

Memorandum of the Second Nuclear Reform Monitoring Committee

1. Date : 14:00-16:30, December 14 (Friday), 2012
2. Place : TEPCO Headquarters 10F West Side Conference Room
3. Participants : Dr. Dale Klein (Chairman), Lady Barbara Judge CBE (Deputy Chairman), Dr. Kenichi Ohmae (Member of the Committee), Masafumi Sakurai (Member of the Committee), Kazuhiro Suzuki (Secretary General), Kazuhiko Shimokobe (TEPCO Chairman, Member of the Committee), Naomi Hirose (TEPCO President, Chief of the Nuclear Reform Special Task Force), Zengo Aizawa (TEPCO Executive Vice President, Deputy Chief of the Nuclear Reform Special Task Force), Takafumi Anegawa (General Manager of the Nuclear Asset Management Department, Secretary-General of the Nuclear Reform Special Task Force)

4. Summary :

Opening address by Chairman

(Dr. Klein) I think we made a lot of progress since our last meeting. I continue to be impressed with TEPCO's openness and honesty and frank discussions. As you know, we've stated before, our committee will be very blunt and frank and open with our comments and recommendations and we appreciate the openness that TEPCO has provided. And we look forward to hearing your comments and your updates today. And we look forward to continuing good progress.

Comments from each Committee Members

(Lady Judge) I just would like to repeat what Dr. Klein has said, which is that we have worked very hard in the past two months, and we can see that we are getting very good support from TEPCO and from the Task Force that has been assembled. In addition, we are looking forward to continuing our work in order to achieve our goal, which is to help to make TEPCO the "best in class" with respect to Nuclear Safety. With respect to the self regulatory subcommittee, of which I am Chairman, I will report on that later, but I wanted to say that during the recent weeks, we have been reviewing various self regulatory operations in a number of countries with advanced nuclear programs in order to formulate an appropriate recommendation for TEPCO. As I have said before, however, I will discuss this later in the meeting.

(Dr. Ohmae) I am responsible for studying technological issues for the Committee. I have proceeded with my examinations with a fundamental focus on why the

accident at Fukushima Daiichi occurred, what measures should be put in place based on the lessons learned from the accident, and the provision of information to Japan and the rest of the world to assist in preventing similar accidents, if such information is available. Having worked with a team from TEPCO for a month and a half studying the facts of the situation and exchanging information concerning technological measures and other issues, I see my work as largely completed.

(Mr. Sakurai) I am responsible for considering crisis management and ethical issues. TEPCO has offered me energetic cooperation in all areas of my work, from inspections of Fukushima Daiichi and exchanges with personnel on the site, to the preparation of documents concerning specific factual details that I have requested. With regard to disaster prevention, crisis management and corporate ethics, I believe that the two most important perspectives are how the measures which have been decided on are put into effect, and how these measures are maintained over the long-term. I will continue to be involved for some time in areas including training and instruction and personnel management.

(Dr. Klein) In regard to the international activities, it's very important that you continue your active participation in the international arena. Being a technical person, we are all very anxious to understand more of what happened at the accident, so that we can prevent those from ever occurring again. So it is very important that TEPCO continues its participation in international conferences in a very open and transparent way as you have been in the past. And we look forward to hearing from TEPCO today.

Setup of the Website for public information disclosure

Secretary General Suzuki discussed the overview of proceedings of the previous Nuclear Reform Monitoring Committee and the composition of the webpage and the content to be published, in addition to providing details of the Committee members. Dr. Klein suggested monitoring the number of visits to the website, and Lady Judge proposed that opinions received regarding the website should be reflected in its operation.

Activity of each Subcommittee Meeting

The members of the Committee reported on the activities of the Subcommittees as follows.

(Dr. Ohmae) I instructed that four studies be conducted in order to verify just how serious TEPCO is in its determination to engage in nuclear reform. This was clearly,

then, a test for TEPCO, but the company responded with a surprising degree of honesty and directness. The reason that TEPCO is regarded with suspicion is that one year and eight months after the accident at the Fukushima Daiichi Nuclear Power Station, the company has still not publicly analyzed and explicated the real causes of the accident. The details of the four studies were as follows.

1. Make clear what type of explanations and guarantees TEPCO provided to local residents concerning the safety of the reactor when the Fukushima Daiichi Nuclear Power Station was being constructed, and which safety mechanisms functioned, and which failed to function, when the accident occurred.
2. For what reasons did TEPCO fail to introduce the measures for station blackout termed B5b, recommended by the United States Nuclear Regulatory Commission (NRC) as anti-terrorism measures?
3. What types of measures should be introduced based on the lessons learned from the accident at Fukushima Daiichi? What types of measures can be taken to ensure that reactors are able to come through despite being faced with similar conditions to Fukushima Daiichi?
4. Looking back today, one year and eight months after the accident, was the information provided to the public by TEPCO in the wake of the accident accurate or inaccurate?

The facts verified by these studies and the proposals which can be made on that basis are as follows.

1. None of the safety functions indicated in the application for approval of construction of the Fukushima Daiichi Nuclear Power Station, or the reactor safety functions explained during public hearings conducted at the time of construction of the Fukushima Daiichi Nuclear Power Station, other than SCRAM (emergency shutdown), actually operated.

Given this, it will be essential for TEPCO to implement the following two measures.

- TEPCO should make sincere apologies to the residents of Futaba, Okuma, and neighboring towns and villages in Fukushima Prefecture which provided land for the construction of Fukushima Daiichi for the fact that the safety functions guaranteed at the time of construction of the facility failed to operate.
- TEPCO should announce its intention to adopt measures to prevent any reoccurrence of the accident and to provide adequate compensation for the damage caused by the accident to residents of the area in the vicinity of the reactors and to the people of Japan.

2. We have judged that information regarding B5b was provided by the NRC to the Nuclear and Industrial Safety Agency, but we have discovered no evidence that TEPCO had direct access to this information. However, in 2006 numerous reactors in other countries began to project station blackouts, and we may therefore consider the possibility that TEPCO knew about or had access to information regarding B5b through alternate channels, for example international conferences.

In the future it will be necessary for TEPCO to introduce reforms to ensure that it is able, as a member of the global nuclear industry, to rapidly obtain the most advanced information regarding safety and to respond sensitively to this information.

3. Findings regarding events which occurred during the accident and the measures taken in the report “What to Learn from the Accident in Fukushima Daiichi Nuclear Power Plant” (which I will refer to as the “Ohmae Report”) and TEPCO’s opinion were compared, and items were classified into those which corresponded and those which did not correspond. We conducted extensive discussions of the items which did not correspond. The results indicated that there was only a discrepancy of around 2% in our opinions. TEPCO has been sufficiently able to introduce alternative measures, and I am personally 100% satisfied with the results. In the future it will be necessary to proceed with these measures at Kashiwazaki-Kariwa and other nuclear power stations without delay, to make announcements to the public in this regard as soon as schedules are determined, and to explain the situation in ways that are convincing to local residents. I believe that making these measures known to the public will convince the public of TEPCO’s level of commitment in this respect.
4. The information which TEPCO has made public since 3/11 was classified into accurate and inaccurate categories based on what we know today, and the inaccurate information was further classified into a: Information which TEPCO was unable to judge as inaccurate due to the company’s own shortcomings; b: Information which TEPCO possessed, but which it was not able to make available to the public due to the past sequence of events; c: Information which TEPCO was aware that it was required to make public, but which it was prevented from making public by instructions or pressure from outside. The results of our analysis indicate that after the accident, a was the largest category, following which b became the largest category; later, c became the largest category. In other words, TEPCO was unable to make accurate information

public initially because of its own incapability, later because of its company circumstances, and finally because of external pressure. It is clear, then, that TEPCO did not present the facts to the public. With regard to category a, it will be essential for all TEPCO staff members, from top management to new employees, to engage in further study of nuclear power. The company should also look into fundamental retraining of its employees, for example making use as necessary of staff members of relevant manufacturers with extensive knowledge of nuclear power.

Turning to category b, we must engage in extensive self-examination to ensure that no repetition of these events can occur, and must ensure that no matter what the circumstances, the operators of nuclear reactors are able to provide the public with all available information even a moment sooner.

With regard to category c, if Japan's reactors are to be restarted, it will be essential for nuclear operators to adopt the attitude, as professionals, that information which should be made public will be made public, no matter what the objections from outside, and to be resolved to make external agencies understand this fact. In addition, it will be important for TEPCO to make the results of these investigations public in order to demonstrate the extent to which it has engaged in serious self-examination, and that it is resolved to ensure that these events cannot occur a second time.

Investigating these four areas in a short period was a difficult task, but the members of the TEPCO team did an exemplary job. If the company implements measures in accordance with the details which have been discussed and agreed upon, I believe that a situation of the type represented by the Fukushima Daiichi accident will not occur again.

(Lady Judge) We have worked very hard together with the TEPCO support team and the Task Force and we have characterized the key issues that we are going to discuss. We have determined that TEPCO itself characterized its own position as "followers" rather than "leaders". The culture appeared to push away problems rather than manage them. They had had previous interactions with industry networks and associations but their suggestions had not been followed. Peer reviews had been carried out, but there had been a failure to remedy the issues raised. Objectives have now been set for TEPCO which include for it to achieve the highest safety standards, and for us to provide a framework for that to happen. We are proposing that TEPCO establish a culture and system that ensures the necessary safety requirements and provides that TEPCO adheres to them without the need to be

directed from outside. Although we always intend to maintain a good relationship with the Regulator, we understand that there must be regulatory tension, and that the regulator has been charged with making sure that TEPCO has monitored its own safety standards. We want to ensure that safe operation is the highest priority at all levels of the TEPCO organization. Accordingly we want to propose a culture which is effectively open, and provides full disclosure, and encourages people at all levels of the company to give suggestions for ways that safety can be improved. These are the principles being used by our sub-committee to establish a self-regulatory organization within TEPCO. We will set forth a detailed proposal later. At the moment we are formulating a self regulatory organization which will operate alongside the management of the business, not under it. The self regulatory organization will report directly to the board of directors as what we have been calling the “independent internal safety assurance office”. The exact name is still being considered. There will be full support from the board and from our committee and sub-committee. The self regulatory organization will provide standards for the TEPCO employees to follow. Those standards will be monitored with the expectation that the national regulatory organization will come in to monitor it on a periodic basis. At all times we would like to encourage all members of the staff to be involved in the change of culture and the safety process that we intend to establish. As I have said many times, our ultimate goal is for TEPCO to be “best in class” with respect to safety, and to establish and abide by the highest safety standards possible.

(Dr. Klein) On the international activities, I provided information from 2 other companies that I served on the board of, Southern Company and Pinnacle West. This information was quite voluminous in length both on safety, safety culture and core practices. And I believe a lot of that information is being translated and will be provided to the TEPCO team. I was really appreciative of both of those companies provide information and I think this just demonstrates how people around the world are willing to help both Japan and TEPCO to strive for excellence. So as we often said before the nuclear community is small that actively caring it. So I think this demonstrates the caring nature of the nuclear industry. On the activities that TEPCO has done, I have been very impressed and I think it's nice that TEPCO has documented all the international activities that they have participated in that include technical conferences. So at some point we should probably make sure that we get those clearly documented. Probably this meeting maybe on the website, so that it is clear, the world knows that you are very active in disseminating information and

receiving input from others. On the example of what you have done, you have shared information about the accident, a lot of technical activities, fuel melting, fuel movement, damage to the reactor vessel. You talked about lessons learned, you talked what could have been done, you looked at valve positions where things failed, when the power is lost. When you look at the list of organizations that have come into TEPCO to examine, the list is rather long and includes the IAEA, WANO, NRC, INPO, national academy of sciences, OACD, NEA, the BWR owners group, EPRI, the National Act . So you have been very proactive and I encourage you to keep up those activities. As we said earlier the world is very interested in technical aspects in Fukushima Daiichi site. So as you get information available, it is very important that is transmitted, I just encourage you to keep up that activity. I think Fukushima Daiichi demonstrates what happens when you have a low probability and high consequence event and as you develop a safety culture and activity, you want to keep in mind those characteristics, those low probabilities and high consequences. I think it is important that Japan creates their own info for the industries work together to share information. I can assure that the US Nuclear industry would not have their good performance records to date. Had they not learned from Three mile island and developed info. So it's very important that Japan proceeds in that direction. The cleanup is going to be long and is going to be difficult and we will talk a little bit more about decommissioning a little bit later. I think with your continued open communication, internationally and nationally it starts to regain trust but it will be a process. Well that's pretty well the comments that I had on international activities and I will hear from Mr. Sakurai on emergency preparedness and ethics.

(Mr. Sakurai) The most important matter from the perspective of corporate ethics is knowing what the risks are. TEPCO had considered a reduction in the utilization rate of its reactors as the major risk prior to 3/11. Because this view was accepted as a given, the company not only did not actively introduce safety measures and disaster prevention measures, but it was also as if allergic to considering that its reactors would represent a danger if such measures were not introduced. Unless this way of thinking is corrected, nothing else can proceed. I would like TEPCO to become aware that unless the attitude of the management level changes, there can be no change in the employees under them. As Dr. Ohmae has also indicated, there is no other path for the company than to recover the trust of the public by providing accurate information.

In the areas of disaster prevention and crisis management, TEPCO must thoroughly

inculcate the basics – that safety is the top priority. However, simply introducing the concept of safety as the top priority is not enough. It will be essential to adopt an attitude promoting constant reexamination of measures. I hope that TEPCO will take the findings of each of the survey committees seriously.

Measures in the areas of disaster management, risk management, and corporate ethics are of no avail without practicality, persistence and continuity. These three perspectives have been taken seriously in the requests for studies and the formulation of materials which have been made to date, and also in the way that results have been received.

The question as to the status of Fukushima Daiichi on 3.11 is another important matter. Studies of the accident have focused on what was not possible, but it is essential to consider why what was possible was possible, and to compare what was possible and what was not possible. It is meaningless to focus exclusively on what was not possible. Taking this perspective, we surveyed Fukushima Daiichi after the earthquake and received explanations from the personnel there. I do not believe that the efforts of the employees of Fukushima Daiichi were deficient in any way, and I think that if the employees of Fukushima Daiichi had been substituted for the employees of Fukushima Daiichi, the result would have been exactly the same. In this respect, I believe that this accident occurred due to factors beyond the reach of human effort and ability. I would like to see an adequate comparative study of what was possible and what was impossible in the response to 3/11 conducted from this perspective.

As Lady Judge has already indicated, I also believe that there is a necessity for the establishment of an internal auditing system at TEPCO. However, I think that there will be difficult issues to consider in relation to the independence of the system and the personnel who will operate it.

When we discuss ethics, what this Committee has in mind is not standard ethics (for example, that one should not drink and drive), but an ethics tailored to an awareness of safety. In relation to the question as to whether the company's ethical awareness has or has not changed, follow-up studies will be necessary, and I would therefore like to see TEPCO conducting continuous surveys. The areas which I am responsible for overseeing involve issues which take time to solve, making continuous monitoring of the status of improvements essential.

As has been mentioned in the Subcommittee meetings, training should not be conducted for the sake of training only, but rather in order to discover where problems exist. Monitoring is also important from this perspective, and we have received understanding on this point from TEPCO's Nuclear Reform Special Task

Force.

Finally, while it is now possible to form a survey and investigation project team, as of the present there are no situations necessitating studies involving new personnel from outside the company. Requests from individual Committee members can be dealt with by the members of the Nuclear Reform Monitoring Committee Secretariat or the Nuclear Reform Special Task Force. There are no issues for which we need to use a survey and investigation project team. If new facts arise or materials are formulated in future which require focused investigation and research, we might consider the formation of such a team, but at the present at least, response by the members of the Secretariat is sufficient.

Interim Report on Fukushima Nuclear Accident and Nuclear Safety Reform Plan

The Interim Report on the Fukushima Nuclear Accident and Nuclear Safety Reform Plan, presented by Takafumi Anegawa, head of the Nuclear Reform Special Task Force, was introduced and discussed. The main comments offered by each of the Committee members are presented below.

(Lady Judge) I thought this was a very good job, particularly given the short period of time from when it was started to when it was finished. It is very impressive that we have been given so much information about what happened, and shows that there is a good collaboration between the TEPCO reform group that you are heading Mr. Anegawa and Dr. Ohmae's questions. This is exactly the way for the committee to work with TEPCO in order to get the best result.

(Dr. Ohmae) Giving consideration to the analysis of the Fukushima accident and future issues, there are a number of important points to be addressed from the perspective of what the government has been doing up to the present.

The first of these is that the government has been having mechanical calculations based on stress tests performed for around a year, looking towards restarting reactors if conditions are acceptable. Believing that no residents would agree to the restarting of reactors based on stress tests unless we find answers as to what actually occurred at Fukushima Daiichi and what measures this makes necessary, I conducted the Team H2O Project as a back-up in the event that the stress tests failed. The government has been pushing these stress tests on the concerned parties for a year, and finally has not restarted a single plant. I think that the public will simply have to understand that this is the nature of the Japanese government.

Another issue is the fact that issuing a declaration of safety claiming that the reactors were in a state of cold shutdown despite the occurrence of not merely a

meltdown but a melt-through in the course of a week, with molten fuel having broken through the pressure vessels and accumulated on the floors of the containment vessels, flew in the face of commonsense, but TEPCO went along with the then-government's desire to declare safety at least until November last year. TEPCO offered no resistance to this, behaving according to category c described previously – they knew facts, but were not able to make them public due to the circumstances of the declaration of safety. I feel that learning why this judgment was made in relation to the breaching of the bottoms of the pressure vessels in the first week is important in terms of understanding the character of this nation. While it is not related to the present report, I believe that this is something that it is also necessary for the Japanese people to know.

I feel that it is necessary for TEPCO to apologize sincerely for having failed to uphold the promises it made at the time of construction of the reactors, having been granted permission to locate its facility in Fukushima, and to determine, together with the relevant regulatory authorities or Fukushima Prefecture, measures to enable residents, in particular of Futaba and Okuma, to return to their homes within the scope of possibility, as soon as they can. At the same time as it makes these apologies to Fukushima Prefecture and to the residents of the area around the reactor, it will be essential for the company to publish this overview of the Fukushima accident and plan for nuclear reform, and to take action to reduce the number of displaced people even slightly earlier than otherwise might have been the case.

(Chief of the TF, Hirose) In relation to Fukushima Prefecture, and I believe that this accords with Dr. Ohmae's suggestions, in addition to studying our actions and responses and offering apologies for the occurrence of this major accident, we have positioned measures that it will be possible for us to effect as our top management priority, and we have formulated a variety of plans. We clearly do not believe that if we simply establish a headquarters for the reconstruction of Fukushima the situation will be righted, but from January 1 next year we will establish a solid footing in Fukushima under the leadership of our Executive Vice President, and I will transfer authority to enable a variety of projects to be undertaken based on rapid decision and implementation while listening to the opinions of local people.

We and all the other employees of TEPCO will visit Fukushima and do all we can, including clean-up and decontamination work. Independently of the provision of compensation, we will do as much as possible to ensure that residents are able to return to their homes at least a little earlier.

(Deputy Chief of the TF, Aizawa) The implementation and the continuation of the

Nuclear Safety Reform Plan will be subject to scrutiny from now on, and I think that this is an extremely important point. However, this is a plan that will be launched based on the conviction of each of our employees, rather than one that will be pushed along by monitoring or instructions from management. We would be very happy if you would provide us with any hints that you may have with regard to how we should proceed in order to stimulate this kind of motivation that proceeds from conviction.

(Mr. Sakurai) I think that TEPCO has had a problem to date in that the top level has not committed to taking the initiative and providing an example, and unless that changes there will be no change in the rest of the organization. Another point is to what extent the management level paid attention to information repeatedly provided to it by members of staff. No matter what efforts management makes, if staff members have offered honest opinions and these have been ignored or set aside, the flow of information will cease.

I think that monitoring is another problem. Management should consider the introduction of new methods after calmly surveying the situation.

(Dr. Ohmae) The four studies that I conducted analyzed facts only, with no input based on my personal opinion. If there is any disagreement with the findings, I think that the people who disagree should discuss the matter with the Nuclear Reform Special Task Force. And perhaps these people should be required to visit Fukushima and Niigata and explain their opinions to local residents. The best thing to do would be, for example, to give them the job of explaining to residents of these prefectures why they believe that Fukushima Daiichi should be restarted. If they stand up to the arguments of prefectural residents and local authorities and maintain their skepticism as members of a monolithic organization, I personally would drag them in front of residents of the area around Fukushima Daiichi and say “Go on, the existence of our company is at stake.” I would like to hear the explanations that would be offered.

(Dr. Klein) This isn't something that you have to do on your own that no one has ever done before. What's important is that you focus on the issue, communicate, communicate, communicate. And continuously evaluate your employees to see that they really understand. Those are companies that have had to go through cultural changes. There are a lot of examples. I think the important thing is it's a continuous process. It's not something that you will do one week and expect the next week that it's all done. It is a journey. I think the most important thing is it you know you can do it and you just keep at it.

Organize proceedings by Chairman

(Dr. Klein) In terms of today's meeting speaking on behalf of my colleagues, I think that we've been pleased with the interaction with TEPCO, you know you're giving good open dialogue communication and we will continue to give open and frank comments. When we identify weaknesses we will certainly point those out. But I think overall, progress is being made and I'm sure lots of your employees are working very hard. So thank you for the information.

I think it would be good for the committee to get a briefing and an understanding of your decommissioning plan and so to better understand your schedule of the issues, and so I think that's one area that would be good to talk about at the next meeting.

(Chief of the TF, Hirose) We have a long-term plan, and we will make it known to the public.

Word from TEPCO Chairman

(TEPCO Chairman, Shimokobe) I would like to thank all of the members of the committee for offering extremely valuable opinions on and evaluations of the Interim Report on the Fukushima Nuclear Accident and Nuclear Safety Reform Plan, which the Nuclear Reform Special Task Force has been working on, and other matters including the stance being taken by TEPCO's management. I am very pleased that today's meeting of the Committee has offered its own unique evaluation of TEPCO's approach. The Nuclear Reform Special Task Force will continue its work towards the planned completion of its final report in February. TEPCO's Board of executives will give very serious consideration to criticism of the final report, and will make efforts to ensure that the proposed nuclear reforms are made still more practicable, to ensure that they are acceptable to the Japanese public, and to the people of Fukushima, who have suffered so greatly as a result of this incident.

Future schedule

The Third Nuclear Reform Monitoring Committee is scheduled to meet on February 23, 2012 (Sat.)

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