASEAN countries will continue to be introduced. If the accident happens again anywhere in, it will become the global phase-out. Therefore, rational unified safety standards (organizational structure, design and operation, regulations) should be reviewed based on the Fukushima Daiichi Problem world-wide analysis and established in the world.