

Overview of JANSI Annual Conference 2025

- Time & Date: March 12, 2025 (Wed), 13:30-17:00
- Venue: Tokyo International Forum Hall D7
- Format: Hybrid (also delivered via Webex)
- Number of participants: Approx. 500 people



Keynote Speech



Panel Discussion

Opening Remarks



Chairman,
Japan Nuclear Safety Institute (JANSI)

William Edward Webster Jr.

This year marks the 12th JANSI Annual Conference. As you are likely aware we hold this conference in March each year to commemorate the great East Japan earthquake and nuclear accident at Fukushima Daiichi. This forum provides an opportunity for the nuclear industry to gather and reaffirm our collective commitment to the highest standards of nuclear safety. Today, approximately 100 participants are joining us in person and 400 are joining remotely, including senior leaders from JANSI member companies, other domestic nuclear-related organizations, and members of JANSI's Domestic and International Advisory Committees. We are also pleased to welcome 23 representatives from overseas organizations. We sincerely appreciate your participation.

In March 2019, we established a 10-Year Strategy for JANSI. However, last year, our strategy has been revised to reflect both the achievements to date as well as the significant environmental changes that have occurred. With wide cooperation from operators and stakeholders, the updated strategy was approved by the JANSI Board in March 2024 to provide direction for the next decade. While JANSI's core initiatives remain unchanged, we are now advancing 14 key actions aimed at strengthening the three pillars of safety culture, structure, and human resources. We will build upon past successes and address current challenges to elevate our efforts to a higher level.

The year 2024 was a successful year for Japan's operators. All 12 operational units demonstrated safe and reliable performance as measured by international standards. Notably, Onagawa Nuclear Power Plant Unit 2 and Shimane Nuclear Power Plant Unit 2, resumed operations after more than 13 years of suspension. As noted by the operators, the industry's support for the restart of these two units was an important contributor to this safe return to service. Now we must move forward with confidence to restart additional plants and continue our efforts to bring all plants back online safely.

Opening Remarks

The percentage of inexperienced personnel in operational roles is increasing as plants remain shutdown for longer periods, and the burden on nuclear power plant personnel is growing due to the installation of new equipment under the application of updated regulatory standards.

In this context, the Seventh Basic Energy Plan has emphasized the critical role of nuclear power in meeting the anticipated increase in future electricity demand. In Japan the Atomic Energy Commission, the government, and relevant organizations have highlighted the importance of securing and training nuclear personnel. As the challenge of securing skilled nuclear professionals grows, those personnel with high proficiency remain the essential foundation for ensuring the safe and stable operation of nuclear plants. Therefore, improving and maintaining these skills is a key issue for the entire nuclear industry.

At this conference, we hope to contribute to achieving the world's highest level of safety and reliability by learning from advanced U.S. cases, renewing our awareness of their importance through discussions among stakeholders, and gaining valuable suggestions for future activities.

This year marks the 13th anniversary of JANSI's journey as a self-regulatory organization. We have made significant progress thanks to your support and active involvement. Moving forward, JANSI will continue to embrace challenges, build on our experience, and maintain a spirit of continuous improvement. I am confident that our collective efforts to enhance autonomous safety will complement national regulations and lead to further improvements in nuclear safety across the industry.

By uniting as one and keeping the motto "Excellence Starts at Home" in mind, we can continue to advance toward achieving our shared goals with our member companies, and further enhancing the effectiveness of our self-regulatory activities. We ask for your continued understanding and cooperation in supporting JANSI's endeavors.

Guest Speech



Commissioner,
Nuclear Regulation Authority
Shinya Nagasaki

I think the attitude of always aiming for a higher level is critical in executing our mission to achieve safety as a commissioner of the NRA. Since its establishment in 2012 immediately after the TEPCO Fukushima Daiichi Nuclear Power Station Accident, JANSI, as a private third party organization, has been proactively working to improve safety among nuclear power operators. Working as an autonomous regulatory organization requires a high level of technical capabilities and expertise. I understand that a great deal of effort and ingenuity are required in conducting education and training, as well as maintaining and enhancing capabilities, especially because this is a highly specialized field.

The NRA sets Mid-term Goals every five years, and the fiscal year 2025 is the first year in the next Mid-term Goal period. Talent development is also considered an important challenge in the Mid-term Goals. One of the key challenges we need to face to meet our regulatory targets, as the country transitions to a society with a declining population, is to hire and develop staff with the necessary capabilities, and grow the capabilities of each of

Guest Speech

our staff members. This year marks 14 years since the TEPCO Fukushima Daiichi Nuclear Power Station Accident. As the people who were on the front lines at the time retire, communicating and passing down their thoughts and sense of mission to the next generation is also becoming a challenge. The NRA is planning to develop staff and manage their capabilities by setting up an accreditation system for expert knowledge and skills necessary for improvement, running and improving upon training programs, and developing an effective learning environment. Additionally, we plan to continuously manage knowledge necessary to execute work and promote the transfer of skills.

I understand that JANSI is also implementing leadership training using knowhow from outside organizations and activities to help operators foster a safety culture for each layer of the hierarchy from nuclear operator top executives to managers. Going forward, we ask that JANSI work on developing talent for improving physical protection in addition to nuclear safety. Personally, I also want to see skills and knowledge passed down in plants that are currently under long-term shutdown but are expected to restart. I'd like to see talent be developed from the perspective of maintenance. I'm sure that maintenance is already conducted periodically on equipment to secure safety but I ask that you check that all equipment critical to maintaining safety is being covered, and that regular operation checks are conducted to ensure safety and to have employees get used to operating the equipment.

The nuclear operators bear the primary responsibility for protecting the lives and property of the public as well as the environment, and the NRA and the Secretariat serves its mission to fulfill its mandate to the public behind the scenes. JANSI, with the kind of determination needed to stand in front of the public, must provide full support without hesitating to use the latest knowledge about safety or technologies to improve safety, and evaluating nuclear operators strictly on their safety improvement initiatives.



Chairman,
Federation of Electric Power Companies
Kingo Hayashi

In February, the cabinet passed the 7th Strategic Energy Plan, the GX2040 Vision, and the Plan for Global Warming Countermeasures. The policy was realistic, aiming to achieve an ambitious vision for decarbonization by utilizing all available technologies to address various uncertainties. I believe it strongly demonstrates our country's commitment to energy policy and is highly significant.

The global energy environment remains increasingly complex due to issues such as the situation in Ukraine and the worsening conditions in the Middle East. On the other hand, there is a noticeable trend in Europe towards a return to nuclear energy and the maintenance and development of LNG, as countries work towards their own national interests and the future development of their industries. In our resource-poor country, it is essential to adopt flexible thinking aimed at future development, without lagging behind the efforts of other nations.

Looking domestically, two BWR plants, Onagawa Unit 2 and Shimane Unit 2, successfully resumed operations at the end of last year. Additionally, there has been steady progress in the review of installation change permits, including for Hokkaido Electric Power's Tomari Unit 3. I believe it is essential for operators to respond sincerely and steadily towards the prompt resumption of operations.

Guest Speech

In the 7th Basic Energy Plan, the decision allowing nuclear operators that have chosen to decommission their plants to rebuild on their existing nuclear power station sites is a very significant development. This change will expand the options available to operators.

In the backend sector, there have been changes in the construction schedule of the reprocessing plant, but the nuclear fuel cycle has made progress with the start of the interim storage project in Mutsu. Regarding final disposal, significant advancements have been made, including the initiation of literature surveys in Genkai Town and the beginning of public reviews of report summaries in two towns in Hokkaido. We must steadily advance backend initiatives such as the reprocessing business and ensure that nuclear power, which is a crucial option for achieving both stable supply and carbon neutrality, is effectively promoted and put on the right track.

To achieve this, ensuring safety is the fundamental prerequisite. The ten-year strategy, which was significantly revised last March, serves as a guiding framework for both operators and JANSI. It is essential for operators to establish voluntary and continuous efforts to improve safety. Furthermore, we must achieve and maintain the highest levels of safety and reliability in the world. JANSI, as an autonomous regulatory organization for the nuclear power industry, is leading operators' safety improvement initiatives using peer pressure and providing assistance to encourage improvement. We ask that you continue to work to maintain and improve the skills of the people who are the foundation of nuclear safety to achieve the vision of "leading operators from an independent standpoint as the authority of world's excellence."

Participating in discussions at conferences like this provides a valuable opportunity to learn about international initiatives. As a nuclear operator, I aim to apply the insights and knowledge gained today to our future activities, and I will continue to strive for improved safety.

Keynote Speech

Initiative of Education and Training in the United States



SVP, Institute of Nuclear Power Operations (INPO)
Amanda L. Donges

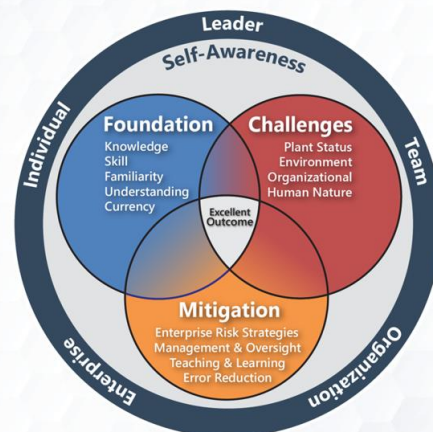
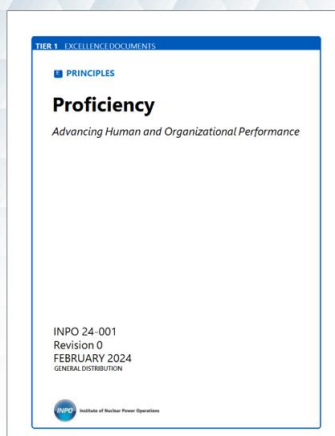
The Future of Teaching and Learning

In 2021, INPO initiated the current Ten-Year Strategy, and focused on teaching and learning. Back then, the understanding of teaching was to provide qualified personnel with necessary knowledge and to strengthen skills through simulators, labs and OJT. While this contributes to high standards of performance in the industry, it was also recognized that reforms were necessary in the next decade. The driving force of this reform is performance and human talent.

First, there is no change in the need for maintaining high performance standards and for continuous improvements. This is significant not only for currently operating reactors but also for creating new opportunities in the future. Without high proficiency, it is impossible to maintain a high-performance organization. Thus, it is necessary to maintain capabilities which achieve excellence daily, and teaching and learning is crucial for this.

Note) The term “proficiency” refers to the capability to exercise knowledge and skills in accordance with the realities at hand and situation in the field as well as the ability to identify and act against issues and obstacles.

Proficiency Standard and Model



In order to improve performance of human talent and the organization, it is crucial to understand “humans”. What characters the work force possesses, and what needs are in demand.

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The need for seasoned workers was recognized in 2021, and this pushed the need for reform. Today, the demand to increase the workforce by 2050 to support development and operation of advanced reactors has been recognized, increasing the need for world-class teaching and learning.

As demand increases, so does the rate of turnover. The available working force is expected to decrease with such turnover and outflow to different industries. The scale of working force is only a single aspect, and the composition of personnel is also important. The labor force dynamics is already shifting, and generational reorganization is progressing in the labor market. Currently, four generations are working in this market. While this itself is notable, another generation will make entry starting 2035 and 2050, and changes are also expected to occur in the distribution of personnel across generations. Therefore, teaching/learning methods adaptable for a wide variety of learning styles practiced by different generations are necessary, and necessary knowledge must be transferred in accordance with such methods.

Also, the world that we live in is subjected to rapid changes with the birth of new technologies, industries and collaborations, and skills required for working in such environment is expanding.

With such changes in mind, INPO established a vision for the year 2030. Three elements were identified for the ideal state of teaching and learning. The first element is to cultivate a culture of continuous learning. Power station leaders must inspire, motivate and encourage life-long learning. Also, one's learnings must also be shared with the organization in an influential manner. It is necessary for leaders to become the role-model putting life-long learning into practice, and they must present this to their subordinates.

The second element is for the working individuals to be passionate educators and learners. They must actively seek information and learning opportunities, and think about the future in addition to being able to execute one's current responsibilities. It is also necessary to share what one learned. Individuals must have a strong sense of their role and contribute to improving proficiency of others. In addition to being teachers themselves, they are required to keep learning.

The third element is to establish advanced educational themes and infrastructure. In other words, flexible, student-centered learning methods must be established through the application of insights in the science of adult learning, advanced teaching methods and latest technologies.

INPO considered these three elements and identified work to be performed in the Ten-Year Strategy. Specifically, it refers to the establishment of standards initiated in 2023. One cannot discuss teaching and learning without covering proficiency. In February 2024, INPO presented the document, INPO24-001 Proficiency: Advancing Human and Organizational Performance. This document was issued for the purpose of establishing an industry standard for achieving and maintaining high proficiency in individuals, teams, leaders and organizations. Furthermore, it proposes a simple model of the framework for defining elements of proficiency.

At the center of this model are the three elements: Foundation, Challenges and Mitigation. These elements are all essential for achieving and maintaining high capabilities. Excellent outcomes exist where the three elements overlap. Such outcome is achieved only when element of the proficiency is adequately considered and managed consistently across the entire organization.

Foundation includes knowledge, skill, familiarity, understanding and currency (having the latest knowledge). Combination of these elements gives rise to a highly proficient individual, team or organization. These elements must be consistently monitored, developed through teaching and learning and evaluated by leaders. Challenges are obstacles to achieving desired outcome.

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There is relevance between proficiency of individual, team and organization and the impact of challenges faced. The higher the proficiency and the stronger the foundation, the smaller the impact of challenges. Mitigation refers to single or repetitive measures for responding to complex risk and challenges related to proficiency of individual or team.

The outer circle represents the importance of self-awareness. When, where and how to be aware of one's capabilities, and is there an environment which enables such awareness, is adequate time and opportunity for self-awareness available? The most outer ring represents expandability. Proficiency is applied to the individual, leader, team and the enterprise as a whole, and also applied to a wide range of situations from individual tasks to large projects and mission as a leader. Proficiency is dynamic, and does not conclude with single accomplishment. Therefore, it is necessary for all individuals, held accountable for management, to manage with intention and continuously cultivate proficiency. After 2025, this standards shall be put into practice under industry-wide cooperation, and initiatives shall be taken to identify resolutions through sharing of best practices.

Also, training/seminar for leadership should be enhanced. Its details shall be updated to ensure consistency with the 2030 strategy, industry trends and new standards. By cultivating leaders from supervisors to executives with ambition for teaching and learning, continuous improvement across the industry shall be accelerated and maintained. Face-to-face and virtual training, community of practice and micro-learning methods shall also be implemented.

In order to develop an environment for continuous learning and to strengthen collective knowledge of the industry, it is necessary to strengthen infrastructure, technology and training contents. Various contents should be made accessible through online platforms to allow resources for important areas to be provided when necessary. Also, ways of teaching one another, methods using technology to learn work-essential knowledge, ways of supporting inexperienced personnel and methods of widely communicating various knowledge shall be reviewed.

Teaching and learning support both the current and future needs. Teaching and learning gives the working people energy, motivation and support, and is essential for the road to achieve high proficiency.

Keynote Speech



EVP & CNO, Southern Nuclear Corporation

Rich Libra

Implementation of Proficiency Standard & Impact on Training

While traditional training has been excellent, and has made significant contributions to the industry, Ms. Donges has stated that conventional means alone are inadequate for making continuous improvements to enhance performance. I will present the changes we are seeing in the field, and introduce how tools explained by Ms. Donges are being used specifically.

INPO24-001 requires us leaders to be educators. We must think about what legacies will be left behind for our younger colleagues, and what we can do to ensure they become better human talents than ourselves. Responsibility of training lies not only within the training center outside of nuclear facilities, but within each and every leader. Proficiency differs from competency. While many leaders and workers are competent, proficiency refers to skills to be able to respond accordingly under situations which differ from what was learned in the past.

We are all striving to reduce event occurrence, strengthen continued learning and improving efficiency. Streamlining of work is important with predictions of inadequate work force in the future caused by changes in the demographics. By making use of proficiency as a tool, we can perform work more efficiently and safely, and resolve future challenges as well.

Conventional training is primarily conducted in classrooms, with curriculums being decided several months in advance. Lesson plans are prepared and just-in-time training is also stipulated. Its details are wonderful, and most effective for the industry. Training is repeated in set intervals, and details have been effectively standardized which made it exemplary.

However, from my perspective, the most effective training occurs when inexperienced personnel are mixed in with experienced personnel. For example, if those with past reactor operator experience and those not yet qualified are mixed in with senior reactor operators, work experience can be shared, creating an effective learning environment. Such experience was difficult to achieve using conventional training methods.

Also, the younger generation today differ from those 20-30 years ago. For example, today's children learn through iPads, smartphones and various other technologies. Changes in composition of personnel which involve such generation cannot be responded to quickly enough using conventional training methods. In other words, it is difficult to evaluate, correct training details and correct performance on the spot. Furthermore, current challenges are often not taken into account. Life outside of work, lighting at the plant, weather, etc. could all impact work performance. It is necessary to consider such external factors and human elements as well.

What is changing? INPO, WANO and the nuclear industry has made great achievements setting standards and enabling risk to be assessed. For example, the risk of power generation, risk of scram, risk for nuclear safety, risk for worker exposure were assessed, and methods to control these risks in the future were established. Performance across the industry has been improved over time, and how risk is managed by which level in the organization and whether work is performed with appropriate assignment of human talent are being thoroughly checked. These are the details of INPO 15-001.

Keynote Speech

Also, the practice of recording what was learned and sharing them has become rooted. For example, we shutdown every spring, remove spent fuel, transfer them to canisters and store them on-site; but the series of work steps were recorded on video and used during pre-job briefings. Workers and instructors discuss important points for work, confirm roles and responsibilities of the supervisor and what actions are to be taken by workers. Also, when implementing new technologies, working videos like the ones on YouTube are viewed in advance to teach and learn, in order to perform work effectively. Training today is not limited to the classroom, but involves utilizing veterans, using technology and each work performed serves as a basis for success.

What makes a proficient nuclear professional, leader or organization? What's crucial is a consistent training program. Through such training, workers and leaders with necessary knowledge and skills can be cultivated. However, this alone is inadequate. Each individual must act as the teacher to give knowledge to others, and be able to exercise required performance in the field.

I will next discuss the roles of training specialists and line managers. Training specialists also act as performance managers, so it is necessary to configure training to enhance work performance in the field. In our industry today, the role of training specialists is not limited to training, but through the standard of proficiency, teaching and learning, emphasis is placed on performance-based training which yields exceptional results. Also, it is necessary for line managers to recognize the importance of training, and have a sense of ownership for teaching, learning and training. This results in partnership between the two parties being important.

We assess the proficiency of workers for specific work, and if there are shortfalls, we develop plans to mitigate for this. For example, decisions are made and action is taken for any shortfalls in proficiency while accounting for factors such as weather and private issues. This system includes not only personnel of the worker class, but senior managers as well. At Southern Company, we expect an increase of 6% in energy demand over the next decade. We have taken initiatives to increase power generation capacity for the first time in a while, renewed our plant license and extended plant service life to 80 years. This process was not conducted for years, and issue here becomes one of proficiency.

For about a year ago, we have started initiatives to improve proficiency and reconsider teaching, learning and training from a different perspective. While there are many tasks to be completed, this is an industry-wide initiative, and not an individual effort by a single operator. Information is mutually shared within the industry. For example, I visited Kashiwazaki Kariwa last year, and I observed fluorescent tapes applied to allow workers to get to important equipment in a blackout when lights are completely incapacitated. This has been implemented in the U.S. as part of measures for improvement. Japan and Europe also actively incorporates lessons learned from experience. I look forward to discussions on this topic with everyone later in the panel sessions.

Panel Discussion

Theme:

Improvement of proficiency in the nuclear power industry

Panelists:

Shuichi Kaneko	Deputy Secretary-General, Nuclear Regulation Authority Director-General, NRA Human Resource Development Center
Amanda L. Donges	SVP, Institute of Nuclear Power Operations (INPO)
Richard Libra	EVP & CNO, Southern Nuclear Corporation
Etienne Dutheil	Director, Nuclear Power Generation, Electricité de France (EDF)
Kojiro Higuchi	Representative Director & President, Tohoku Electric Power Company
Isao Kato	President & CEO, Japan Nuclear Safety Institute

Moderator:

Makoto Takahashi	Professor, Graduate School of Engineering, Tohoku University
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Opening Address:



Professor, Graduate School of Engineering, Tohoku University

Makoto Takahashi

We will now begin the panel discussion. Many topics for discussion were presented in the two intriguing keynote speeches presented. We will now have selected panelists present short speeches. I believe many more important topics will be presented here as well, but considering the general theme of education and training, this is an opportunity to consider not only the technical aspect, but also the human aspect as well. My area of expertise is in human factor and system safety, I am interested in how safety will be maintained as humans and machines become more integrated. Furthermore, human collectives such as organizations and teams become involved in such picture, and the topic of training and education obviously becomes deeply related. With these interested in mind, I am looking forward to today's discussion.

Panel Discussion

Short Speech: (in the order presented)



President & CEO, Japan Nuclear Safety Institute

Isao Kato

JANSI, through peer reviews and assessment of daily performance, evaluates the status of operators in relation with standards of excellence. Training conducted by each operators are included in the evaluation as well. Another important pillar in JANSI's activity is providing support. This includes the use of operating experience information and various trainings such as leadership training.

We JANSI conduct activities which aims to achieve excellence through evaluation-based support and communication with nuclear operators.

After the Fukushima Daiichi Accident, the number of personnel with no operating experience has increased, and opportunities for veteran engineers have diminished for the same situation. Currently, PWR plants have restarted and is operating without issue, but most BWR plants remain shutdown, and many opportunities to experience operation has been lost. In response to this, each operator has taken various initiatives. First is regarding improving knowledge, skill and attitude. Second is regarding skill transfer to younger employees and maintaining/improving skills under long-term shutdown. Young operators are given opportunities to work at thermal power stations of the same utility, or are assigned to nuclear power stations abroad, and the implementation of systematic approach to training (SAT) is in progress as well.

In response, JANSI has provided support to systematize training utilizing SAT to improve effectiveness of training conducted by operators. We have visited power stations to confirm issues and training status, and provided support for hosting workshops sharing good practices from abroad. Also, to improve operator team performance, we have proposed the implementation and provided guidelines for trouble response training which involves tackling various events in succession for several hours, and have reviewed training conducted by each operator. We have reviewed preparations for restart based on experiences of preceding plants, and have continued activities to share such information to other plants to be restarted in the future.

Also, in JANSI's peer reviews, there are cases where systems for improving performance are not being used effectively, or are not being promoted adequately by station leaders. Therefore, as leadership training, training for executives through line managers have been conducted, and performance improvement training has been conducted through addressing challenges in improving performance, sharing good practices and conducted on-site training for management observation.

Maintaining and improving motivation has become an issue in younger employees in particular due to long-term shutdown and heavy workload after restart. Therefore, leadership training for younger personnel was conducted which includes not only training in the classroom, but also one which requires active participation. Also, opportunities to exchange opinions for each operator level was conducted, and discussion sessions are held between operation managers, mid-level class operators, younger personnel and female engineers. Initiatives to prevent forgetting lessons learned from the Fukushima Daiichi Accident shall be continued.

With such significant loss in opportunities for actual operating experience, conventional training alone is inadequate for achieving proficiency. There is no doubt that training of fundamentals will continue to be extremely significant in the future, but in addition to such formal training, informal training provided in daily work is also important.

Panel Discussion

For example, there are areas in work that have not been practiced in the past 14 years after Fukushima Daiichi Accident, and may continue to be so for the next few years. There are informal training methods that could be implemented to cover for such areas such as the use of short-videos just mentioned and experienced personnel sharing tips over lunch, etc. In other words, various moments at everyday work must be utilized as opportunities for leaning. In Japan, this has been loosely referred to as "OJT", but we must go beyond this and think about what our challenges are and what specific actions need to be taken to overcome this. What I spoke of about earlier is being discussed in the United States where performance is superior. Japan is at a huge disadvantage in terms of operating experience, and I believe that we must put in more effort than the United States or France.



Director, Nuclear Power Generation, Electricité de France (EDF)

Etienne Dutheil

Nuclear power stations in France includes 57 PWR units located in 19 sites, and one new EPR opened transmission in December 2024 for the first time in 25 years. Our power stations are standardized, with 32 900MWe power stations and 20 1300MWe power stations. The average duration of operations is approx. 38 years.

In France, there is no limit to the period of operating license, but it is a regulatory requirement to conduct a periodic safety review (PSR) every ten years. In the 4th PSR, EDF's 56 2nd generation PWRs needed to be upgraded to the same safety levels as the 3rd generation PWRs as they exceeded 40 years in service, and major equipment and process changes were made. As a result, the 4th PSR required six times the workload of the previous 3rd PSR and took the longest time to date, 160-180 days. The 5th PSR will also address climate change, and discussions are scheduled for further extension of operation. The amount of electricity generated in 2024 achieved the target of 361 TWh despite the large amount of work required for the PSR. In addition, load-following operations were needed to accommodate the increase in renewable energy, and two power plants were shutdown last week.

START 2025 is a nuclear power station reform program with two objectives: to improve performance and to change management methods. It aims to move away from the former corporate driven management approach to the development of a safety culture at each power station, and the 4th PSR has shown the results. This also involves proficiency. Various changes were made to operating methods, and training had to be reconsidered. Also, the load-following operation of reactors is increasing with the increase of renewable energy sources.

The French government is moving toward reducing the share of nuclear power generation over a ten-year period from 2012 to 2022, and this resulted in the planned closure of 900 MWe power stations. In 2020, the Fessenheim Nuclear Power Plant (NPP) was closed for political reasons; in 2022, the Fessenheim NPP was closed for political reasons. However, in 2022, following the energy crisis caused by stress corrosion cracking problems and the invasion of Ukraine, there was a growing awareness among the public that nuclear energy is competitive and important for maintaining independence of electricity supply, and that nuclear energy is effective in combating climate change. This led to a change in government policy and the extension of the service life of existing nuclear power stations beyond 60 years, as well as green light being given for new nuclear energy programs and a small modular reactor programs.

Panel Discussion

The French nuclear industry has also been facing issues in securing personnel, and circumstances in the past 10 years have been poor, making it difficult to hire personnel. However, employment is now guaranteed, and long-term employment can be promised to contractor companies. It is also important to raise awareness of the importance of participation in the nuclear industry. Therefore, we are taking a proactive approach to attract new human talent. In particular, we hold information sessions at schools and offer hands-on courses for young people to experience. The company is also trying to get junior high school students to participate in internships at power stations.

START 2025 states that managers are responsible for ensuring the proficiency of their teams. Improving work begins with improving skills in the field. A leader must commit to developing the skills and behaviors of the team, and train and manage the team to create a highly skilled team. In terms of career development, the company has changed its system to one that allows employees to stay in the same post while being promoted, as in the past transfers were too frequent. The management of this career path is also under the responsibility of the manager.

Also, in the area of maintenance, the company provides just-in-time training using mock-ups and large digital simulators so that employees can improve their skills and better understand their work. Before actually performing the work, training is conducted using simulators to ensure that the work can be performed safely. For important work, a small number of contractors are selected and trained to enhance their skills.

In response to the extended outage caused by the novel corona virus and stress corrosion problems, five measures were developed based on risk analysis. First, special training should be provided to new employees who joined the company during the shutdown period. In addition, on-site leaders should coach and strengthen fundamentals. Make decisions based on conservative bias. In other words, although there is inevitably a rush to restart operations, safety should always be a priority. Also, the function of Independent Nuclear Safety Oversight must be ensured, and operational focus and long-term activities must be maintained.



Representative Director & President,
Tohoku Electric Power Company
Kojiro Higuchi

Today, I will introduce our initiatives at Onagawa and Higashidori Nuclear Power Stations to maintain and improve proficiency of nuclear professionals. We operate plants at Onagawa and Higashidori, and Onagawa Unit 2 was the first BWR plant to restart operations in Japan, and Higashidori Unit 1 is currently undergoing screening for conformance with new regulatory requirements.

Onagawa Unit 2 was restarted in November 2024, 13 years after the Great East Japan Earthquake. We have declared this restart to be a “re-commencement” and have been working to improve safety and build a relationship of trust with the local community.

First, we have been working on training of operators. As a special initiatives for the restart of operations, we sent young operators to PWR power stations in Japan, Southern Nuclear’s Edwin I. Hatch Nuclear Plant in the U.S., and our own thermal power stations to experience the difference between a plant in operation and a plant in shutdown by sensing the heat and sound generated by equipment such as pumps and turbines. We have heard that the program has fostered preparedness for operation through dialogue with the operators of each utility as well.

Panel Discussion

Although not all of the operators were able to participate, we feel that the fact that the participants were able to share their experiences with their peers and motivate each other which contributed to the restart of the Onagawa Unit 2. In addition, a person with experience as shift technical advisor (STA) was assigned to all operation teams of Unit 2 in order to strengthen the guidance of younger employees and to reduce the psychological stress on operators. We feel that this initiative is working effectively.

Next is the training of maintenance staff. They have been learning the structure and operating principles of valves and instrumentation, and disassembling and inspecting pumps with vendors acting as instructors in an effort to strengthen their technical capabilities. In preparation for the restart, experienced employees from the head office and Higashidori Nuclear Power Station were assigned to Onagawa Nuclear Power Station to provide support, including final confirmation of equipment condition, etc.

Since there were steam turbine facilities and power generation facilities that had not been in operation for 13 years, we conducted on-site walkdown with the cooperation of employees of our thermal power division, who had experience and expertise in restoring facilities from earthquake and seismic damage, and shared their operating experience to ensure that all possible measures were taken to restart operations.

Next was training in chemical and radiation control. As part of initiatives to prepare for the restart, experienced employees from the head office and Higashidori Nuclear Power Station were dispatched as instructors to conduct practical training on water quality control during operation, radiation control in areas with high radiation dose after operation, training on wearing protective equipment, and repeated pre-study sessions and practical training for drywell entry.

Next is maintaining of skills of core designers who design the fuel layout. The core design work has been continued with contractors for about 25 years, and efforts have been made to maintain and improve the knowledge and experience of the core designers. The knowledge and experience accumulated through this effort was reflected in the core design after the long-term shutdown.

Next is training of severe accident response team. These personnel have undergone repeated training using newly installed mobile equipment, such as power supply vehicles and high-capacity water trucks, and have acquired operational methods and response know-how. In addition, to prepare for serious incidents, we have confirmed that we can complete tasks and operations within the required time by installing a hose that is approximately 1400 meters long and combining multiple facilities. We are also conducting training for commanders.

Onagawa Unit 2 was able to resume operations through the conduct of "One Team ONAGAWA" by maintaining and improving technical capabilities through training, skill transfer from veteran employees, and receiving cooperation from others. We will continue to conduct training based on the belief that there is no end to safety measures.

Finally, I have three expectations for JANSI: First, JANSI should issue an AFI based on the situation in Japan. We ask JANSI to issue AFI which accounts for the circumstances in Japan, and provide support which ensure effective and thorough improvement. The second is to optimize performance monitoring: I expect JANSI to clarify the status of performance from normal times through PMCM, and to optimize the overall performance monitoring and maximize its effectiveness. Also, we ask JANSI to present a course of action for improvement based on a comprehensive perspective. Third, we expect JANSI to expand its support based on its wealth of knowledge, and we expect JANSI to further expand its support to operators by leveraging its wealth of knowledge and deep insight as a self-regulatory organization.

Panel Discussion



Deputy Secretary-General, Nuclear Regulation Authority
Director-General, NRA Human Resource Development Center

Shuichi Kaneko

Knowledge, skills and key factors required in nuclear operators and regulators are fundamentally the same. While the required extent of depth and thoroughness of knowledge and skills differs depending on the detail of work, it is my fundamental understanding that coverage of required knowledge is basically the same across all sections. On such basis, knowledge, skill, and attitude (KSA) are all important, but furthermore, it is necessary to focus on the balance and interrelationship between them, and to take initiatives which ensure that they have good balance and good interaction. We have various experiences where regulators and operators jointly act and put into practice, and such experiences are good learning opportunities.

The skills required for personnel involved in nuclear safety are traditionally positioned as scientific and technical expertise, an understanding of the actual conditions and characteristics of the actual plant for which they are responsible, an understanding of the operational structure, work procedures, and readiness for actual operations, and a field-oriented attitude. In addition to this, the following are required: awareness and analysis on strengths and weaknesses in safety assurance (focusing attitude), communication skills between regulators and operators and other related stakeholders, the ability to explain in comprehensible manner to local residents, shareholders, and other non-specialists, and problem awareness and practical skills to link findings to improvements. Once becoming aware of a problem, can it be shared with supervisors and others, and can a solution be developed and implemented? This is both an individual and organizational issue, and I also think it is a question of whether or not such a work environment has been maintained.

I would like to introduce what I have noticed through regulatory reviews, inspections, and emergency preparedness. In the regulatory review process, it is important to share an awareness of the issues and to communicate clearly from the technical perspectives. There were times when I felt that what each party thought the problem was and what measures they were planning to take were not well communicated at the review meetings. It is also important to learn from the previous results of discussions at other facilities in the review, and to check such matters carefully, with awareness of difficulty to move forward if there are errors in the documents and materials used in the regulatory procedures. These things are obvious to those who participate in discussion directly, but it is also necessary to give opportunities to younger and less experienced people.

The Nuclear Regulation Authority has inspectors stationed at each power station. It is important for the inspectors to understand the situation on site, but it is also important for the employees of the operator. In particular, it is important to know how well the managers and supervisors on site are communicating with each other and understanding the actual situation. This is not so much about knowledge or experience, but rather about how the attitude of focusing on the situation is put into practice. Also, how will the corrective action program (CAP), which has been the focus of efforts after implementation of the new inspection system, be effectively implemented? The CAP is a process to turn findings into action, so it is important to consider whether it works well or not.

Finally, there is emergency preparedness and response. The ability to disseminate information and respond to the public including mass media at the time of an incident; in other words, communication with the outside world, must be performed well especially if the situation has the potential to become serious.

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In particular, communication to share with the community a concrete image of the protective measures to be taken by local residents will also be necessary.

Discussion:



○Takahashi: Various points of discussions were presented in the short speeches, but since a comprehensive discussion of all of them would be very time-consuming, I would like to divide our discussion into three themes.

The first is effective training, the second is on-site skills, and the third is non-technical skills.

First, in terms of effective training, I would like to ask Chairman Kato for his impression regarding initiatives being taken abroad.

○Kato: I strongly felt that the training was based on practical application, and that various efforts were made in addition to classroom lectures, including the use of short videos. Similar to one not being able to learn how to ride a bicycle simply through theory, the question is how one learns the key points for performing work. Since these kinds of efforts are being made even among high-performing countries, we need to be more creative, and I felt that it is very important for the line people to take responsibility and interest in training. I was very impressed with the level of awareness in this area.

○Takahashi: I was very impressed by the method of learning by watching videos of important tasks. I believe that the use of video has the effect of conveying information that cannot be conveyed through the use of procedures alone. I would like to know about the effectiveness of such aspects.

○Libra: In fact, the introduction of the video has resulted in a reduction in exposure in the process of placing spent fuel in dry casks. In fuel handling, it is more important to be able to perform the work safely than keeping up with the schedule, and I think that the fact that there have been no incidents with an impact over the past seven years is one indicator of this.

○Takahashi: Next, I would like to ask Ms. Donges and Mr. Dutheil to comment on what they felt about the initiatives taken by the Japanese side.

○Donges: I was very interested in the perspective of recognizing the difference in experience level and changing the way of teaching. The French example of approaching junior high school students to secure personnel at an earlier stage was also helpful. I also thought it was wonderful that, when actual equipment is not available, training is conducted in a simulated environment that is close to the actual situation by utilizing technology and tools.

○Dutheil: In Japan, I was impressed by the efforts being made to improve proficiency. Also, in the spirit of mutual help, I think it is a very good action that a power station under long-term shutdown sends its personnel to other online sites to share experience.

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○Takahashi: Next, I would like to focus on the assessment of proficiency as a core of effective training. In order to conduct training, it is first necessary to properly evaluate the current situation and recognize the difference between the current situation and the target, so the most basic question is how to evaluate the situation.

○Takahashi: Next, I would like to focus on the assessment of proficiency as a core of effective training. In order to conduct training, it is first necessary to properly evaluate the current situation and recognize the difference between the current situation and the target, so the most basic question is how to evaluate the situation. Ideally, we would like to systematically evaluate and manage the situation, and then give feedback to training, but there are some difficulties there. I would like to get comments from Mr. Libra and Ms. Donges.

○Libra: The key is transparency of performance. It is also about setting the reporting threshold for problems at a very low level. We stress the importance of leaders going to the field, observing the work, documenting what the field crews, leaders, and operators are suffering from, identifying such signs, and keeping eyes on. As for results, the industry has set very low thresholds and reporting requirements. There are times when we have reported but there is no problem. However, some uncertainty is expected at the beginning, even when at a stage where we are unsure if it is important or not, we believe that by looking at whether things are getting better over time, we can both prevent events and improve performance.



○Donges: In the U.S., one way to assess knowledge is through written tests, and another is through task performance assessments in the field or in a simulated environments to measure the skills needed to perform a task. On the other hand, observation is still important. One way to do this is to set a low threshold for what an operator must have fundamentally, and to be transparent about it.

For example, in maintenance, we need to look at specific skills and the behavior related to specific skills. It is necessary to observe both from the perspective of fundamentals and technical skills, and to address any shortfalls. The other is the evaluation of proficiency. The basis of proficiency is knowledge and skill, but it is also necessary to look at it from the perspective of experience, such as when was the last time work was performed, are familiarity with work, if work was performed multiple times, or just once. By understanding whether the individual has the necessary knowledge, skills, and experience for each position, and by identifying where the areas of improvement are in individuals and areas, we can paint a larger picture of proficiency.

○Takahashi: I would like Chairperson Kato to comment on JANSI's basis and perspectives for evaluation of proficiency. Is it assumed that this evaluation is systematic?

○Kato: For JANSI, the most important tool for observation and evaluation is peer review. During the peer review, about 30 experienced JANSI personnel go to each power station to observe the behavior of workers and evaluate the gap with excellence. From there, they identify where there is area for improvement. And they create a platform where the operators can come together and share best practices and problems with each other. In this sense, we are promoting evaluation through peer review, and for common issues based on

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the results, we have created an organization to encourage collaboration among the parties involved.

Another new initiative we have recently launched is the PMCM, in collaboration with WANO. If our peer review is like a once in four-year physical checkup, PMCM is like monitoring blood pressure and body temperature on a regular basis, and if any adverse trends emerge from various parameters collected with cooperation from power stations, JANSI will identify the issues and take action.

It was pointed out that observation of on-site behavior is important, but this does not mean that it is sufficient just to go around the site, but also to provide reviewers with perspectives on what kind of work they are looking at and how they should look at it. By doing so, issues are resolved in cooperation with the respective operators. In doing so, we will also refer to initiatives taken by operators overseas.

○Takahashi: Deputy Secretary General Kaneko, I understand that the Nuclear Regulation Agency also evaluates safety culture based on observations, but there must be some difficulties there.



○Kaneko: To begin with, there are differences among people in terms of what they consider a safety culture to be, and what they consider to be maintaining and fostering a safety culture. Examining a single behavior will not allow one to capture the entirety of the concept. We must have a more comprehensive viewpoint. For example, what kind of awareness of issues does a certain staff member usually have in work, what is the staff involved in, what kind of things is the staff interested in and actively works on, and what are the things that are not clear to the staff? We call it a 360-degree evaluation or, more recently, a multifaceted observation, and we look at the behavior of the staff, but I think it is necessary to take an approach that considers, from

various aspects, how much safety culture has permeated the company as a whole and what are its strengths and weaknesses.

○Takahashi: The relationship with contractors was mentioned several times earlier. Evaluation and training are important internally, but it is also necessary to raise the performance of contractors. I would like to ask Rep. Director President Higuchi and Mr. Dutheil for their thoughts on this.

○Higuchi: Regarding the construction and operation of nuclear power stations, some parts are being done in-house, while others are being done jointly with contractors if it is not possible to do so internally. In this context, the utility is the client and the contractor is the recipient of the contract, but the most important thing when working is the awareness that we are equal partners working toward the same goal. In this sense, it is not enough for us to improve our own "proficiency," but it is important to conduct training in an integrated manner which includes contractors. In some aspects of work, contractors have higher technical capabilities than we do. Therefore, I think it is the role of the leader to create an open relationship between utility and contractor, allowing for good communication with no need for holding back.



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○Dutheil: The technical capabilities of contractors is a very important topic, and the key to this is long-term contracts. Without long-term contracts, contractors cannot develop their capabilities. Therefore, we have a six-year contract with an additional two-year extension. In addition, the contract is divided according to the level of the contractor. For example, for the operation of complex machinery such as turbines and water injection pumps, we sign special contracts and limit the contractors who handle them to a few specialized contractors.



It is also important to intervene more regarding the development contractor technical capabilities. Especially regard to critical operations, we assess whether individual operators are able to perform complex operations precisely. This means selecting and contracting with companies based on operators that are qualified on the individual level. Training methods include having trainees learn operations using models and using decommissioned thermal power station facilities to train on emergency power supply and auxiliary turbine operations.

While it is important to develop human talent, we also need partner companies that can do the job properly. Therefore, we share medium-term goals with our contractors. By presenting clear goals, contractors are motivated to participate and take pride in contributing to the achievement of those goals.

○Takahashi: The next theme is the importance of field skills, observation, situational decision, and decision-making. The importance of “findings” has been mentioned many times, and one of the first things to learn is the importance of observing the field, the reality, and actual objects. Secondly, we must ask if procedure oriented training alone is sufficient. Of course, the most fundamental thing is to learn the procedure and follow them, but following procedures does not always guarantee safety. Situations that are not covered by the manuals can occur, and it is important to think voluntarily. I would like to focus the discussion on the difficulty of training in these areas.

First, Ms. Donges. It is said that the younger generation nowadays complies with procedures but rarely acts on their own initiative. What kind of measures could be taken to address this?

○Donges: Looking at procedures and listening to lectures from the perspective of a different generation or someone new to the industry might help strengthen the procedures and create opportunities for deeper discussions on specific topics. The diversity of the organization will strengthen training materials and deepen understanding.

There is no one way to learn that will satisfy everyone, so I think it is important to allow flexibility in teaching and learning. For example, I am used to classroom learning and prefer to listen to lectures and take notes and learn from the interaction with the instructor, but someone may want to do hands-on training on a mock-up. Others might want to use a 3D model of the plant to learn the systems and equipment. Others might prefer to use a mentoring program and be directly mentored by someone who has more experience than they have or who has experience they don't have. Combining them may be the most effective way to achieve this.

○Takahashi: Mr. Libra presented an example of training VR. I think VR is a good way to let people experience things that would be difficult to do in real life. What are your thoughts on this?



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○Libra: The great part of VR is that one can embed errors; for example, electrical technicians using the VR training could be tested if they notice a missing part. Since it is virtual, there is no worry about actually breaking equipment, so we use it to train people to overhaul pumps, valves, breakers, etc. Advances in technology have made it possible to do many things. We are still in the trial stage with regard to utilization, but I believe there are still many technologies that can be used, including AI.

○Takahashi: I specialize in risk perception. For example, there is a smell when you actually see a short circuit in front of you, but there is no smell in VR. I think there may be a big difference in impression between actually experiencing the actual thing and VR.

○Libra: As you stated, VR can never be said to be superior to the actual experience. However, as Ms. Donges stated, we need training with diversity and multifaceted evaluation. We need to look at what works, especially since different people learn in different ways. Young people come to us because they want to do a good job in the nuclear industry, so we need to be committed to them and provide them with a variety of training methods

○Takahashi: Mr. Dutheil, What kind of training and initiatives do you think are possible to improve the ability to judge situations and make decisions?

○Dutheil: First of all, it is important to enhance the technical capabilities internally. In hiring, we try to hire people who have experience in the field, even if their academic background is low. Then, the manager's role is important so that the basic skills are enhanced for career advancement. Regarding maintenance, there is an in-house program, which is also the manager's responsibility. The goal is to acquire proficiency. This will enable the local workers to act more precisely and make decisions. Then, in order for the field to have decision-making power, the first step is to give responsibility and also to allow failure. If failure is not tolerated, the person will not make decisions, and efficiency will suffer. Therefore, it is important to tolerate failure, recover and improve with transparency.

○Takahashi: Mr. Kaneko, regarding this point on findings, how do you train inspectors on the proficiency of communicating what they feel and see in the field to operators?

○Kaneko: The only way to develop communication skills is through hands-on experience. In Ms. Donges' presentation, she indicated that good training can be achieved when an organizational culture of continuous learning is fostered, motivated educators and learners are present, and effective methods and tools are combined. I think this is exactly true to everything. I think it is important to find a way to achieve this balance, because none of the elements should be lacking.

I tell the inspectors to speak proactively. There are many things that operators would not be aware of if we did not tell them, so it is important to share our findings properly, and if we do share it, we must do so in a comprehensible manner, and if it is better to put it on paper, it shall be done. The effective realization of the three elements previously mentioned is important to enhance the ability of communication.

○Takahashi: I would like to move on to the third theme, non-technical skills, and the importance of leadership communication. Here, I would like to focus our discussion on the term psychological safety. Mr. Libra, what do you actually do for psychological safety when communicating within your organization?

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○Libra: It is not possible to build trust within five minutes of meeting, so it is necessary to enhance trust every time you have an opportunity for mutual interaction. In the relationship between a leader and subordinate, psychological safety is built through the subordinate's trust in the supervisor and the supervisor's proper care of the subordinate. The subordinate must be able to say, "This person cares about me. If that is the case, then it will be okay to say this." Although the answer may not be immediately available, it would be ideal if there is a relationship of trust where the two parties can search for the answer together. However, this is a difficult task and still requires effort.

○Takahashi: Mr. Kaneko, there were significant differences in the level of authority between regulators and operators in the past, but what are your plans for flat communication on even grounds?

○Kaneko: At the workshop we held with the OECD/NEA last year in Japan, as each country has a different culture, so they analyzed what kind of communication and approach to safety we should take in light of that. Japan is said to be authoritarian, and there is a tendency for hierarchical relationships to manifest quite easily. However, I think it is very important for both sides to make efforts to get rid of this tendency through repeated communication.

○Takahashi: President Higuchi, I think it is important for upper management to be aware of the need to create an atmosphere of openness in the organization, where people can say what they want to say. What do you think?



○Higuchi: Japan is characterized by a pyramid-type organization, and it is important to flatten it out. We conduct a survey of all employees once a year to check the level of stress in the workplace. Stress increases when the head of a group is an overbearing person, and suddenly disappears when the boss is replaced. Feedback of the survey results to the work site has also had the effect of making supervisors aware of their own behavior and correcting it. If a staff is aware of a problem or an inappropriate situation but is unable to talk about it, the situation is likely to take a turn for the worse. Therefore, it is very important for the top management to commit to creating such an environment and to send out messages to promote it.

○Takahashi: In addition to psychological safety, another important keyword is leadership. In closing this theme, I would like to ask President Kato to give us a response from JANSI, which conducts leadership training programs for operators.

○Kato: When we say of leadership, we tend to see it as a top management issue, but people at all levels need to see it as their own issue. Therefore, we started out with training for CEOs, but now we also target candidates for management positions. In the program for younger employees, the basics are taught in classroom, but participatory training is also incorporated, such as the application of learned skills through role-playing. The program also incorporates a "Letter from Supervisor" system, in which supervisors are asked to write down what their intentions are in sending that person for training, so that the person can get a sense



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of what supervisors are thinking. We also do follow-up training to check how their behavior has changed as a result of the training. We use this approach because it helps to increase the motivation of the participants by strengthening the involvement of their supervisors. We would like to continue to receive feedback from everyone and try out various new methods in the future.

○Takahashi: Now that the exchange among the panelists is over, I would like to ask the panelists the questions that we received in the questionnaire. First, I would like to ask a question to Ms. Donges: You mentioned the diversity of human characteristics in employees, but how is this important for improving safety?

○Donges: I believe that if we know the characteristics and preferences of each generation, we can have flexibility in our teaching methods and optimize our learning methods.

○Takahashi: Next, I have a question for Mr. Libra: You explained the importance of modifying training in accordance with changes being made. Please introduce a case where effective changes were made to conventional simulator training and classroom training.

○Libra: I think the strength of our industry is that we have excellent operator training. Therefore, there is no problem with conventional training. However, more can be done. For example, we could focus on performance, and see how we can make better use of the resources we have. In particular, what needs investment is how to transfer simulator training to the field; we must review how to supplement this area. In Japan, personnel are being dispatched to industries other than nuclear power, and I think that is what we are talking about.

○Takahashi: Next, I would like to take some comments or questions from the audience.

○Ihara: I am Ihara, CNO of Chubu Electric Power Company. I have a question for Mr. Libra and Ms. Donges. What kind of activities are you doing to improve the proficiency of those who will become the next generation of plant managers and CNOs, which means us?



○Donges: The proficiency of the individual performing the work and the proficiency of the leader and the organization as a whole is a bit different. What do we mean by a leader's skills and knowledge? Is it decision-making skills, communication skills, or the ability to motivate one's own people? If we re-evaluate the current situation with this in mind, we may be able to identify areas that need strengthening with regard to individual leaders.

In addition, when developing human resources, it is important to do so with intention. Make sure they acquire the knowledge and skills properly before assuming a position, so that they can successfully lead when they stand in that

position. It is important to have them gain work experience and practical experience with these intentions. This way, they can assume their new positions with proficiency and use them as a stepping stone to further enhance their abilities. This should be done with intention by senior management and management.

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○Libra: As the plant manager, one needs to be involved with the Nuclear Safety Review Committee and the budget committee, and many other factors are required. For example, our utility has eight plants at four sites, so we would like to have a system in place so that about 20 people can serve as plant manager. It is also important to let them know that the company is investing in their development. However, this is a really big topic, so I hope we can discuss it at another time.

○Uesaka: I am Uesaka, Chairman of the Japan Atomic Energy Commission. A few key words came up in today's discussion, but what do you think should be done to certify such training? Since this is training for working people, I think it would be better to certify it not with a university degree but with a national qualification. What do you think about establishing a national qualification system and eventually making it an international standard?

○Dutheil: In France, there are few people in charge of power station operation who come from the field, and the problem is that there are too many that come from elites. Therefore, we are promoting people with long experience in the field by having them receive external training and internal certification and making them serve as management. We are also promoting people with field backgrounds so that various people can mix and work together in a diverse work environment.

○Libra: Everyone wants to do their job with pride. For example, in the U.S., there is a professional certification in radiation protection, which is not an easy certification to obtain, leading to a sense of pride in those that do become certified. Leaders must encourage such things. I think they have a system in place whereby salary increases with qualifications, or awards are given when qualifications are acquired.

○Donges: In the U.S., the Nuclear Regulatory Commission (NRC) developed regulations on training in 1993. In particular, operators, repairmen, engineers, radiation protection, and water chemistry control personnel were regulated, and training requirements were established for the safe operation and maintenance of the plant. Training plans are evaluated by an independent certification committee to ensure compliance with federal regulations.

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○Takahashi: Finally, I would like to ask each of the speakers to give a few words.

○Kato: We have heard many new information from overseas speakers today. JANSI and WANO will work together to process the contents of these talks, and I think it is necessary to receive various ideas from the industry and give them concrete shape in order to make Japan's nuclear power safe with excellent performance. Today is a new start, and I would like to continue to hold interest in training.

○Higuchi: I was reminded of many things, including examples of overseas initiatives. I believe that the basis for safe operation of nuclear power is people. And the starting point for this lies in the field. I would like to continue to contribute to further improvement of performance by improving my proficiency based on a thorough knowledge of the work site.

○Kaneko: We also have employees of various generations with diverse aspirations, and through today's discussion, we were made aware of the need to take on the challenge of developing human capacity in our own way. We will enter a new mid-term target period from this April, and human resource development is one of the major pillars, so we would like to make sure that we proceed with our efforts.

○Donges: Today, I reaffirmed the importance of the role of leaders. In building continuous improvement and psychological safety, it is necessary for leaders to set an example with their own actions. It is important to share initiatives and issues with each other and work together to maintain a high level of performance and make further improvements.

○Libra: I participated for the first time, and I thought it was very healthy and wonderful that you chose one theme and delved into it from various aspects, and that you also included the regulators in the discussion. I would like to express my gratitude for the warm welcome.

○Dutheil: I would like to reiterate the importance of knowledge and experience in the field. Knowledge and experience are the keys to proficiency. When communicating with managers, proficiency should be the main topic of discussion, and there must be a relationship of trust. Safety and transparency are necessary between the workers and the leaders, and for that, we leaders must be open to any criticism and negative opinions.

○Takahashi: I had a very fruitful discussion with you today. Nuclear safety is a very important issue, and everyone is aware of the need to improve safety and is working toward it on a daily basis. However, it is difficult to implement it efficiently and effectively, and that is where the difficulties lie. I hope that what has been discussed here today will contribute to nuclear safety in the future.

Closing Remarks



President & CEO, Japan Nuclear Safety Institute

Isao Kato

14 years after the Fukushima Daiichi Accident, Japan currently houses a mix of 14 reactors that have restarted operations and many other reactors that remain in long term shutdown. With this state in mind, the JANSI Annual Conference was planned for the purpose of raising awareness for issues faced by JANSI and Japanese nuclear operators regarding cultivation of human talent in the future and the maintaining and improvement of proficiency, and to acquire hints from initiatives being taken abroad.

Through the program today, I learned that systematic approach to formal training (SAT), which is the foundation, continues to be important for maintaining and improving proficiency, but it is inadequate to simply continue and improve this, and that the further use of daily work experience as a place for informal training is important.

In Japan, where some plants have restarted operations from long-term shutdown and some still remain shutdown, many works are “first-time, infrequent or have changed” (“Hajimete, Hisashiburi, Henko” hereinafter “3H”). These 3H works have the potential to have negative impact in performance. One lesson learned today was the importance of cultivating capabilities to realize issues which could hinder successful performance of work. The second important lesson learned is to review and implement mitigating measures against subject issues in advance. Familiarization of the above as organizational systems and practices, and implementing them is necessary for the safe and quality conduct of tasks and work in Japan’s nuclear power stations. I believe that choosing the best translation for the word “proficiency” in Japanese is necessary for implementing its concept.

Maintaining and improving training and proficiency is the responsibility of line managers. We must give stronger interest, time and management resources into this area. The instructions from the Chairperson of the Nuclear Regulation Authority on March 11 stated to train oneself so that one can answer whatever call that awaits. The purpose of maintaining and improving proficiency is to train the ability to exercise one’s capabilities when a situation requiring it arises.

The experience lost or to be lost in the 14 years after the Fukushima Daiichi Accident and during the time from shutdown to restart of operations is enormous. On the other hand, through conformance with new regulatory requirements, analysis of the Fukushima Daiichi Accident, status of response at Onagawa, Fukushima Daini and Tokai Daini nuclear power stations on the same day, and initiatives for safety measure projects and restart of operations taken by each nuclear operators, we have continued to accumulate new experiences and share these with each other.

In order for the nuclear industry to answer the demands from society, we must continue to tirelessly pursue excellence and take initiatives to improve performance. JANSI, as the industry’s self-regulatory organization, will continue to lead autonomous improvement activities taken by operators, and continue to meet the mandates set by operators. In order to achieve the vision defined in the 10-year strategy jointly by JANSI and nuclear operators, that is, “for operators to achieve world’s highest standard of safety and reliability and maintains this status, and for JANSI to lead operators from an independent, figure of authority in world excellence”, we will cooperate with ATENA, NRRC and WANO in making progress. Once again, I would like to express my gratitude to the participants today, and would like to conclude my closing remarks.