Closing Remarks[1]

Shunsuke Kondo
Chairman
Japan Atomic Energy Commission

Thank you, Mr. Chairman.
Good afternoon, distinguished participants and ladies and gentlemen!

It is a great honor for me to make these closing remarks at this roundtable on the American Viewpoints on Japan's Zero Nuclear Option.

In the website of the Howard Baker Forum, we can find the philosophy of the forum that says, "In governance, wrote James Madison in Federalist No.14, the government should never disregard as touchstones of sound policy "the suggestions of their own good sense, the knowledge of their own situation, and the lessons of their own experience." Sorting out these "suggestions" in today's modern world of advocacy and spin is a daunting challenge. The Howard Baker Forum serves as a neutral ground for examining the issues and finding creative solutions to pressing national problems. "

At present, we people in Japanese Government is trying desperately to sort out these suggestions based on our sense, knowledge and experience, living with bated breath in the midst of the election campaign in which one of central issues is future energy policy and nuclear energy policy, in particular. I believe, however, unless we can also view ourselves from the outside, what we know about the inside of Japan will be just as inconsequential.

Therefore, this event is especially timely for us. I would wish to extend my special thanks to Mr. Scott Campbell and Mr. Walter Lohman for allowing us this opportunity to participate in this round table here in Washington this afternoon. The addresses by distinguished speakers and a fruitful exchange of views and ideas that followed we have witnessed will surely help us in one way or other to sort out important suggestions for our deliberation of nuclear energy

[1] Presented at the Fifth US-Japan Roundtable, "American Viewpoints on Japan's Zero Nuclear Option" hosted jointly by The Howard Baker Forum and The Heritage Foundation on December 5, 2012, at the Heritage Foundation, Washington D.C. USA.

policy.

I wish I could give you a meaningful summary of what I think of major importance in this afternoon, but it is impossible for me to do so, owing to a wide variety of topics and opinions exchanged that reflected a great deal of experience and great perceptivity of distinguished speakers and panelists. Therefore, I would like to present a few thoughts that have developed over what I heard this afternoon, after explaining you where we are in Japan.

As you know, March 11, last year, a really great earthquake and the resulting tsunamis hit people and facilities including nuclear power plants located on the Pacific coast of Japan. The aftermath of this earthquake and tsunami is about 20K deaths or missing. Evacuees are about 300K people in total. As for damages, about130K houses were completely destroyed, and 300K houses were half destroyed. The cause of this magnitude of the calamity is that this natural event was a once-in a thousand years event and only 40% of the coastline was lined with anti-tsunami seawall, some of which was washed over its top by the tsunami.

In the case of Fukushima Daiichi NPP that was hit by the earthquake and tsunami, all AC power for units 1-5 was lost and all DC power was lost on units 1, 2, and 4 due to flooding as the maximum tsunami height impacting the site was far higher than the design base tsunami height. With no core cooling to remove decay heat, core damage began on unit 1 on the day of the event. Steam driven injection pumps were used to provide cooling water to the cores on units 2 and 3, but these pumps eventually stopped working. As a result, fuel damage also occurred in units 2 and 3. Delay in containment venting and coolant injection due to insufficient preparedness for severe accidents in such situation caused core meltdowns, hydrogen explosions in the reactor buildings and the continuation of significant radioactive releases to the environment over an extended period.

Since the stabilization of the situation at the site, the Atomic Energy Commission has all the time advised politicians to deliberate governance[2] in four arenas, governances for on-site cleanup, off-site decontamination, nuclear power recovery and plan to cope with the policy of planning no new NPP pledged by Prime Minister.

[2] Here governance means a democratic engagement of public decision-making body through the institutional arrangements where various stakeholders including citizens and government officials jointly identify problems and enact effective and legitimate action plan.

Let me briefly touch upon each of them.

First, on-site cleanup.

We proposed the government to establish a mid-and-long-term roadmap for on-site cleanup activity as I reported to you last December. In response, the Government and the TEPCO adopted the Mid-to-Long-Term Roadmap for Fukushima Daiichi that defined the decommissioning activity into three phases and outlined major milestones of on-site works and R&D projects for technologies and information necessary. The target of phase 1 is to start the removal of spent nuclear fuel from spent fuel pools in two years; that of phase 2 is to start the removal of fuel debris from RPVs in ten years and that of Phase 3 is to complete the decommissioning of all units in 30- 40 years.

Major on-site works promoted at present are, in addition to the assurance of the reliable operation of circulating water injection cooling,

- Treatment of accumulated water and control of ground water inflow to reactor buildings,
- Reduction of environmental radiation,
- Improvement of work environment in controlled areas,
- Long-term health management of workers experienced high-level exposures,
- Removal of spent fuel from spent fuel pool,
- Preparations for fuel debris removal and
- Management of radioactive wastes.

With heartfelt appreciation, I would like to say that the advice and support from the US government and industries have been very effective and supportive.

Second, off-site recovery.

This is the most difficult arena that involves both decontamination of a wide area and communication of low-dose risk to the sufferers. As you know, the radioactive releases from the plant caused radioactive contamination of a wide area of the land around the plant, extending to 260 km from the site in a few directions, and about 80,000 peoples are still

requested to be out of home as the radiation level of their home is higher than 20 mSv/year and about the same number of peoples have chosen to leave home from the fear of exposure to radiation, though the radiation level of their home is below 20 mSv/year. Many of them are suffered from a psychological agony due to fear of radiation, separation of family, disruption of communities etc.

Trades of agricultural and marine products in the neighborhood of the plant are still restricted. Damage compensation is estimated to be at least about 6 trillion yen (70 billion US$) at present. It should be also emphasized that though no one has been directly hurt by the radiation exposure itself, the accident has caused several hundred deaths due to the worsening of diseases owing to dislocation, including emergency evacuation from hospitals and the stress of life in a shelter after dislocation.

From April this year, designating 11 municipalities as the “Special Decontamination Area”, Government has been promoting decontamination of this area in consultation with residents, focusing on the part of which radiation level is lower than 50 mSv per year, with a view to reducing annual additional doses below 20 mSv in two years. In the area where radiation dose is higher than 50 mSv/year, Government implements only demonstration decontamination projects in two years, and lessons learned from the projects will be reflected in the decontamination policy for such area to be established in the future.

The objective of this decontamination activity is to shape an environment for residents to be able to come home. However, three municipalities have already decided that they would not return to hometown for five years based on the regional heterogeneity of habitability expected to remain in their area even after the decontamination activities in two years.

The challenges Government is tackling at present are to;

- Promote public communication for securing sites for interim storage facility for radioactive waste from decontamination works,
- Seek for more efficient and effective decontamination technology and approach and those for forests which cover more than 70 % of their area, in particular,
- Monitor health condition and promote health management based on the common concept of early diagnosis and treatment for any diseases identified for a two million

population during almost whole lifespan due to uncertainty in the effect of low-dose radiation exposure, and

- Promote risk communication about the low-dose exposure.

Needless to say, the life of sufferers, the proceeding of these works, includiing inevitable occurrences of friction in the proceeding are on the news almost day after day and will be so year after year. It was reported that the electricity consumption in July this year in Japan was 6.3% less than last year. Can I understand that this was a result of people's recognition of bond with sufferers and resultant understanding of the need for energy conservation? We should never forget that we are living in such social atmosphere in these days.

Third, recovery of nuclear power generation.

From my viewpoint, the recovery plan for nuclear power should cover governance in three dimensions, technical, institutional and public trust.

In the first 12 months since the accident at the Fukushima Daiichi, global nuclear energy community has acted promptly to draw lessons, and made efforts to strengthen nuclear safety. In other words, global nuclear energy community has been eager to fix nuclear power technology. This is because the community summarized that though the accident was triggered by a massive force of nature, it was weaknesses regarding defense against natural hazards, regulatory oversight, accident management and emergency response that allowed it to unfold as it did and they can be fixed apparently; and why not fix them as nuclear energy offered and would offer many benefits, helping to improve energy security, reduce the impact of volatile fossil fuel prices, mitigate the effects of climate change and make economies more competitive.

When the newly established "Innovative Strategy for Energy and Environment" in Japan Mr. Takahara touched in his opening address stressed that Japan would use nuclear power as an important power source after improving it based on lessons learned from the event, I am sure that the author of the Strategy had summarized the situation in the same way.

The root cause analysis for this event gives us the following lessons for technological governance:

a) Nuclear regulator and operators were shy with probabilistic approach and failed to let the experts in tsunami know the necessity of having information about the magnitude of the tsunami of which return period was around10, 000 years.

b) They also failed to satisfy the need for defense-in-depth features that should prevent a disproportionate increase in radiological consequences from an appropriate range of tsunamis and floodings more severe than the design basis ones:

c) Utilities and vendors made decisions to deviate from the accident management strategies developed by the global nuclear community, claiming that AC Power supply in Japan is highly reliable based on the data obtained in 10 years or so: measures introduced were based on the assumption that a loss of all AC power would not last for more than 30 minutes:

d) Emergency trainings were superficial such that they could not build up the preparedness for severe accidents that require venting of the containment vessel in diverse situations.

Based on these lessons, nuclear regulators in Japan asked operators of all nuclear facilities to take the following actions before restarting from shutdown for periodic inspection and refueling;

a) Ensure that design base external events including seismic, seismic-tsunami and other events, and their combined effects are properly evaluated.

b) Ensure that extended losses of power and ultimate heat sink are covered under severe accident conditions, and protection is provided by a diverse and flexible capability of providing power and cooling:

c) Ensure that severe accident management procedures, including reliable hardened vent for specific reactor containment, are made to respond to a beyond design basis event, taking into consideration of the fact that external events might affect the entire site and training thereof are in place:

d) Ensure that emergency preparedness and response capabilities are in place and available

even under combined effects of natural events.

It was also requested for reforms in the safety management system by taking into consideration the following recommendations made by governmental accident investigation committee and others into consideration seriously.

a) A strong safety culture should be established in every nuclear enterprise.

b) There should be strong leadership in all the institutions involved in nuclear power that ensures attention to safety, as well as continuing efforts to understand the technology and to improve it.

c) Every operator should recognize its fundamental responsibility for safety, continuously driving himself for safety excellence, making regular investments to address insights arising from operating experience and evolving knowledge of external events and incorporate advances in safety technology.

d) The regulator must be competent, independent, and dedicated to the task of ensuring that safety obligations are fulfilled.

The establishment of Japan Nuclear Safety Institute (JANSI) is an example of electric power companies' renewed determination to devote to nuclear safety, responding this request.

In response to the last point, on the other hand, Government finally established the Nuclear Regulation Authority (NRA) on 19 September as a new independent regulatory organization that is responsible for nuclear safety, security and safeguards of nuclear materials. This is the key element of action to recover the governance of nuclear power in institutional and public trust dimensions.

The NRA immediately started reviewing the characteristics of active faults in and around several NPP sites that had been open to dispute. The Authority also started to establish a new safety standard that requests the implementation of countermeasures against severe accident such as those mentioned above by July next year, which will be the criterion for the NRA to allow the restart of idling plants.

In the public trust dimension, local governments and citizens are essential participants in addition to the central government and operators of NPPs. As the NRA asked municipalities within 30km from NPPs to establish an emergency plan, the number of participating municipalities rose significantly. Therefore, Government should establish an innovative institutional arrangement within which problems are identified and solutions are enacted through interaction among participants in restarting the idling plants.

Fourth: plan to cope with the policy of planning no new NPP in Japan.

We have insisted politicians that governance plan for this policy arena should cover four dimensions at least, namely, human resources, competitiveness of nuclear manufacturing industries, nuclear fuel cycle activity and international relations.

Certainly the new strategy touches upon these issues in appearance, but it does not talk much about them so that we can start the deliberation of a comprehensive policy package to materialize the objective in consistent with other basic policy objectives for Japan to thrive in a competitive world.

And, while nuclear power plants were idling, Japan Nuclear Fuel Limited (JNFL) started the operation of new centrifuge cascade for uranium enrichment of the updated section of Uranium Enrichment Plant, resumed the construction of a MOX Fuel Fabrication Plant and started the final test of melters of the Rokkasho Reprocessing Plant (RRP), with a view to completing the active test of the RRP in the fall of 2013.

In parallel, Government is, I hope, to start R&Ds for used nuclear fuel direct disposal and for advanced burner reactors that can reduce the amount of radioactive wastes, compiling the outcome of some 30 years of fast-breeder reactor R&D activity including the operation of Monju. Government also started to intensify the activity to determine the site for a high level radioactive waste repository.

As Japanese nuclear industry had quite a limited number of new domestic order in 10 year pipeline even before March 11 event, it seems reasonable for us to deliberate a system-wise adjustment to the new policy of no new order in the future from a mid and long term

viewpoint, paying due attention to the success of restart of idling plants and the resumption of and the increase in the MOX fuel use in the operating reactors in the near future, on the one hand, and the need for a comprehensive strategy to govern this complex arena.

That said, it seems to me two things we should do in the very short term.

First, there is clearly a short-term issue about human resource pipeline into nuclear business. It is not something that we can let drift, because the announcement of no new plant policy in the social atmosphere filled with blame for nuclear community started to affect enrolment patterns in universities, human resources we need will not be available to us in the relatively short term. So we are proposing the nuclear community and Government to tackle this issue in the relatively short term.

Two, Japanese nuclear industry should start to adjust itself to the situation. For one of the less industry-savvy peoples in the room, I am not sure about what the nuclear industry can do, faced with such a situation. I think, however, that there should be a genuine government-industry joint action for making the best use of nuclear industrial capability in terms that are going to make sense to the people, as it is a kind of important public properties Japanese people contributed to build up by having accepted the construction of 50 some nuclear power plants since the late 1960s.

Ladies and gentlemen,

I think this afternoon we were fortunate to be able to attend this roundtable among experts with a variety of perspectives on the theme. I felt the power of that combination has been on display today. Many talked about the importance of the US-Japan relation and the importance of deliberating nuclear issues taking this context into consideration.

Many talks during this afternoon reminded me what was preached by David Lilienthal, the first Chairman of the US AEC shortly after the Accident at TMI NPP in 1979; “ We should fix nuclear energy, not extirpate it”.

Now it is fallen to us to try and come up with the difficult task of learning from the discussion and pointing out what we should do in mid-and-long term perspective. As we do

not have an endless opportunity to exploit the cooperation that we have and to set up for what the future is going to bring, can I ask you a favor of working together with a sense of urgency to seize the maximum opportunities that we can work together for the future.

Finally, on behalf of all Japanese participants, I would like to express our sincere appreciation again to The Howard Bake Forum and the Heritage Foundation for organizing this meeting.

Thank your for your kind attention.