

27th International Conference on Structural Mechanics in Reactor Technology (SMiRT)

山中委員長挨拶

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On behalf of the Chairman of the Nuclear Regulation Authority, NRA, I would like to share my sincere welcome with all the participants here in SMiRT27 at Yokohama and hope that devoted technical discussions contribute to enhance nuclear safety. It is great honor to me to have this opportunity to make a speech today.

I had been engaged in research on the safety of nuclear fuel at Osaka University for nearly 40 years, and then I was appointed to a Commissioner of the NRA in 2017. Five years later, when I became a Chairman of the NRA, in my first message as a head of the organization, I emphasized three areas that I would like to put foci:

- ① Communication with various stakeholders in more understandable manner,
- ② Regulation considering facilities' situation in real,
- ③ Human resource development in nuclear safety.

Till today, I have been working with these in mind as a Chairman.

The NRA was established in 2012 based on the reflection and lessons learned from the accident at the TEPCO's Fukushima Dai-ichi Nuclear Power Station.

In the past, there was a widespread safety myth, which is wrong belief, that accidents would not occur if only safety standards were met, and continuous improvement for safety were rarely made. This situation must be one of the results from the structure of regulators that the regulatory bodies were not independent from nuclear promotion agencies, and that the responsibility of safety regulation was dispersed under double-check hierarchy.

Furthermore, because of the lack of technical expertise in the regulator, technical determination had to rely upon the licensees' interests; therefore, the regulator could not accomplish regulatory requirement to avoid accidents in the timely manner.

Those are why the NRA was established as an independent regulatory committee governed by expert commissioners and with authority to regulate whole nuclear safety arena.

The magnitude-9 earthquake and tsunami on March 11, 2011, resulted in the simultaneous loss of functions on multiple equipment and systems in TEPCO's Fukushima Dai-ichi, and then failed to prevent the severe accidents at Unit 1 through 4.

The lessons learned from this accident are reflected in the strengthened safety regulatory requirements of nuclear facilities we developed in the summer of 2013.

We have greatly reinforced the countermeasures against natural hazards such as earthquake and tsunami, and have enhanced the requirements for preventing severe accident, for example, by multiplexing and diversifying SSCs (structures, systems and components).

In addition, we have newly required to deal with and mitigate the progress and outcomes of severe accident and terrorism.

With these new regulatory requirements, we have reviewed and approved the renewal of licenses for nearly 20 units of nuclear power plant so far.

In terms of continuous improvement of safety, instead of we are constantly collecting new knowledge and discussing the improvement of regulatory requirements, not leaving them as they are.

In our legal requirement, a robust back-fit scheme is built-in, where new knowledge obtained from domestic and overseas operational experience or safety research is screened for the discussion at the NRA Commission Meeting in order to decide the necessity of reflection as a regulatory requirement. Once decided to be reflected, then the legal documents would be amended and applied to existing facilities.

To date, more than 10 back-fits have been decided, including countermeasures against natural hazards such as volcano, earthquake and tsunami, as well as internal flooding.

With regard to the Noto Peninsula Earthquake occurred on January 1, this year, we will collect knowledge by paying close attention to the investigations and researches conducted by relevant parties, and if new knowledge is obtained, we will appropriately determine whether or not it is necessary to incorporate it into regulation and how to incorporate it.

Besides such back-fit efforts by the NRA, I would like to make a strong emphasis that it is quite important to encourage licensees' voluntary continuous safety improvements as they have the primary responsibility for nuclear safety.

The Fukushima Daiichi NPS accident also revealed that off-site countermeasures, such as evacuation and its preparation, needed to be improved.

Many lives were lost due to inappropriate evacuations; however, there were no loss of life from radiological damage on the contrary.

The NRA formulated the Nuclear Emergency Preparedness and Response Guide, recollecting such a situation during the severe accident.

The EPR Guide stipulates how to set zones for preparation of protective measures and operation against nuclear emergencies according to the types and characteristics of nuclear facilities.

Referring the EPR Guide, the local governments build a plan for residents' protective measures including smooth evacuation, taking into account their geography, climate, demography, transport network and so on.

After legislative discussions in the Japanese National Diet, the new Nuclear Regulatory Inspection System has come into effect since April 2020.

Currently, the NRA inspectors can freely observe facilities and components, and access licensees' information anytime and anywhere.

Our inspectors also oversight from performance-based and risk-informed perspectives; that allows us to check the level of safety in effective and efficient manner.

Resident inspectors walk through the facility on a daily basis, and when needed on specific issues, the expert inspectors are dispatched from the NRA headquarters.

The aftermath of TEPCO's Fukushima Daiichi NPS accident is still on going.

As one of our top priorities, the NRA has kept eyes on TEPCO's decommissioning work at the Fukushima Daiichi NPS, in order for safe and steady progress.

During 10 years after the accident, the main activities were countermeasures against challenges with high radiological risk brought by the accident.

The next 10 years should be the period to advance a new phase of decommissioning, namely waste management, including analysis, classification, appropriate treatment and storage of various types of waste.

Moreover, the whole details of the accident has not been revealed.

The NRA continues to work with various research institutes to investigate and analyze how and what occurred in the accident.

I myself have visited Fukushima Daiichi NPS eight times in this couple of years and observed the reactor buildings directly to lead the investigation activities.

Last year TEPCO surveyed the inside of Unit 1 containment vessel and it was revealed that the concrete pedestal under the reactor pressure vessel was severely damaged in the way we had not expected.

Observed peculiar damage is like that concrete part is lost with reinforcing steel bars only remaining. The mechanism of this situation has not been clearly explained so far.

Likewise, we are conducting research on a variety of issues that need to be elucidated.

The NRA will never forget the accident which originated us, and continue to tackle with issues in the Fukushima Dai-ichi NPS.

I have worked on these issues with three focused areas I mentioned in mind. Our efforts to further strengthen the nuclear safety will never end, and we continue to improve our organization, nuclear regulation, radiation protection measures and situation of TEPCO's Fukushima Dai-ichi NPS.

We are pleased to welcome you and close by wishing fruitful discussions, successful this conference.