Commentary

Risk Communication for Stakeholders Making Decisions about the Energy Future with Atomic Power (2)

–Risk Communication Activities Based on Lessons Learned from Accident Response at Fukushima Daiichi NPS–

Tokyo Electric Power Company, **Tomoki Usui** and **Takashi Yamamoto**

The Tokyo Electric Power Company (TEPCO) has been promoting risk communication by heeding the lessons learned from the Fukushima Daiichi Nuclear Accident. Based on the assumption that there is no such thing as absolute nuclear safety, risk communicators have been appointed to coordinate specific measures with the Social Communication Office established in the company. Both in coordination with each other are assigned to cultivate the social sensitivity of the Nuclear Power Department and the company as a whole to ensure that their way of thinking and criteria for judging are not out of touch with the rest of society. This commentary presents a series of dialogues that have been pursued with communities in Fukushima and Niigata.

KEYWORDS: risk communication, risk communicator, dialogue

I. Introduction

This commentary is mainly based on the report that the Tokyo Electric Power Company (TEPCO) submitted at a seminar on risk communication in the nuclear sector that was held in August 2014 by the Human-Machine Systems Research Subcommittee of the Atomic Energy Society of Japan (AESJ). It features the risk communication activities pursued by TEPCO as part of its efforts to heed the lessons learned from the Fukushima Daiichi Nuclear Accident. To promote further discussion on risk communication from a diverse range of perspectives, this commentary also presents the challenges identified by TEPCO in its capacity as the entity responsible for the accident as well as a regular company.

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II. Lessons Learned from the Fukushima Daiichi Nuclear Accident [1)]

In September 2012, TEPCO established the Nuclear Reform Special Task Force to analyze both the technical and organizational factors behind the Fukushima Daiichi Nuclear Accident under the oversight of the Nuclear Reform Monitoring Committee. The root cause identified by the task force was inadequate preparedness against accidents due to excessive confidence in existing safety measures and the priorities assigned to the capacity factor and other business performance indicators. The accident cannot be ascribed to a natural disaster. Rather, intellectual efforts were not sufficiently exhausted to prepare against avoidable accidents. Taking this failure to heart, the task force looked deeper into the safety mindset, technical competence, and communication skills as factors behind the accident.

A deeper analysis of inadequate preparedness as a root cause in terms of communication skills revealed a hesitancy before the accident to share information on residual risks and communicate in general with the local communities. As shown in **Figure 1**, for example, any acknowledgement of the need for severe accident measures was assumed to weaken the argument that nuclear power plants were already safe enough.

III. Reform Plan for Enhancing Nuclear Safety [1)]

The six measures listed below have been adopted to radically address problems associated with the equipment at nuclear power plants (hardware measures) and substantially address organizational problems (intangible measures).

Measure 1: Reform of management
Measure 2: Monitoring of management and reinforced support
Measure 3: Reinforcement of capacity to develop defence in depth proposals
Measure 4: Enhancement of risk communication
Measure 5: Reorganization of power plants and headquarters in the event of an emergency
Measure 6: Organizational overhaul of power plants during normal operations and reinforcement of technical competency for operations by TEPCO employees only

Of these six measures, this commentary will focus on Measure 4 to enhance risk communication.

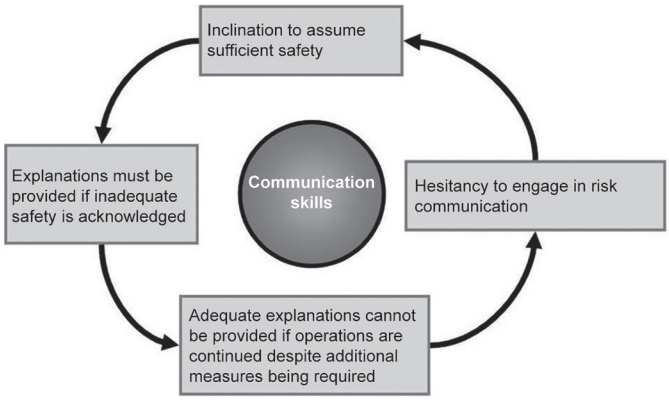

Figure 1 Vicious cycle (communication skills)

IV. Fulfillment of Risk Communication

Multiple layers of defence in depth must be built up to reduce the residual risks to a socially acceptable level. An additional measure will need to be adopted to eliminate the assumption that an announcement of risks would lead to the regulatory authorities and local communities demanding excessive measures, leaving the utility companies with no option but to shut down their nuclear reactors. If this kind of brain freezing due to above assumption actually happened, new countermeasures will also be needed to dissolve the assumption for future. Accordingly, TEPCO shifted its policy to the pursuit of risk communication. Based on the idea that there is no such thing as absolute safety, leaders of the nuclear sector are now expected to disclose any risks directly and seek an understanding of their safety measures from the local communities and the wider society.

As the entity responsible for the Fukushima Daiichi Nuclear Accident, TEPCO assumes responsibility for disclosing any risks and the corresponding countermeasures to the public. It must also accurately communicate the risks of nuclear emergencies while at the same time sincerely acknowledging and addressing any questions and concerns that the public may have. Such communication would enable TEPCO to obtain useful information about unnoticed risks as well as develop a shared understanding of a socially acceptable level of risks and a means of addressing the risks of extremely rare events associated with grave consequences.

Accordingly, TEPCO has committed itself to risk communication with the goal of "disclosing risks, providing explanations and holding discussions on how to enhance nuclear safety with respect to these risks, and gaining a certain degree of public understanding of these measures." To achieve this goal, confidence building amongst the local communities, TEPCO, and the wider society is considered essential.

1. Appointment of Risk Communicators

TEPCO has appointed professional risk communicators who provide close support to upper management and leaders in the nuclear sector to ensure that they always bear in mind the perspectives of the public. They help plan the methods by which risks are acknowledged and disclosed, explain any limitations, recommend policies, and conduct risk communication according to these policies. As of the end of April 2015, TEPCO has appointed a total of 37 risk communicators, with 11 assigned to its Tokyo headquarters, 13 to Fukushima (including the Daiichi and Daini Nuclear Power Plants), 11 to Niigata (including the Kashiwazaki-Kariwa Nuclear Power Plant), and 2 to Aomori (including the construction site of the Higashidori Nuclear Power Plant).

The upper management and leaders in the nuclear sector always seek the opinions of risk communicators before making any major business decisions. These executives also consciously encourage the relevant units inside TEPCO to carry out any recommendations made by the risk communicators that incorporate requests from the local communities, the wider society, and the regulatory authorities.

Aside from the practice of holding daily dialogues, the risk communicators undergo training programs conducted by external lecturers with the aim of gaining further skills for engaging in risk communication with the local communities and the broader society.

2. Creation of a Social Communication Office

The Nuclear Power Department and TEPCO as a whole used to consider it best to "smooth things over." This conduct fell short of public expectations. They communicated without giving much thought to the information that they were sharing with the public. The company was even unable to recognize that its insincere response to members of the Diet Accident Investigation Committee was an issue of concern for the public. Without reform, an organizational culture such as this would obstruct proper information sharing on risks and render risk communicators useless.

Sincere communication with society regarding the risks associated with nuclear energy is crucially dependent on the urgent and daring reform of this organizational culture. After much soul-searching over its earlier failure to get to the crux of this deviant culture, TEPCO has now decided to invite an external expert to swiftly and effectively realign the company with society and pursue more socially minded risk communication.

This external expert was appointed as the director of the new Social Communication Office, which reports directly to the president. The office employs 15 full-time personnel, including the director and vice director. As indicated by the organizational structure shown in **Figure 2**, the office pursues robust risk management and conducts awareness activities concerning the expectations and perspectives of the public. Organizational reform is initially being pursued with the Nuclear Power Department. The office has been assigned the roles described below.

- Conducting of in-house awareness activities: Mobilize risk communicators to collect detailed information on the risks involved in nuclear power operations and conduct awareness activities regarding the importance of sensitivity to the sentiments of the local communities and the wider society.
- Collection of information related to the activity status and improvement instructions: Analyze the collected risk information and issue instructions concerning the necessary countermeasures for potential and imminent risks while keeping in mind public expactations and consensus.
- In-house sharing of case studies of improvement instructions: Share instructions widely within the company to improve its corporate culture and company-wide risk management.

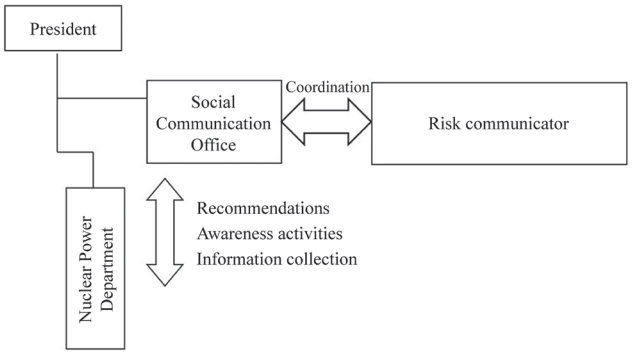

Figure 2 Organizational structure for promoting risk communication (as of May 2015)

V. Case Examples of Risk Communication in Fukushima

1. Dealing with Difficult Announcements Regarding the Fukushima Daiichi Nuclear Power Plant

In 2013, TEPCO became mired in a problem associated with how the spilling of contaminated water into the port at the power plant was announced. From that point on, the Social Communication Office shifted its basic policy and took all possible efforts to address matters that were of concern and interest to the local communities and the wider society [1]. Under this new policy, the office would—without considering the possible public repercussions—swiftly and honestly announce the risks and worst-case scenarios expected based on the assessment results even without clear and sufficient supporting evidence.

After this policy shift, the next issue to be addressed was how to respond to the public interest in the question of how much radioactive material had been released. The earlier approach would have prompted the company to announce something like the following: "An assessment is impossible due to the insufficient amount of data that is available at the moment." Instead, the Social Communication Office and the Nuclear Power Department conducted assessments based on confirmed data at that time to make the following series of announcements [1].

- Case Study 1 (August 2, 2013): Estimated spill into the port of contaminated ground water containing about 10 to 40 TBq of tritium.
- Case Study 2 (August 21, 2013): Estimated spill into the port of contaminated water containing up to 30 TBq of strontium-90 and cesium-137 from the trenches of Units 2 and 3.

Purely in terms of risk communication [2-5], these announcements should have been combined with communication regarding risk assessments with due consideration given to the relevant implications and interpretations as well as risk management with due consideration given to the necessary countermeasures. At that moment, the swiftness and transparency of the announcements were probably prioritized in light of the high public interest in the latest status of the power plant.

2. Attentive Dialogues with Residents of Fukushima Prefecture

Residents of Fukushima Prefecture frequently express the need for a clear explanation of how TEPCO is handling decommissioning work and contaminated water. Such requests are shared within the company and they now weigh heavily on the continuing dialogues with these residents. Employees visit the residents' temporary shelters and upper management is trying to establish more opportunities to provide the necessary explanations. Three specific activities are described below to provide examples.

- TEPCO managers provided explanations at prefectural meetings [6] organized by the prefectural government to discuss the safe decommissioning of the nuclear power plants in Fukushima and at council meetings [7] organized by the Ministry of Economy, Trade and Industry to discuss decommissioning and measures against contaminated water in Fukushima (17 times in total by the end of April 2015).
- TEPCO employees visited a total of about 150 temporary shelters and other such places to explain the progress that had been made in terms of the Mid-and-Long-Term Roadmap.
- Brochures were inserted into information bulletins issued by the municipalities to provide updates on the Fukushima Daiichi Nuclear Power Plant (once a month in nine municipalities).

3. Greater Opportunities for Site Visit

Another request that residents from the prefecture frequently make is for them to have more opportunities to see and confirm the current situation at the plant for themselves. In 2013, the number of visitors had to be limited to ensure their safety in the on-site environment with due consideration given to the work that needed to be carried out there. Respecting the residents' wishes, TEPCO is trying to host more visitors by making the following improvements.

- Regular bus services have been organized exclusively to host large numbers of visitors from Japan and abroad (shared by multiple groups invited to visit the site from inside the buses).
- The hosting capacity was increased so that more regular bus services could be offered and more visitors could be invited to attend the site visit.
- Revision of briefing materials for the site visit and information materials on decommissioning were provided to improve visitor satisfaction.

Following this increase to the hosting capacity, 9,207 visitors attended a total of 770 site visits organized from April 1, 2013, to March 31, 2015.

In addition, a video tour has been posted on the official TEPCO website so that people can ascertain the situation at the power plant visually and virtually [1].

VI. Case Examples of Risk Communication in Niigata

1. Dialogues with Citizens (Case Study 1: Briefing Sessions for Local Communities)

Briefing sessions are organized for the local communities located in the vicinity of power plants to explain the decommissioning activities being conducted at the Fukushima Daiichi Nuclear Power Plant, the safety measures being implemented at the Kashiwazaki-Kariwa Nuclear Power Plant, and so forth.

Briefing sessions have been conducted since October 2007 in each local community located in Kashiwazaki and Kariwa. After the Fukushima Daiichi Nuclear Accident, 18 sessions were conducted in each community up to the end of April 2015.

2. Dialogues with Citizens (Case Study 2: Community Meetings)

TEPCO also participates in monthly community meetings with community representatives to address any doubts, questions, and requests that they may have to ensure transparency on nuclear power plants.

The community meeting is officially called as the Communal Committee for Ensuring Transparency on Kashiwazaki-Kariwa Nuclear Power Plant. The preparatory meeting to establish the committee was held in 2002. Since then, a total of 143 regular meetings have been held up to the end of April 2015. The committee consists of up to 25 members recommended by various groups that are recognized by the Committee, who are residents in Kashiwazaki and Kariwa, as the local communities.

Committee members are given the following five assignments:

(1) Examine and monitor the operations of the nuclear power plant and its impact

(2) Make recommendations to the power utility company and other stakeholders

(3) Share information with residents regarding their discussions at meetings and other

activities
(4) Conduct training for committee members
(5) Carry out any other tasks that are necessary to achieve the goals of the Committee

3. Greater Capacity to Host Site Visit at the Kashiwazaki-Kariwa Nuclear Power Plant

TEPCO believes that it is best to allow people to see the safety measures in place so that they can convince themselves of the safety of nuclear power. Accordingly, the company organizes tours while building up its capacity to host visitors. In fiscal 2014, the plant hosted 14,275 site visitors.

VII. Summary of Issues Ahead

TEPCO recognizes that the following issues will need to be addressed to enhance risk communication going forward.

- How we should switch to risk communication that is mainly aimed at rebuilding trust?
- How we should coordinate internal communication and external risk communication to cultivate social sensitivity throughout the organization?
- How we should incorporate any opinions and questions that we encounter during risk communication into the PDCA (plan, do, check, and action) cycle in the risk management that we conduct?

Meanwhile, external experts acquainted with such matters have shared the following opinions regarding risk communication by TEPCO.

- Is risk communication viable in Fukushima? In practice, communication may be taking place between the victims and the party at fault.
- The mistrust toward nuclear energy that we observe today may be rooted in mistrust toward the people and organizations that handle nuclear technologies rather than the technologies themselves.
- External communication should be preceded by internal communication.

The pursuit of ever better dialogue through risk communication is a road with no end. TEPCO has simply taken its first step down this road. The company intends to continue holding dialogues with the aim of gradually fostering the seeds of trust.

VIII. Conclusions

In August 2014, the content of this commentary was presented at a seminar on risk communication in the nuclear sector. The participants shared the following comments.

- It is important to listen to the public attentively in addition to sharing information with them.
- Care must be taken to avoid figures shared in a briefing or a dialogue from taking on a life on their own.

Exchanging lessons learned and challenges encountered in risk communication with forerunners across the borders of companies and organizations provided an excellent opportunity

for TEPCO to reflect on its earlier activities. We are grateful to both the participants and the organizer of the seminar for this precious opportunity.

Some international organizations have evaluated the risk communication that TEPCO has conducted to date as follows.

- In a mission report [8], the International Atomic Energy Agency (IAEA) appreciated the establishment of the Social Communication Office and other measures aimed at building up our organizational capacity.
- TEPCO applied to the Public Information Material Exchange (PIME) organized by the European Nuclear Society [9] and received a communication award.

TEPCO will continue to seek improvements by actively collaborating with other organizations and external experts while incorporating their feedback.

Regrettably, despite the ongoing efforts described above, it was revealed in February 2015 that radioactive concentration measurements from drainage canal at the Fukushima Daiichi plant had not been announced for almost ten months [1]. TEPCO deeply apologizes for having undermined confidence in its commitment to disclosure. The company has undertaken measures such as preventing the contamination of rainwater, deploying purification materials to the drainage system, and redirecting the drainage to the port. We have examined the risks exhaustively from the perspective of local community members and the wider society. As part of its endeavors to regain society's trust, TEPCO is seeking to improve the way that it shares information while attentively listening to the views of the public by taking heed of one of the comments made in this seminar.

References

1) Official website of Tokyo Electric Power Company: http://www.tepco.co.jp.
2) Naoki Yamano: Revisiting Risk Communication: Reshaping Nuclear Risk Communication [in Japanese], Journal of the Atomic Energy Society of Japan, Vol. 57, February 2015, P43–47.
3) Ekou Yagi: Nuclear Energy and Risk Communication [in Japanese], document distributed at the 5th meeting of the Working Group on Voluntary Efforts to Enhance Nuclear Safety under the Advisory Committee for Natural Resources and Energy, October 29, 2013: http://www.meti.go.jp/committee/sougouenergy/denryoku_ gas/genshiryoku/anzen_wg/005_haifu.html
4) Mariko Nishizawa: Risk Communication [in Japanese], Energy Forum, 2013.
5) Hideyuki Hirakawa, Tomoko Tsuchiya et al.: Theory of Risk Communication [in Japanese], 2011.
6) Prefectural Meetings on the Safe Decommissioning of Nuclear Power Plants in Fukushima [in Japanese], Prefectural Government of Fukushima: http://www.pref.fukushima.lg.jp/site/genan01/.
7) Council Meetings on Decommissioning and Measures against Contaminated Water in Fukushima [in Japanese], Ministry of Economy, Trade and Industry: http://www.meti.go.jp/earthquake/nuclear/decommissioning.html.
8) Summary Report on the Review by the International Atomic Energy Agency of the Decommissioning Measures Conducted by the Tokyo Electric Power Company for Units 1–4 at the Fukushima Daiichi Nuclear Power Station [in Japanese], Ministry of Economy, Trade and Industry: http://www.meti.go.jp/press/2013/12/20131204002/20131204002.html.
9) Official website of the European Nuclear Society: http://www.euronuclear.org/events/pime/pime2015/award.htm.