Contribution ID: **104** Type: **ORAL**

Accident at TEPCO's Fukushima-Daiichi nuclear power plant - What went wrong and what lessons are universal -

Monday, 3 September 2012 09:00 (30 minutes)

The speech on the recent nuclear accident focuses on "what went wrong"and "what lessons are universal".
As is well recognized in the nuclear safety regime, prevention of radiological impact to human and environment as a consequence of nuclear reactor accident follows the basic philosophy of defense-in-depth consisting of five layers of defense, of which the first three by design, the 4th by prevention and mitigation of beyond design basis (severe accident) conditions, and the 5th by offsite emergency plan.
Breach of defense layers was particularly significant in protection a) against natural disaster (1st layer of defense) as well as b) against severe conditions, specifically in this case, a complete loss of all AC/DC power and isolation from Ultimate Heat Sink (4th layer of defense). Confusion in crisis management by the Government and insufficient implementation of offsite emergency plan revealed issues such as delineation of responsibility in the 5th layer of defense.
Deliberation of lessons learned should not stop at analysis of causal chain of events but also touch upon underlying factors such as cooperate risk management strategy, organizational culture, interface among operator, regulator and society etc., all of which influences key decisions on safety. This deliberation here is based on a) analysis of what led to breach of layers of defense-in-depth, b) UT (University of Tokyo) study on "why nuclear community failed to prevent this accident", and c) Accident Investigation Committees'reports. Details are discussed such as a) preparedness to residual risk by assuming "what if the assumed condition was wrong" under high uncertainties, b) not sufficient continuous safety improvement by learning from global good practices, c) basic assumptions in the most basic level of safety culture hierarchy.
In conclusion, personal view on universal lessons comes to the very basics of the use of technology;
a) Resilience: There is a need to enhance organizational capability to Respond, Monitor, Anticipate, Learn in varying conditions to lead to success. As for design, expected are reduced system interactions, enhanced reliability by "diversity"& "passive"in safety system,
b) Responsibility: Operator is primarily responsible for safety (responsible use), and the Government has to fulfill the responsibility to protect public health and environment.
For both, their capability is supported by competence, knowledge and understanding of the technology,
c) LPHC (Low Probability High Consequence) risk: Consequence matters, rather than voicing low probability. There is a need to avoid, as much as possible regardless its probability of occurrence, the reasonably anticipated environmental impact (spill, land contamination etc.), and
d) Interface with society: Importance of risk communication and communication with safety experts in other disciplines was recognized. Further, post-Fukushima situation indicates "no production without trust from the society".

Primary author: OMOTO, akira (T)

Presenter: OMOTO, akira (T)

Session Classification: Session1

Track Classification: Opening and Closing