

Summary of JANSI Annual Conference 2017

The text herein is not based on the consent of the speakers.

[Brief Overview of Conference]

Date: 9:30 - 17:50, Thursday, April 27, 2017
Place: Iino Hall
Number of participants: Approximately 310



[Opening remarks]

Shojiro Matsuura, President and CEO, Japan Nuclear Safety Institute (JANSI)

- The JANSI Annual Conference 2017 is hereby convened, as the fourth JANSI Annual Conference. This conference is held for the purposes of informing not only JANSI members but also the wider nuclear power communities about JANSI's activities, as well as to exchange opinions from a variety of perspectives about the purpose and role of self-regulatory bodies, with the aim of enhancing JANSI's activities.
- This year, our focus is on "improving the safety of nuclear power plants", and we have decided to hold opinion exchanges on the topic of voluntary measures to improve safety from the perspectives of both society and technology.
- I hope we are able to use the keynote speech and panel discussions to deepen the debate on measures aimed at improving the future safety of the nuclear power industry and other topics.

[Keynote speech] Building a voluntary system involving all stakeholders for continuous improvements in nuclear safety

Satoshi Kusakabe, Commissioner, Agency for Natural Resources and Energy, Ministry of Economy, Trade and Industry



- Six years have now passed since the TEPCO Fukushima Daiichi nuclear accident, and during this time Japan has carried out a thorough review of nuclear power policy in a way that gives top priority to safety. We have worked particularly hard on the following three areas: the reconstruction effort in Fukushima; strengthening nuclear regulations; and enhancing nuclear disaster prevention. At the same time, it cannot be denied that Japanese people continue to express concerns about nuclear power. We must continue to make ongoing efforts in the pursuit of greater safety and meet these concerns by restoring the faith of the general public in nuclear power.
- I believe that, rather than handling safety regulations in a passive way, the involved parties, including the power companies, need to build a system that allows us to make deliberate and continual improvements to safety, and I believe there are several steps we need to follow in order to achieve this. First, we have to work on the basis that the power companies themselves are dealing with the regulations sincerely. Second, rather than adopting a passive stance, it is necessary for the power companies to make suggestions to one another and self-regulate in a way that helps them to improve safety together. Third, the nuclear industry as a whole, including manufacturers and research institutions, needs to come together to pursue safety and reflect the latest insights in safety measures. Doing this will help the industry to start a dialog with the regulatory authorities, and lead to further improvements in safety.
- This system would allow all parties involved in nuclear power to pursue safety improvements from their respective positions through these three steps, to make suggestions to one another, and to aim for greater levels of safety – I have called it the "Voluntary system for making ongoing safety improvements in nuclear power". Building this kind of system is the key to gaining the understanding of local authorities and local residents; more than this, it is a major element in allowing Japan, after our experiences of the Fukushima Daiichi nuclear accident, to make a genuine contribution to international society.

- As we set about building this system, I have three requests to make of everyone involved in self-regulation activities. Firstly, I would like to point out to JANSI that the result of self-regulation activities is an ongoing track record of safe nuclear operation, and this is not something that can be achieved overnight. In order to firmly establish self-regulation and achieve results that are clearly obvious to the industry, JANSI will be expected to continue implementing measures persistently and adopt the position of leading the voluntary safety improvement initiatives implemented by the industry. Last year, I got the opportunity to ask CEO Peter Prozesky of WANO (World Association of Nuclear Operators) about the significance of self-regulation activities. According to Mr. Prozesky, self-regulation activities are an attempt to pursue never-ending improvements in safety through which you constantly have a questioning attitude. This behavior is based on firmly-rooted beliefs, and only when these beliefs are strong is it possible to achieve safety that exceeds regulatory standards. It would be no exaggeration to say that initiatives implemented by self-regulatory organizations make the final difference in terms of nuclear safety.
- Secondly, I would like to point out to the power companies that the main players in improving safety through self-regulation activities are the power companies themselves. I would like to see them trying to think hard about and understand the meaning of self-regulation, taking the assessments of JANSI seriously, and continuously striving to improve quality.
- Third, I would point out to local governments and members of the mass media that in order to continually achieve safety improvements through voluntary self-regulation activities it is important to constantly adopt a questioning attitude. I would like you to maintain a constant interest in whether or not the industry is continuing to implement tireless measures aimed at improving safety, and to continue asking questions.
- From our position of jurisdiction over nuclear power policy, the Ministry of Economy, Trade and Industry will continue to call for operators to address self-regulation activities seriously, and we will provide the support needed for these activities to function effectively. The important thing now for the nuclear power industry is for the relevant parties to move into action with enthusiasm as we share recognition of the challenges we face and set about trying to improve safety voluntarily.

[Session 1: Voluntary Safety Improvement Efforts in Nuclear Power Generation] <Short speech>

Moderator: Akira Yamaguchi, Professor, The University of Tokyo



- I realize this may be a little inappropriate, but the title I have come up with is "Protection Can Become Nonsensical". One example would be internet passwords. The more complex the password, the safer it becomes, but there are cases when you end up forgetting the password and can no longer log in. If you increase the strength of the brakes on a car to make a car that will never crash, the braking performance improves but this then becomes a danger for cars driving behind. The risk of being crashed into from behind then arises.
- If we take the example of cooling performance, which is extremely important for nuclear power plants, as the multiplicity and redundancy of alternative cooling increases, the piping system and injection line grow larger and the risk of leaks rises, as well as issues such as the increased human error risk from maintenance management.
- The higher you try to set the bar for safety, the more areas of uncertainty emerge. Thinking about these areas, I believe the approach to strengthening safety measures then moves away from strengthening design measures and towards appropriate risk management. When this happens, risk management plays an extremely important role.
- When PRA (Probabilistic Risk Assessment) is used to make decisions in the United States, there is a guide for assessing the technical adequacy of the PRA. The guide suggests that achieving voluntary safety improvements does not mean waiting until the PRA is fully completed. That would simply be an excuse to do nothing. It is important to use the current best insights to improve safety, to recognize the weaknesses in terms of PRA, and to remember the need to work hard to overcome these issues.

Satoru Katsuno, President and Director, Chubu Electric Power



- The “Proposals for Voluntary and Continuous Improvement of Nuclear Safety” submitted by the Japanese government in 2014 contained the following framework: (1) Risk management; (2) Comprehensive risk assessments; (3) Reducing residual risk; (4) Improving resilience; and (5) Reconstructing safety improvement research.
- In terms of the risk management system, it is necessary to work from the assumption that “risk is never zero”. Regarding the measures we have implemented at Chubu Electric Power, we have enacted the “Chubu Electric Power Group Nuclear Safety Charter” and established a system whereby the Nuclear Power Division and the Communications Promotion Group report on the status of activities to the “Nuclear Power Safety Committee”, which is composed of executives chaired by the President and the head of the Auditing Division, and receive its instructions. Each of these three organizations needs to communicate externally, and the Nuclear Power Safety Committee gives information to an advisory board composed of external experts, from which we receive opinions.
- As part of the new inspection system that we plan to introduce, we will incorporate “risk informed” approaches in order to utilize risk information to clarify the impact on safety, and “performance based” approaches to reflect our results in ensuring safety, and we have clearly set out our unambiguous responsibility as an operator for carrying out inspections.
- As an operator, we will seek to improve our voluntary security activities, identify issues by ourselves, and further develop our programs of corrective actions for resolving these issues; at Chubu Electric, we will oversee the situation as needed to monitor the functioning of equipment and any deterioration in quality, and work to improve the capabilities of our diagnostic technologies. Furthermore, we will increase our utilization of peer reviews by JANSI and WANO, and work actively to promote the voluntary security activities of the industry as a whole.

Yutaka Kanai, Executive President, Hokuriku Electric Power Company



- In serious reflection upon the criticality accident cover-up discovered in 2007, Hokuriku Electric Power Company regards improvements to our technological capabilities to be an extremely important challenge, and we have gradually increased our staff. Our Nuclear Power Division as a whole currently has a staff of around 550.
- As part of these efforts, recently we have come up with various ideas to improve the training of our operators. These include training in dark and smoky conditions, as well as training at thermal power plants in order to experience a “living plant” in consideration of the long-term shutdown of our two reactors at Shika Nuclear Power Plant. Furthermore, we are carrying out regular joint training using an operation training simulator in cooperation with Chubu Electric Power Company and Tokyo Electric Power Company, which possess ABWRs (Advanced Boiling Water Reactors). In addition to this training, we are considering switching our shift system from a five-team two-shift system to a six-team two-shift system.
- As the operations shutdown becomes long-term, there are concerns about a lack of “tension” arising in simulation training because of “familiarity”. For this reason, we have come up with training methods that increase the sense of tension by introducing team assessments through the appointment of executive officers and operators from other shift teams as “inspectors”.
- The training and education of managers, in addition to plant staff, is also extremely important. As part of these efforts, every morning we hold general managers’ meetings, from the plant manager down.
- In terms of raising safety awareness, as a general rule, as president I visit our plants every month to hold “Frank Dialogs” with the workplace employees. Since 2007, I have held 97 such meetings in total (as of April 27).

Shojiro Matsuura, President and CEO, Japan Nuclear Safety Institute (JANSI)

- The important factors in deciding the success of voluntary self-regulation can be expressed by taking the following letters from the alphabet - “P, R, and C”. In order to promote better voluntary safety improvements, it is essential that



- we are “Prudent” in never being satisfied with the status quo, and “Proactive” in considering implement measures with foresight. We also need to be “Rigorous” in our scientific approach and seek to be “Resilient” so that we are able to recover, no matter what happens. And our methods need to have a “Conscience” not be “Complacent”.
- A self-regulatory organization that leads these activities needs to show “Professionalism” in respect to nuclear safety, promote mutual “Reliability & Respect” in regard to operators and regulations, and achieve the “Commitment” of CEOs and “Complementary” relations with the regulations.
- The main challenges facing JANSI as a voluntary regulatory body include: improving the quality of “Peer Review”; developing “Restart Reviews” (support for restart); and introducing comprehensive evaluations of power plants. We need to keep these key words firmly in mind at all times and combine these efforts in order to produce effective results.

Koji Okamoto, Professor, The University of Tokyo



- What lessons can be learned from the TEPCO Fukushima Daiichi nuclear accident? I believe the following three main pillars will lead to voluntary safety improvements: “think about overall risk”; “expect the unexpected”; and “gaining trust is a difficult path”.
- The only way to improve voluntary safety by dealing with the unexpected is to implement “ongoing improvements”. One of the targets for these activities is promoting improvements in the direction of reducing overall risk. To have an improvement target by promoting ongoing corrective measures on a risk basis, it is essential to promote improvements in a direction that is based on future risks, rather than confirming the present situation.
- One of the tools we have for dealing with risk is PRA (Probability Risk Assessment), but we must not rely solely on this tool. Workplace feedback is needed in order to be able to use PRA as a tool.
- If we take the example of a chef, a beginner (a power company new to risk in this example) would use a new knife (PRA) to cook (promote plant safety) and gradually grow from being a beginner to becoming a professional chef, while learning from his or her mistakes and sharpening the knife until it can be used with outstanding skill. The result is delicious food. I believe that the same applies to power plant safety.
- In order to improve their voluntary safety, operators need to build systems that allow them to use the tool of risk skillfully. It is also important that they show the general public that risk has been reduced as a result of carrying out assessments of troubles.

Yuko Sakita, Journalist and Environmental Counselor



- Until the TEPCO Fukushima Daiichi nuclear accident occurred in 2011, I think it would be honest to say that we simply left energy to the energy operators.
- The “myth of safety” has been destroyed as a result of the accident, so how do we go about restoring trust with the general public and society so that we are able to use nuclear power? To turn our safety efforts into peace of mind, I have the following three proposals, which are aimed at fostering trust between JANSI and the general public and society – “disclosure of information”; “dialog”; and “participation and collaboration”.
- In order to achieve “disclosure of information”, I feel it is essential for the general public and society to have clarity about the accountability and processes for confirming whether or not JANSI’s tough checks are functioning.
- It is also important that we have a “dialog” so that the flow of information is not simply one-way. In order to achieve this, we need to offer regular opportunities for public hearings and public relations. Surely it would be a good idea to have full opportunities for award ceremonies, announcements of leading case studies, frank opinion exchanges, and Q&A between the participants and mass media, especially in the consuming regions.
- Regarding “participation and collaboration”, I think it is important for JANSI and local communities to come together and create opportunities for fostering a safety culture. Sharing the results of nuclear facility assessments with local people in the respective regions and holding opinion exchanges would form a platform for building trust. I would be very

happy to see diverse representatives from local communities taking part, talking together, and creating greater opportunities to “co-create” safety and peace of mind.

<Panel Discussion>

Moderator:	Akira Yamaguchi,	Professor, The University of Tokyo
Panelists:	Satoru Katsuno,	President and Director, Chubu Electric Power
	Yutaka Kanai,	Executive President, Hokuriku Electric Power Company
	Shojiro Matsuura,	President and CEO, Japan Nuclear Safety Institute (JANSI)
	Koji Okamoto,	Professor, The University of Tokyo
	Yuko Sakita,	Journalist and Environmental Counselor

- Moderator, Professor Yamaguchi: I think the main points from the short speeches can be summarized as follows: firstly, there is the question of the base for carrying out safety improvements, including things such as insights and technology, maintaining personnel, and a safety culture; secondly there is the question of governance, systems and frameworks for operating self-regulated systems; this includes the role of JANSI; and thirdly, there is the question of how we communicate with society.

(In response to a question from the audience about the efforts being made to achieve the peace of mind demanded by society)

- **President Katsuno** I think that safety will lead to peace of mind if we are able to give a full explanation to local communities and society at large about the fact that we are working tirelessly to improve safety in a variety of ways as part of our everyday work, and by providing local people with a full level of real-time information when various risk events arise.
- **President Kanai** In terms of the relationship with the local community, I think it is extremely important for local people to be able to meet the people who work at the power plant, and to be able to fully trust them after seeing the full extent of the efforts they are making. At Hokuriku Electric Power Company’s power plants, we encourage our staff to go out into local communities as much as possible and explain their work to people in their own words.

(In response to a question from the audience about the need to share concerns with society, show these concerns, and work with local communities to overcome them)

- **Ms. Sakita** I believe that showing society fully that the risk is never going to be zero but that we are working hard to reduce risk as much as possible is an important part of turning our safety efforts into trust. Surely if JANSI and the operators fully communicate the systems they have for allowing JANSI to carry out thorough checks of the operators’ work it will help to build up trust.

(In response to a question from the audience about whether Japan is the only country that fails to make good use of risk information acquired in real time)

- **Professor Okamoto** PRA, including living PRA, is a tool for measuring risk. Living PRA is a very important tool in this sense, and an extremely important way of knowing what is currently happening at a power plant. In the case of the United States, when an event occurs the operator will use living PRA to check how big the problems is, and the NRC has its own independent living PRA tools to carry out assessments and allow the two parties to hold discussions. It is not that we do not use these tools at all in Japan. For example, PRA tools during shutdown (periodic inspections) are used to control risks because the situation changes on a daily basis during periodic inspections, and if we expand these tools we will be able to make good use of them.

(In response to a question from the audience about how to attract reporting in the mass media, given the importance of its role in communicating efforts to improve safety to the general public)

- **President Matsuura** I think the surest way to gaining the trust of society in relation to the question of how much safety has actually improved is to build up a track record, for example in regard to the restart of operations, by having operators achieve trouble-free safety during restart and then operate safely for a certain period of time without any problems. Operators need to show these results to the general public by themselves; we believe that communicating directly with the general public goes beyond the scope of JANSI’s current responsibilities.
- **Ms. Sakita** The general public has become extremely sensitive to the question of whether or not information will be fully disclosed and whether or not there is a willingness to do so. There may be things that cannot be disclosed when carrying out assessments, such as detailed data. This is unavoidable, but I think there are processes that can be disclosed to a certain extent, such as the systems used for overall assessment. I would like you to consider how you can keep confidential information confidential, but at the same time show flexibility in disclosing what you can.

(How does JANSI work to achieve voluntary safety improvements?)

- **Professor Okamoto** The goal I think we need to aim for is for all stakeholders to work together to achieve overall safety improvements. For this reason, I think it is extremely important to show that both operators and regulations are making progress in this direction, in ways that include the general public and the mass media. JANSI has several tools that allow it to achieve this, including peer reviews and the full-scale introduction of an overall assessment system for power plants. I would like to see JANSI showing, from a neutral and fair position as a provider of technical support engineering, whether or not each plant has improved or stagnated every year in relative values, not in comparison with neighboring plants but in comparison with its own figures for the previous year.
- **President Katsuno** We need to recognize that, while on the one hand JANSI is a self-regulatory organization affiliated to the body of operators, it is also independent as an organization from the individual operators, and it is essential for plant personnel to recognize this too. Assuming this to be the case, I think it is important for us as CEOs to continue expressing our expectations to JANSI, to commit to its achievements, and to communicate these internally. In terms of Japanese culture, the way we relate to self-regulatory organizations is noticeable in that we do not like to be given suggestions by outsiders; this is something that we need to improve internally, and an area in which I think we are making progress.
- **President Kanai** From our perspective, JANSI is an invaluable institution for the purposes of voluntary safety improvements, and an extremely important organization. So, what do we need to commit to as CEOs? Firstly, we need to provide support as the entire power industry, or in other words fully provide the necessary manpower and funding. Secondly, surely it is extremely important that we establish a relationship of independence between the power companies and JANSI, and that JANSI then gives invaluable advice to each power company. I think our role is to build and protect a robust framework for this to happen.

<<Summary by the moderator>>

- I feel that we have achieved a high level of initiatives in voluntary safety improvements. However, as Professor Okamoto pointed out, we also need to reduce the overall risk; “efficiency” has been a key word in the discussions. In terms of voluntary safety improvement initiatives, moving forward I think we have entered a phase of aiming to develop overall safety improvements a little more, and trying to build an independent system to achieve this successfully.
- **President Matsuura** I think the phrase “trust and respect” is very appropriate here. This applies to the relationships between JANSI, the operators, and the regulatory bodies; trust and respect is something that we need to communicate actively as a key phrase, and to work hard to achieve, especially in terms of our relationships with the general public.
- In relation to technology and society, we need to recognize that the way we communicate with society is not good

enough in some ways. In terms of how we overcome this challenge, we need to remember the word “openness”, and seek to keep a variety of communication channels open at all times so that we are able to communicate freely with various stakeholders. In order to achieve this, I think it is important that we are honest. Moving forward, we are faced with the extremely important challenge of how we develop proactive relationships with the mass media, and how we think about communicating industry initiatives to society, and we need to come up with more ingenious solutions.

- In terms of the future outlook, we need to aim for a situation in which we firmly establish the voluntary safety improvement measures we have implemented thus far, set up independent systems, inform the general public in order to gain their trust, and in doing so create mutual respect and trust. I would like to see operators making even greater efforts to carry out voluntary safety improvements, and for JANSI to monitor these efforts thoroughly and show leadership in the field of self-regulation.

[Session 2: JANSI’s activity results report for FY2016]

Director, Planning & Administration, JANSI	Yoichi Hiraoka
Director, Safety Systems, JANSI	Masuhiko Nakano
Director, Evaluation & Assistance, JANSI	Takeyoshi Yaegashi

- (1) JANSI’s main activities and comprehensive evaluation of power plants
 - Explanation of the main challenges facing JANSI for the foreseeable future (improving the quality of peer reviews, full-scale introduction of the comprehensive evaluation of power plants, and developing support for the restart of power plants)
 - From the main topics, a detailed explanation was given of the system for comprehensive evaluations of power plants
- (2) Programs for improving safety systems and support for restart
 - Summary given about safety improvement measures evaluation, as well as proposals, recommendations and support
 - Results and evaluation of support for restart, and explanation of future improvements
- (3) Nuclear power facilities evaluation program and support program
 - Summary of peer review aims and systems, and explanation of excellence guidelines, etc.
 - Introduction of a variety of support programs for power plants
- **Poster session**
 - Voluntary safety improvement initiatives by nuclear power operators promoted at JANSI
 - JANSI peer review
 - Operation of power plant comprehensive evaluation system
 - Developing and implementing a leadership training program
 - Promoting activities to foster a safety culture
 - New initiatives for analyzing operational information (event analysis)
 - Ensuring safety of nuclear power at restart (restart support)
 - Technical support in each specialist technical field

[Session 3: Safety Improvement Efforts at Nuclear Power Stations]
<Short speech>

Masahiko Sato, Deputy General Manager of Ikata Nuclear Power Station, Shikoku Electric Power Company



- The Unit 3 at Ikata Nuclear Power Station restarted power generation in August last year for the first time in approximately five years and four months. It has since continued to operate smoothly without any trouble. In preparation for the restart, the power station prepared a system for handling a major accident. For this system to be utilized effectively, education and training are essential.
- In addition to giving personnel competence and maintaining and improving them, we have formulated a training program to secure sufficient personnel. In terms of training design, we have made independent efforts to set out how we will operate the installed equipment to meet the requirements for types of training, operational procedures, and training frequency, in accordance with the JANSI guidelines, and we have given careful consideration to provide systematic training. We have also developed an operational manual for each skillset. Specifically, we have set out clear guidelines for each role, including cooling and water injection for the nuclear reactor, securing a power source, and securing water resources through the operation of pump trucks.
- We have also incorporated a large amount of training without showing scenarios beforehand, and we are following a medium to long-term management plan. Moving forward, in addition to actively seeking to address matters that we identify with a view to further strengthening our effectiveness, the challenge we face is to promote effective training in line with each employee’s level of ability.
- We are also working to incorporate comprehensive training. This is a major undertaking that requires time and work, but we want to incorporate it into our training and improve our ability to make a systematic response. Furthermore, we plan to utilize disaster simulation exercises and actively seek to respond to the risk of a major accident.

Yasuhiko Yoshida, General Manager of Ohi Power Station, the Kansai Electric Power Company



- Since my appointment as General Manager of the power station, I have set out two goals. Firstly, I want our power station to become one that makes the local people glad that a power station was built there. Secondly, I want to become a power station that makes its employees glad that they are working there. I believe this will be the source for establishing a mindset in each and every employee that they are responsible for the power station’s safety and quality.
- Gaining the understanding of the general public is essential for a nuclear power company. In order to achieve this, we first need to obtain the understanding of local people, and the key to achieving this is to gain the recognition of the people working at the power station, 70% of whom are local people, that we are working as hard as possible to improve safety. Currently, we utilize digital signage for the purposes of actively communicating and sharing information with employees at our contractors, and we hold regular information-sharing meetings. In addition to work safety measures, we are doing everything we can to improve the work environment of the power station, including improvements to the staff canteen, etc.
- A challenge we face moving forward is maintaining our technical skills. A long time has passed since operations were shut down at the power plant. For example, as part of our efforts to maintain and improve the technical skills of our operators, in addition to simulation training for severe accidents, we also provide actual experience at neighboring thermal and nuclear power plants.
- Furthermore, what concerns the operators themselves is their lack of experience in start-up and shut-down operations, which they must put into practice. There are as many as 700 operations involved in start-up, and operators need to have 100% understanding. For this reason, we carry out follow-up education and training for 100% of operations. In addition, we have made operational guidelines for the start-up check-sheets for the 40 most important operations, including warnings and knowhow based on previous trouble, and we have sought to pass on technical skills and relieve operators’ concerns.

Ichiro Ihara, General Manager, Nuclear Power Division, Chubu Electric Power Company



- Hamaoka Nuclear Power Station has approximately 750 employees. Just under one-third of the technical staff that have joined the power station since the Fukushima Daiichi nuclear accident in 2011, or 210 employees, have no experience whatsoever of plant operation. The biggest challenge we face as we work towards restart is to improve the technical skills of these staff members at the same time as maintaining the technical skills of our veteran operators and maintenance staff.
- In relation to the maintenance of operators' technical skills, Chubu Electric is cooperating with Hokuriku Electric and TEPCO, which also possess ABWRs. We have visited each other's sites to carry out simulator training, evaluate one another, and select improvement examples, and we have held skills contests for our junior employees.
- Furthermore, through the Japan-United States CNO (Chief Nuclear Officer) Leadership Meeting led by JANSI, we sent young employees, including fuel staff, repair staff, and operators, to Diablo Canyon Power Plant in the United States. In addition to exchanging information related to PRA (Probability Risk Assessment), etc., they built up their knowledge and skills by shadowing staff as they toured the facilities.
- In order to acquire capabilities, technical skills, and knowledge, the most important thing is to maintain motivation. We hold regular meetings to communicate to the junior employees what the purpose of their work is and how important their role is. We cannot yet see when restart will be, but we plan to give our all, alongside the third of our young staff who have yet to experience operation, as we try to realize restart.

Takeyoshi Yaegashi, Director and Evaluation & Assistance Vice President, JANSI

- In addition to peer reviews, JANSI supports power plants in a variety of different ways. All of our measures can be characterized by the fact that we are seeking to meet the regulatory standards and achieve "excellence", which is the highest safety standard.
- In order to address performance improvements, which is a challenge faced by all nuclear power stations, the companies met up at Chubu Electric's Hamaoka Nuclear Power Station, which is implementing state-of-the-art activities, and we promoted the "Benchmark Visit" program as a way of sharing initiatives. I look forward to seeing an environment of friendly rivalry, whereby the respective companies following the example set by Hamaoka and at the same time develop their own original improvements.
- Another pillar of our activities is assistance visits for disaster prevention training. Teams composed of operators, experts and JANSI employees visit power plants, work alongside the administrative staff from the stage of formulating training plans, and give advice. The aim is to ensure that a thorough PDCA cycle is implemented.

Yojiro Ikawa Editorial writer at Yomiuri Shimbun, Tokyo Headquarters



- Looking at the initiatives implemented by the regulatory authorities since the great earthquake and tsunami disaster, there are some areas where it is unclear whether safety has actually improved. Surely the lessons of the Fukushima Daiichi nuclear accident have essentially already been reflected in the stress test stage. The important thing is to implement measures in respect to tsunamis, power sources, and cooling water, and these have been sufficiently checked in the stress tests.
- I believed that the new regulatory standards were the logical extension of these efforts, and I did not expect to see the current serious situation in which almost all nuclear power generation has been suspended. Risks can never be zero. The question is how far you are prepared to accept them. The important thing is to hold coolheaded discussions based on the data.
- Looking back at the serious events relating to nuclear power, the majority are the result of equipment failures, and the design and manufacturing errors that brought these failures about. In most cases, something appears normal but it hides a fault, and when this happens a situation develops and we end up losing trust. Nuclear power plants have a large amount of hardware that is subject to verification testing. Why don't you allow young technicians to make full use of this and build up specialist knowledge? Can you really trust the equipment and facilities in front of you? Are the manufacturer's specifications, design and manufacturing good enough? You need to foster technicians who

continually ask these questions. The current period of long-term shutdown is the perfect time to strengthen the educational platform. If all you do is carefully look at how to handle the regulations, human resources will not develop, and your nuclear power technology will become obsolete.

Katsumi Kuruba, Professor, Fukui University of Technology



- Forty years ago in 1977, Fukui Prefecture established the Nuclear Safety Division. It hired specialist technical staff, and consistently upheld the position of checking everything that could be checked independently by the prefectural government. It has thoroughly collected and accumulated technical data, and fully disclosed this to the central government, operators, and local residents in order to reach consensus. Fukui has developed a unique system for monitoring environmental radiation and monitoring operations, and it has the following catchphrase – "Residents of Fukui Prefecture, Keeping an Eye on the Power Station",
- When preparations were being made to restart the Units 3 and 4 at Kansai Electric's Ohi Power Station in 2012, the new regulations were not yet in place. The question arose as to how to allocate power supply vehicles and fire pumps. Rather than waiting for instructions from central government, discussions were held with the prefectural government and the operator and the approach was taken of implementing the best possible measures that could be taken at that time. I believe this approach later had an impact on the new regulations.
- Currently, I am affiliated to Fukui University of Technology and I am working to foster nuclear power personnel with an international perspective and who are active in the local community. In February this year, we made use of a grant supporting projects that foster human resources in the field of nuclear power regulations, and held some extremely stimulating onsite training with students at the Fukushima Daiichi and Fukushima Daini power stations.
- Before the Fukushima Daiichi nuclear accident, we taught students to "prevent accidents from happening". However, since the accident this has changed to an approach of "safety needs to be ensured even if an accident occurs". We need to continue fostering human resources so that even if a situation like Fukushima Daiichi happens again, they are able to minimize the damage for the people living nearby.

Mariko Ichikawa, consumer life consultant



- In 2006, the citizens group "Roundtable for Food Communication" was launched and began activities on the topic of food safety. After the Fukushima Daiichi accident, it sought to study radiation and in its own way sought to reduce the damage caused by harmful rumors. The Consumer Affairs Agency has held risk communication sessions dozens of times per year. However, little progress has been made in the understanding of the general public. The reality is that misunderstanding is particularly entrenched in large cities and consuming regions.
- It is often said that safety is scientific and objective, but that peace of mind is a psychological and subjective judgment, but I think this is slightly off the mark. Safety means low risk, but because subjective judgement comes into play we are faced with the difficulty of not being able to make across-the-board judgements. Peace of mind refers to the feeling that there is nothing to worry about by letting the experts check and decide whether a situation is safe or not.
- In the field of food safety, there are many people who still feel concerned even if you tell them that there are standards showing that food is considered to be sufficiently safe in scientific terms. Typical examples are pesticide residues and food additives. People are easily affected by worrying information. This applies even more to women who are raising children. There are even self-proclaimed experts who give incorrect information to the media and stir up concerns among consumers.
- Accepting people's concerns, including about nuclear safety, and continuing to show them an attitude of aiming for higher safety standards will foster trust. Never covering up accidents and trouble, never lying, and dealing with people in an honest way will help to back that trust up.

[Panel discussion]

Moderator: **Hiromi Yamazaki**, Executive Vice President, JANSI

Panelists: **Masahiko Sato** Deputy General Manager, Ikata Nuclear Power Station, Shikoku Electric Power Company

Yasuhiko Yoshida, General Manager of Ohi Nuclear Power Station, Kansai Electric Power Company

Ichiro Ihara, General Manager, Nuclear Power Division, Chubu Electric Power Company (former General Manager, Hamaoka Nuclear Power Station)

Yojiro Ikawa, Editorial writer at Yomiuri Shimbun, Tokyo Headquarters

Katsumi Kuruba, Professor, Fukui University of Technology

Mariko Ichikawa, Consumer life consultant

Takeyoshi Yaegashi, Director and Evaluation & Assistance Vice President, JANSI



Moderator: Mr. Yamazaki

- **Moderator: Mr. Yamazaki** I would like us to focus on the following two main discussions from among those picked up on during the short speeches: (1) Maintaining and improving technical skills at power plants, and the question of motivation; and (2) The perspective of the general public.

[1. Maintaining and improving technical skills at power plants, and the question of motivation]

- **Mr. Yoshida** The fact is that providing education as part of severe accident training has resulted in a greater administrative workload. In effect, we are saying to the plant staff that for us to succeed they need to achieve their mission no matter what. If you are unsure if something can be achieved, you need to make improvements somehow. We build up small improvements through training and increase its effectiveness. We tell the plant staff that they are training so that the power plant can be protected no matter what happens; currently, we are carrying out 1,000 training sessions per year.
- **Mr. Ihara** I agree with what Mr. Ikawa said about the need for technicians to make greater efforts to pursue and acquire technological skills. New employees spend their first year learning the plant in a two-shift watch, and then split into different specialisms, such as power generation, or maintenance. When the plant is shut down, it is difficult for them to see their goals. The situation is such that we have come up with a variety of systems for them to acquire technical skills. Under these circumstances, when they come up against technical issues in their respective workplaces, we let them think about ways of making improvements or finding better methods. We have people in the industry at JANSI who are capable of teaching them, so we send young people to JANSI to hold debates and increase their technical skills by overcoming the challenges they face.
- **Mr. Ikawa** Having listened to the explanation given by the power stations, I think we would be wrong to think that just because we are carrying out severe accident (SA) training everything is OK. I think it is a very good idea to throw out the old “myth of safety” and to work on the assumption of previously unthinkable scenarios or difficulties, such as total loss of power. We may be able to avoid SA or situations like Fukushima, but unless we foster a mindset of thinking about and identifying day-to-day problems with defects or components, and system problems such as design problems, if we ever had an incident at an earlier stage it is unlikely that we would ever be allowed to restart operations. If we are not careful, we could be looking at the end of the nuclear power in Japan.
- **Mr. Sato** It is not that we are only training for severe accidents; the most important part of our work involves carrying out checks during normal operation to prevent accidents from happening in the first place; in other words, preventing small problems from arising. The basic approach is to increase everyday safety by using the knowhow we have accumulated during regular patrols and our ability to detect abnormalities. Until now, we have spent time teaching this; an extremely important question we are now faced with is how we replace the training time lost as a result of training for severe accidents so that we can maintain the previous level of training. The reality is that we have added staff in order to create the time to allow us to do this.

- **Moderator:** Surely the power company as a whole is important and not just the power plant itself. I am sure that gaining the understanding of the local community can be a major motivating factor. What is the current situation in this regard?
- **Mr. Ihara** To give you an example, for many years we have been visiting people’s homes in Omaezaki City, where Hamaoka Nuclear Power Station is located, and four neighboring cities, to give one-to-one explanations about the power plant. When young technician from the power plant accompany their senior colleagues on trips to local homes to speak to people, people respond with understanding and encouragement. There are cases when employees’ motivation has increased, despite the current tough environment, as a result of employees being able to confirm their position and find job satisfaction through their relationship with local people.
- **Moderator:** Universities have students majoring in nuclear power. How have the feelings of these students changed in respect to the idea of working at a nuclear power station?
- **Professor Kuruba:** Currently, if you ask our students whether they want to work in the field of nuclear power many of them say they do; at our university I would say this applies to almost all students. My own current opinion is that the younger generation does not necessarily want to abandon nuclear power; rather, I think they are slightly concerned about the situation and this feeling is leading them to make different choices. The extent to which nuclear power recovers depends on the steady operation in the workplace of power plants in each region, and I think both us and the students are looking forward to a time when we have a better reputation, not just locally, but across the country as whole. The impression I get is that motivation levels have not fallen at all.

[2. The perspective of the general public – what do we need to do for the general public to accept restart?]

- **Professor Kuruba:** There are cases, such as at Takahama Nuclear Power Plant, when there were great difficulties with the local community, but after many years of working hard to gain the understanding of local residents and the legislative bodies in respect to restart, the local community has finally agreed and restart has been achieved. The judiciary’s judgment led to a sudden freezing of the situation, and this was a big shock for local communities. It goes without saying that before anything else we need to give a full explanation to the local community about why we are using nuclear power and why we should restart, and this is something that the electric power companies and the nuclear industry as whole need to explain to the nation. When we try to guess the governor’s response to this question after all this time, I think it will come down to the fact that the central government has not set out a clear policy. The central government has not given a firm policy or details to the Japanese people, and it cannot make up its mind. This has led to various concerns among the people. Without a clear direction, there is tendency to choose the safest path. This is why I think we have not made progress in terms of the understanding of nuclear power. On all the questions, including the question of repositories for high level waste, the issue of spent fuels, and the question of the Monju plant, the government has failed to set out a clear policy and details to the nation and to make the effort to gain people’s understanding, and things have been left unresolved. Given this situation, we cannot expect to get any answers.
- **Mr. Ikawa** I think it would be better to think about this from a slightly different perspective. In order to achieve restart, we need to see the politicians doing better. However, at the moment we cannot expect much. Working on the assumption that nothing will change for the time being, I think the nuclear power industry needs to start thinking very seriously about how to maintain motivation and technology. Apparently, there is an insect called the tardigrade that can survive even if you freeze it for two or three years or send it into space. If nuclear power is considered to be necessary for Japan from a long-term perspective because of the energy supply-demand balance, the question of whether our nuclear power plants can become like the tardigrade becomes important. Rather than rushing to restart, I think a bigger priority is to involve technicians and related manufacturers in serious discussions on how nuclear technology can be maintained, and to think about how we can build up a firm defensive platform.
- **Professor Kuruba** Technology changes all the time, so if we take a tardigrade approach we will not produce human resources. We will end up with nothing. The question would become how we go about resuscitating and re-hatching the industry, and I think that would be really tough. Unless nuclear power keeps moving, people will not develop and the industry cannot be maintained. In other words, the technology could not be improved or maintained, so I don’t think it would be a good idea to give up so easily. If we are realistic, the situation is not particularly optimistic, but if we are able to restart one, two or three power stations, I think we have a future.
- **Mr. Ihara** In relation to this question, I think the situation regarding BWR is particularly challenging. In the case of BWR, it is not enough simply to have somebody capable of operating, somebody capable of carrying out maintenance, and then become a tardigrade. Nuclear power technology is more broad-ranging than that. Even if we look at the

question of nuclear fuels, there is a long supply chain, and it covers a very broad-ranging area. If this chain is broken over the next few years, even in a single location, the whole chain will no longer be linked together. I think if we choose the tardigrade route, we will lose everything. There is a risk that nuclear technology will be lost from Japan, so surely we need to keep it moving.

- **Moderator: Ms. Ichikawa, in your speech you mentioned the need to accept people’s concerns and resolutely continue to give people full explanations. Could you please give your opinions on what messages can be given by the power companies, or The Federation of Electric Power Companies as a whole, or how we should communicate those messages?**
- **Ms. Ichikawa** From the perspective of the general consumer, the only source of information about nuclear power plants is the media. I am sure that the power companies are extremely concerned about what information will be reported, but simply telling media representatives to report information correctly is not going to work. However, I think we are currently in the process of rebuilding the trust lost after the March 11 accident. Building up trust is a very hard thing to do, and it takes time and work. However, the nature of trust is such that it can fall down in an instant because of an unexpected occurrence. Operators may see consumers as fickle and difficult to deal with, but actually they want to give their trust. This is why the companies that gain trust are those that meet these expectations, and this is the meaning of a brand.
- **Moderator: When restarting power stations, it is extremely important that we listen to the concerns of the local community. What is your day-to-day approach to holding dialog with local communities, listening to their concerns, and building up relationships?**
- **Mr. Yoshida** As I mentioned just now, we have been pursuing a variety of initiatives with the goals of making local people glad that a power station was built there, and making the employees glad that they are working at Ohi Nuclear Power Station. The first priority in trying to make local people glad that they work at Ohi is to create a workplace at which the rules are properly followed, safety discipline is established, and they can work there with peace of mind. The second most important thing is that they understand that we are managing the plant transparently, without covering things up, and managing it in such a way that information is fully disclosed. Third, the people who work there need to understand that the power plant is being run in a sincere and fair way, and that local people learn this in turn. I think these things are important.

<<**Moderator’s summary**>>

- The panel discussion has shown us that the site superintendents of each power station are working passionately, not only to meet the new regulations, but also to maintain and improve workers’ skills, and of course to carry out daily training on how to respond to a serious accident, as well as a variety of initiatives aimed at maintaining motivation. It is also clear that they are working very hard to come up with ways of responding to local communities, and this is very reassuring.
- Gaining the trust of local communities is not something that can be done overnight, but I think it is important that we show people an attitude of working hard every day.

[Closing remarks]

Hiromi Yamazaki, Executive Vice President, JANSI

- At this year’s conference, we chose the themes of safety improvements and improvements to voluntary safety activities, which are major recent topics and major topics for the nuclear power industry. In the panel discussions, we debated the challenges faced in making ongoing and independent efforts to promote voluntary safety improvements in ways that are acceptable for society, and we received some extremely stimulating suggestions about the role of operators and JANSI. It would be befitting if all of today’s visitors took home the results of our discussions and made wide-ranging use of them, and this I something that would make our conference extremely meaningful. JANSI and I will offer our full support to operators’ initiatives, including attempts to improve the technical skills of station personnel, through workplace reviews (assessments) and support activities provided in line with the results.

[Questionnaire results] 93 responses were collected

- The sessions and panel discussions were mostly understood, and people were happy for the most part. However, several people responded that it would be better to reduce the number of panelists and develop discussions in greater depth.
- Numerous responses stated that Session 3 contained several specific examples from the power plants that will be useful in the future; that the session gave the opportunity to hear about each company’s positive initiatives and ideas; and that this will help to improve motivation.
- In response to the collection of questionnaires handed out to the audience during the sessions, which was carried out for the first time this year, we were told that these questions will be used and that useful comments were received.
- In terms of operation of the conference, several people commented that the break times were too long. The opinion was given that if a session finished early, it would be better to shorten the break time and start the next session earlier in order to avoid overrunning the finishing time.